

Sixteenth Annual Vendor/Contractor Profile Special Section

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Over **3 Decades** of Nuclear **Design, Engineering** and **Fabrication** Excellence

N NA NPT NS U U2 U3 R NB (NQA-1)

Amer Industrial Technologies, Inc.

Supplying the **Nuclear Renaissance**
with **33+ Years** of Custom, Heavy Fabrication Experience

Over the past 33 years - nuclear utilities, engineering firms, construction companies and government agencies have all turned to Amer Industrial Technologies to provide them with the nuclear engineering and fabrication quality they expect. Led by its Founder and President, Ahmad E. Amer, AIT has made the investments in personnel, equipment and quality programs necessary to maintain their ASME Section III stamps for these 33 years. Dedicated to the nuclear industry from the very beginning, AIT is valued among their customers as the preferred fabricator of critical nuclear components for the Nuclear Renaissance.



"We at AIT believe that doing anything exceptionally well requires commitment and perseverance. We are driven to create the highest quality products by bringing together integrity in design, engineering and fabrication craftsmanship. For AIT to do anything less would be a betrayal of our beliefs."

-Ahmad E. Amer
Founder & President, AIT



Large Heavy Walled Pressure Vessel designed and fabricated by AIT

AIT's commitment to maintaining their nuclear certifications for these past 33 years, is in direct contrast to those companies who chose to abandon their nuclear program following Three Mile Island. Indeed, the Nuclear Renaissance has spawned the arrival of companies whose entire nuclear pedigree consists of obtaining one or more of the ASME nuclear certificates. Whereas, AIT has held these nuclear certificates and been doing nuclear fabrications for over 33 years!

Having supplied nuclear components to customers from Europe, the Far East, South America, Eastern Europe and the Middle East, AIT has the experience to be a preferred nuclear component fabricator on an international scale. Further, AIT has also developed and nurtured a network of international material suppliers to ensure competitive pricing and timely deliveries.

AIT offers the full range of nuclear services including design, quality assurance, engineering, inspection, testing and non-destructive examination. "A lot of fabricators require the engineering design be completed by the customer or another source", says Ralph Lecky, Vice President. "At AIT, we do the full package, all the way through shipping."

With a 260,000 of fabrication facility located on the Delaware River in Wilmington, Delaware, AIT engineers and fabricates a vast array of nuclear components including:

- **Shell & Tube Heat Exchangers**
- **Heavy Walled Pressure Vessels**
- **Tanks**
- **Piping Spools**
- **Flow Control Elements**
- **Casks & Canisters**
- **Spare Parts**
- **Modular Systems**

Further, with AIT's Delaware River site, AIT can engineer, fabricate and barge directly from their property very large 400+ ton fabrications with diameters exceeding 30 feet and lengths exceeding 130 feet.

AIT will continue to use its 33+ years of nuclear engineering and fabrication experience to be a key supplier partner to the Nuclear Renaissance.



Amer Industrial Technologies, Inc.

Over **3 Decades** of Nuclear **Design, Engineering** and **Fabrication** Excellence



ASME Section III Class 2 RHR Heat Exchanger



We barge from our location



4000 psi, 5 1/2" thick deionized vessel for NASA

Heat Exchangers
Pressure Vessels
Piping Spools

Nuclear Material Supplier
Engineering Services
Specialty Fabrications

Modular Systems
Casks & Canisters
Flow Control Elements

100 Amer Road, Building 200 | Wilmington, Delaware 19809 | Phone: (302) 765-3900



22' Diameter, NQA-1 Stainless Steel Tanks for the Department of Energy

www.amerindustrial.com



July 1, 2010

Subject: Introducing QualTech NP

To Our Valued Customers,

We are pleased to announce the formation of a new business unit, QualTech NP, to provide safety-related hardware solutions and technology services to the nuclear power industry. Its strategic focus will be to serve as the nuclear industry's leading supplier of Commercial-Grade Dedication (CGD), Equipment Qualification (EQ) and safety-related hardware solutions. On July 1, 2010, Curtiss-Wright Flow Control's Nuclear Group will merge the Sciencetech EGS Products Division (Huntsville, AL), Trentec (Cincinnati, OH), and NETCO (Lake Katrine, NY) operations into QualTech NP.

Since the early 1980s, EGS, Trentec, and NETCO have independently pioneered solutions to your most challenging safety-related hardware and equipment qualification needs. EGS is the industry leader in safety-related connectors, electrical penetration assemblies, and environment qualification services for equipment in both existing and new build nuclear plants. Trentec is internationally recognized as the leader in solutions for nuclear facility replacement parts, commercial grade dedication, and airlock, hatch and door manufacturing. And NETCO is the authority on spent fuel rack aging problems and a leading supplier of spent fuel management solutions, in-situ testing, and the NETCO SNAP-IN® neutron absorbers.

These three businesses have complementary capabilities and combining their resources and assets will allow us to develop more solutions to your most challenging safety-related hardware and equipment qualification needs. It will better position us to respond to the growing demands caused by plant aging and new plant construction activities. We plan to further upgrade and improve our facilities, equipment and test capabilities in order to provide additional value for you, our customer.

The EGS, Trentec and NETCO teams will continue to provide high quality products and services that you have come to rely upon. You can continue to contact your existing representatives at:

QualTech NP, Huntsville Operations
125 West Park Loop
Huntsville, Alabama 35806
256.722.8500

QualTech NP, Cincinnati Operations
4600 East Tech Drive
Cincinnati, Ohio 45245
513.528.7900

NETCO (new location)
701 Grant Avenue
Lake Katrine, NY 12449
845.382.6912

As always, we value your business. We're very excited about the opportunities that lie ahead and look forward to continuing to offer you and your organization world-class service and products of unparalleled quality in support of your business needs. Please feel free to contact us if you have any questions or concerns.

Respectfully yours,

Kurt Mitchell
General Manager
QualTech NP, a business unit of Curtiss-Wright Flow Control Company

Growing QualTech NP to meet the challenges of today's nuclear power industry.

Our foundation is strong.
Our roots run deep...

Trentec, EGS Products, NETCO



Curtiss-Wright Flow Control has been rooted in supporting the nuclear power industry for over 50 years. To meet the growing requirements of today's industry, we have formed a new business unit, QualTech NP, dedicated to working with utilities, NSSS, EPCs and industry suppliers to meet their most challenging needs: qualification, seismic testing, commercial-grade dedication, connectors, cables, penetrations, airlocks, doors, hatches, spent fuel management, obsolescence solutions and custom manufacturing.

**CURTISS
WRIGHT**
Flow Control Company
QualTech NP

Learn more about QualTech NP at <http://qualtechnp.cwfc.com>

Mitsubishi US-APWR. Generating a lot of momentum with U.S. utility customers.

The US-APWR technology has now been selected by two U.S. utilities for nuclear power plants in the United States, a continuing endorsement of the most powerful and efficient nuclear power technology ever developed for the commercial market. The design, developed by engineers at Mitsubishi Heavy Industries and offered to U.S. utilities by Mitsubishi Nuclear Energy Systems (MNES), uses a number of features that create greater operating economy and require a smaller footprint than competing nuclear power plant designs. The US-APWR is the result of Mitsubishi's 40-year history of building 24 nuclear power plants using pressurized water reactor (PWR) technology.

In building plants for U.S. utilities, MNES is able to rely on Mitsubishi's capabilities as the world's only fully-integrated nuclear power plant supplier, providing planning, design, manufacturing, construction and plant maintenance for its customers. In addition, the company provides a

number of replacement components to utilities in Japan, China, Europe and the United States, including reactor vessel heads, control rod drive mechanisms, pressurizers, steam generators, and steam turbines.

Luminant Generation Company, the largest Texas power producer, has selected the US-APWR design for two plants it is developing at its Comanche Peak Nuclear Power Plant. In addition, Dominion Virginia Power, a major East Coast utility, has chosen the US-APWR for a third unit the company may build at its North Anna Power Station in central Virginia.

Special features of the US-APWR include:

Reactor Vessel

Neutron reflectors reduce the number of structural members, minimize the neutron exposure rate of the reactor vessel, and reduce fuel-cycle costs through the efficient use of neutrons.

Advanced Accumulator

The high-performance accumulators use an automated system to change the post-accident core injection flow rate from high to low in Emergency Core Cooling injection operation. The advanced accumulator functions both as a traditional accumulator and lower-pressure injection pump, eliminating the need for an independent low-pressure injection pump, improving reliability.

Turbine Generator

An integral shroud design enhances the reliability and efficiency of the three-dimensional, 70-inch class turbine blades. Each turbine system has two moisture separator reheaters.

Instrumentation & Control

Digital technology is applied to both the I&C cabinet and the Human System Interface (HSI). The digital HSI reduces the possibility of human error. The system has shorter cables to reduce the duration of maintenance activities, many of which are conducted by self-diagnostic and automatic test systems.

Steam Generator

Thermally treated alloy 690 steam generator tubes improve their resistance to stress corrosion cracking. Circular holes in the traditional tube support plate design have been replaced by broached holes to allow steady water flow through the holes to reduce the accumulation of impurities.

Reactor Coolant Pump

The pump has improved hydraulic performance and a new cartridge-type seal to improve maintainability. The service life of the seal has been extended through improvements in the design and material specification.



U.S. Advanced Pressurized Water Reactor (US-APWR)

The main specifications of the US-APWR are:

Electric Power	Approx. 1,700 MWe
Core Thermal Power	4,451 MWt
Reactor Fuel Assemblies	257
Reactor Fuel	Advanced 17x17, 14 ft.
Active Core Length	13.8 ft.
Coolant System Loops	4
Coolant Flow Rate (Thermal Design Flow)	448,000 gpm
Coolant Pressure	15.5 MPa
Reactor Coolant Pump Motor Output	6,000 kW



Contact us to learn more about the US-APWR.

(703) 908-8040 | www.MNES-US.com



Westinghouse Electric Company has a proven track record for providing the safest, most advanced and cost-effective technologies for the commercial nuclear power industry. Our commitment to local job creation has been successfully implemented in France, Korea, Japan and China, while also creating thousands of jobs in the United States.

Westinghouse's more than 15,000 global employees are focused on listening and responding to specific customer needs with the goal of creating success for our customers. Four core businesses combine years of experience with the youthful energy of today's nuclear energy professionals.

Our newest design, the Westinghouse **AP1000** nuclear power plant, is the most advanced of its kind currently available in the global marketplace with over 40 countries having expressed an interest. Four units are under construction in China and four in the United States in South Carolina and Georgia. The **AP1000** design has also been announced as the technology of choice for no less than 12 additional new plants in the United States.



A Toshiba Group Company

**You can be sure...
if it's Westinghouse**

Nuclear Services

Westinghouse Nuclear Services offers field services, including outage support, advanced products, component services and training and engineering services to improve reliability and to sustain regulatory compliance.

Nuclear Automation

Westinghouse Nuclear Automation provides full-scope, world-class Instrumentation and Control (I&C) solutions for operating and new nuclear power plant designs.

Nuclear Fuel

Westinghouse Nuclear Fuel partners with nuclear plant operators to support the fullest range of facility and fuel configurations including PWR, BWR, VVER, AGR and Magnox reactors.

Nuclear Power Plants

With a global network of partners and suppliers, Westinghouse Nuclear Power Plants provide the full range of products and services to design, license, build and commission nuclear power plants around the globe on a full-scope turnkey basis.

Kinectrics: The Power of Experience

Advanced Expertise / Full Service
Nuclear Support - **Worldwide**



Equipment Qualification

Kinectrics has performed equipment qualification encompassing a variety of international reactor designs and utility / manufacturers' equipment needs for over 2 decades. Our team of EQ specialists has qualified thousands of safety-related electrical and mechanical components.

ENVIRONMENTAL CHAMBERS & AGING OVENS - Kinectrics has a variety of chambers used to perform accelerated thermal aging of components, and determine component or system activation energies.

SEISMIC TESTING - Kinectrics is capable of performing full seismic testing services for nuclear. Our labs are equipped with two tri-axial seismic testing tables.

Commercial Grade Dedication

Kinectrics will procure commercial components, evaluate all of the critical characteristics, and create a dedication plan. We have unsurpassed capability in confirming conformance to the characteristic. Our detailed dedication plans are based on EPRI Standards in compliance with regulatory requirements.

Quality Assurance

Our highly-qualified EQ specialists are familiar with details of specific standards throughout North America, and have actively served on the technical committees that developed these important industry criteria. Kinectrics is registered to ISO 9001 and maintains a 10 CFR Appendix B program.



KINECTRICS

History of Excellence

Kinectrics is a unique "one-stop shop" for life cycle management of electricity generation and transmission assets, supported by reliable engineering, complete inspection and testing services, and innovative products. Our award-winning team of scientists and engineers deliver the unique advantage of almost **100 years of proven expertise and experience** in the energy industry.

Commitment to Nuclear

Kinectrics offers technical capabilities specifically focused for the nuclear industry. Included are comprehensive services in nuclear plant inspection, equipment qualification and commercial grade dedication, genuine nuclear parts and specialized tooling, feeder and fuel channel integrity, nuclear waste management, and industry-related environmental technologies, as well as electrical testing.

Nuclear Inspection Services

Kinectrics is building a world-class team able to provide qualified, inspection services to the nuclear industry. Complemented by our subsidiary company, Axiom NDT, we have the right people, experience and processes to deliver innovative solutions throughout North America for the reliable inspection of plant systems and components.

New Expanded Facilities

Kinectrics' recently upgraded **Steam Test Facility** permits close control of steam conditions, to meet IEEE 323 margin standards, while minimizing over-testing during simulations.

Design Basis Accident Simulation –

Kinectrics has unparalleled capabilities to simulate the severe accident environments associated with advanced reactor designs.

The Kinectrics **Decontamination and Refurbishment Facility (DRF)** is a new dedicated area for the refurbishment, repair and decontamination of active plant equipment and components.

KINECTRICS 

Our new US Office in Cincinnati, Ohio provides focused support for the existing and expanding market, with staff having over a century of combined experience with US standards and regulations.

NOW OPEN!

Kinectrics U.S. Office Cincinnati, Ohio

Nuclear Experts Knowledge is Power!

Kinectrics offers unique testing and assessment capabilities to help utilities and suppliers make and validate critical decisions for both existing nuclear plant operations and, new station design / build projects. We have been delivering proven solutions to the nuclear industry in North America for over 70 years.



KINECTRICS

**\$1,000,000
investment
in new
advanced
EQ testing
facilities!**

Kinectrics Services

- Equipment Qualification
- Commercial Grade Dedication (CGD)
- Seismic Qualification
- EMI / RFI Testing
- Radiochemistry
- Tritium Management – Process & Plant System Design
- Field NDE (Visual to Phased Array UT methods)
- Electrical Equipment & Cable Condition Assessment
- Metallic and Non-metallic Material Evaluation
- Mechanical Testing & Aging Simulations
- Rotating Machine Monitoring & Condition Assessment
- Root Cause Failure Analysis & Forensic Evaluation
- Concrete Structure Assessment, Repair & Rehabilitation
- Obsolescence Management & Reverse Engineering
- Probability & Risk Assessment
- Radioactive Materials Characterization
- Fish Protection / 316 (a)&(b) Solutions
- Environmental Assessment & Thermal Studies
- Chemical Analysis

Advanced Services by Kinectrics Companies

- Field Inspection – CGSV & ASNT NDT & Level III Services by **Axiom NDT Corp.**
- Nuclear Regulatory, Safety, Licensing, Health & Environmental Services by **Candesco Corporation**

www.kinectrics.com



It's no accident. Central Research Laboratories (CRL) has been the global leader in direct manipulation of nuclear materials for more than 50 years. How? By creating effective solutions to difficult problems in the absolute world of toxicity.

A little history

CRL of Red Wing, Minnesota has been designing, developing and manufacturing equipment and systems for the nuclear industry since the 1940s. Over the years, the company has accumulated more than 100 patents, and installed more than 8,000 units in 26 countries.

Extending a hand

CRL established its leadership presence in 1950 with a breakthrough telemanipulator design. Telemanipulators function as an extension of the human hand. CRL has 15 different models to manipulate hazardous materials in situations where direct contact isn't safe for people or for the environment, and when finger-like dexterity and feel ("force-feedback") are needed. Without telemanipulators, important activities ranging from nuclear waste cleanup to preparation of radiopharmaceuticals for medical procedures would be more difficult, costly, and dangerous.



It's no accident: Central Research is the leader

Touting the line

In addition to the telemanipulators, CRL's principal product line includes:

Double-Door Sealer Transfer System — Used for transferring items and materials in or out of sealed enclosures, allowing rapid and repeatable transfers without breaking containment of the enclosure or the transfer container.

Sealed Pass-Through Enclosure System — A means of providing a sealed penetration into an enclosed volume using a glove, window, bag, plug, or ball manipulator and maintaining the integrity of the enclosed volume during a replacement or transfer procedure.

Drum Transfer Systems — Bagging and bagless transfer of hazardous materials using industry-standard drums.

Service with a style

Products are important. No question. But so is service. CRL provides complete before- and after-sale service for all products, including:

- Engineering assistance to ensure proper layout, installation, and operation
- On-site installation support
- On-site field service (repair and maintenance) of all CRL equipment
- Factory repair and refurbishing
- Complete spare parts availability
- On-site or factory training on equipment maintenance and operation
- Technical support for the life of your equipment

Again, CRL didn't take the industry lead by accident. Rather, it has earned it every day for more than a half century by providing the best solutions to difficult problems in the absolute world of toxicity.

CENTRAL RESEARCH LABORATORIES

Red Wing, Minnesota 55066
 651-388-3565
 www.centres.com
 FAX 651-385-2109

Plants Experience New Award-Winning Steam Generator Deposit Removal Treatment



DMT is a fast, effective, and environmentally safe innovation for removing steam generator secondary side deposits.

A significant reduction in personnel exposure, plus a stellar safety record contributed to highly successful fall and spring outages for several utilities. Their teams worked with AREVA to focus on the highest standards of operational excellence and achieve significant milestones in safety, quality, delivery and performance.

Two accomplishments in particular merit a closer look. They include the removal of Steam Generator (SG) secondary side deposits at one plant in spring 2009, and the subsequent removal of even more deposits for another plant in fall 2009.

These plants reaped the benefits of using Deposit Minimization Treatment (DMT) – a new, environmentally-friendly SG deposit removal process for the secondary side. More than 2200 pounds of deposits were removed from three steam generators at the first plant, the initial application of DMT. Over 2500 pounds of deposits were removed from three steam generators at the second plant.

DMT also won a 2010 Top Industry Practice Award at NEI's May event in San Francisco for its innovative approach, which prolongs steam generator life, adds value and enhances operating performance. The treatment is fast, with virtually no impact on outage duration and no containment building entry is required.



Problem?

NLI's sole focus is to effectively address the needs of the nuclear industry's most demanding applications, providing answers for all types of equipment problems including electrical, mechanical and instrumentation.



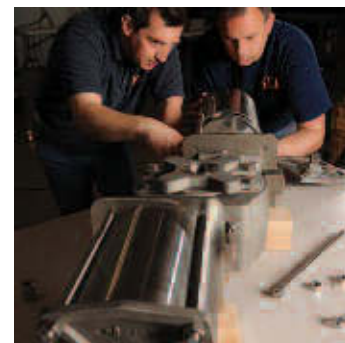
SOLUTION EXAMPLE 1

Because of our long standing relationship with Trane, NLI is able to provide the innovative Adaptiview digital upgrade for chillers. NLI's scope includes the design, fabrication, mock-up testing, dedication testing, qualification, installation, and start-up of the control system. These units can be used on literally any chiller in the nuclear industry. Supplied as pre-packaged kits, Adaptiview units are prequalified for seismic, mild environment, V&V and EMI/RFI, and of course they can be provided for either safety- or nonsafety-related applications. Two NPPs are benefiting from these superior digital upgrades, and the word is spreading.



SOLUTION EXAMPLE 2

In conjunction with our teaming partner Square D Services, NLI designs, manufactures, qualifies and supplies Masterpact® low voltage breakers to replace old maintenance-intensive breakers such as GE AK, AKR and Westinghouse DB, DS and ABB K-Line breaker series. This equipment is furnished as prequalified* replacements for existing breakers, requiring *no field changes* to install, and each unit is amazingly *maintenance free* for up to 10,000 operations or 40 years. Fourteen nuclear plants have selected the Masterpact® to replace low voltage breakers, and several more are looking at the benefits of this innovative equipment.



SOLUTION EXAMPLE 3

NLI manufactures, tests and supplies innovative quarter-turn pneumatic actuators through our alliance with QTRCO, Inc. QTRCO actuators are available as direct replacements for most current and obsolete actuators, such as Bettis, Contromatics, Rotork, and others. These actuators feature a host of innovations that make them incredibly reliable, high performing, and extremely easy to install and maintain. Actuators for nuclear applications feature all stainless steel construction and very few soft parts. Models are available with no soft parts for harsh environments.

NLI consistently meets the exacting requirements of our clients, and we are able to support the nuclear industry with proven, state-of-the-art solutions.

* NLI has prequalified the subject equipment in accordance with IEEE Standards 323, 344, 7-4.3.2 and EPRI TR-102323, exceeding all requirements.

Masterpact® is a registered trademark of Square D Services.



Solved.

Challenges can be anticipated or unexpected, complex or straightforward, or an overwhelming combination.

Add that to the mire of on-going difficulties associated with managing daily operations, and you've got the recipe for a real conundrum. That's where NLI comes in. Whether it's new construction and OEM capabilities or ongoing maintenance and upgrading issues, we are ready to take on any obstacle the nuclear industry faces. We truly think outside the box, finding innovative ways to provide state-of-the-art equipment and services that address current requirements and will stay reliable and effective for years to come. Our track record proves it—we are constantly developing new processes and procedures for equipment and other solutions that help our clients supply the world with nuclear power. Next time your facility is faced with seemingly insurmountable challenges, let us provide you with creative answers. We're your single source.



E L E M E N T S F O R T H E N U C L E A R I N D U S T R Y



www.nuclearlogistics.com • 800.448.4124

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TOTAL LIFE CYCLE CARE FOR YOUR MATERIAL HANDLING EQUIPMENT

Equipment 866.261.9975
 Service 800.933.3001
 Parts 800.727.8774
 Training 866.821.4006

LIFE-CYCLE CARE keeps your plant operating at peak efficiency. Our global network of material handling experts will help you select the right equipment for your application, and then maintain it for top performance, for the life of your crane, and the life of your business.

P&H PRODUCTS & SERVICES

P&H products are backed by an extensive network of regional service centers that are staffed and equipped to provide immediate response to your needs. We service and provide parts for all brands.

- Turnkey Installations
- Project Management
- Modernizations and upgrades, all makes and models
- Original Equipment Manufacturing
- Engineering Evaluations and Equipment Feasibility Studies
- Statutory code compliance evaluations
- Design and Engineering evaluations
- Seismic Evaluations
- Training
- Operation, Maintenance and Safety Training
- Service, Maintenance and Parts for all brands

P&H EQUIPMENT

- Polar cranes
- Fuel handling cranes
- SUPERSAFE™ single failure proof cranes, including upgrade of existing cranes
- Radwaste handling cranes
- Missile shield cranes
- Turbine maintenance cranes
- Remotely operated cranes
- Outage support cranes
- Refueling machines
- Under hook attachments
- Lifting beams
- Remotely operated grapples

P&H SERVICE

- Turnkey control replacement and capacity updates
- Outage support, including containment work
- Preventive maintenance (24/7)
- Installation & relocation of equipment
- Repairs and trouble shooting
- Environmentally friendly lubricants
- OSHA compliance inspections
- Runway surveys
- Structural Evaluations
- National service accounts

P&H MODERNIZATIONS

MODERNIZATION AND REBUILDS. A modernization program can restore your outmoded or inefficient crane to peak productivity and like-new performance at far less than the cost of a new crane. We also rebuild P&H and Morris drums, bottom blocks, gearing, brakes, motion controls and wheel assemblies.

- Capacity Upgrades
- Control Upgrades - VFD, Static Stepless, DC-Digital
- Replace motors, brakes, magnetorques, add radio control
- Integrate load cells/weigh systems
- Single failure proof upgrades
- Replace festoon systems
- Improve crane tracking

P&H QUALITY

- ISO 9001 Certified Manufacturing Facilities
- 10CFR50 Appendix B and NQA-1 Compliant cranes and material handling equipment
- NUREG 0554, NUREG 0612, NOG and NUM compliant
- AWS certified welders
- In-house NDE capable

MORRIS MATERIAL HANDLING • HEADQUARTERS: OAK CREEK, WI • WWW.MORRISCRANES.COM



NUCLEAR MATERIAL HANDLING

TURNKEY SUPPLIER OF:

- ✓ SUPERSAFE™ SINGLE FAILURE PROOF CRANES
- ✓ SPENT FUEL CRANES
- ✓ TURBINE DECK CRANES
- ✓ REACTOR ROOM CRANES
- ✓ MANIPULATOR CRANES
- ✓ TRANSFER CANAL MACHINES
- ✓ CRANE MODERNIZATIONS
- ✓ ENGINEERING SERVICES
- ✓ INSPECTION & REPAIR
- ✓ OPERATOR & MAINTENANCE TRAINING

10CFR50 Appendix B & NQA-1 Compliant, NUREG 0554, NUREG 0612, NOG & NUM Compliant – ISO 9001 Certified Manufacturing Facilities



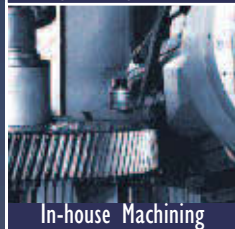
Engineering Services



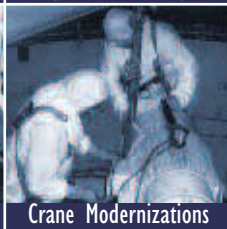
Outage Support, Regional



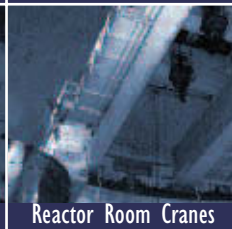
Special Applications



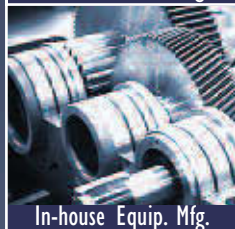
In-house Machining



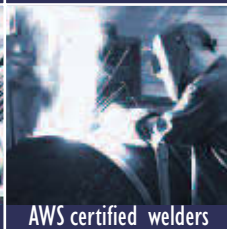
Crane Modernizations



Reactor Room Cranes



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SUPPORTING MAINTENANCE INNOVATIONS TO IMPROVE ASSET PERFORMANCE

Innovative maintenance practices are essential to safe and efficient plant operation. Underwater Engineering Services, Inc. provides specialized technical and engineering services that promote best practices and ensure that plants meet stringent regulatory and safety requirements. UESI has provided quality technical services and outage support for over twenty years. Today, we are still working with our industry partners to develop new maintenance processes that help to lower maintenance costs, shorten outage schedules, and reduce radiation exposure.



Underwater Engineering Services, Inc.

Partnerships for the New Nuclear Industry

Call (772)337-3116 or visit our website at www.uesi.com

A Greenman-Pedersen, Inc. Company

INNOVATIVE MAINTENANCE PRACTICES IMPROVE ASSET PERFORMANCE

The prospect of new nuclear construction is exciting, but operating nuclear plants will require diligent management of facility assets for years to come. Innovative maintenance practices will be essential to keeping plants operating safely and efficiently. For over twenty years, Underwater Engineering Services, Inc. has provided quality technical services and outage support. In 1988, UESI developed a unique approach to the underwater inspection and repair of safety related coatings that remains in use around the world. Today, UESI is working with its industry partners to develop new maintenance processes that take advantage of advances in robotic technology to

lower maintenance costs, shorten outage schedules, and reduce radiation exposure.

As the nuclear industry moves into its next phase, UESI will continue to provide the kinds of quality technical and engineering services critical to meeting regulatory and safety requirements. Our services and capabilities include:

- ASME IWE code inspections
- Underwater coating assessment and repair
- Wet welding to ASME/AWS requirements
- Diving services in the suppression chamber, reactor vessel & fuel pool
- Robotic solutions
- Intake and discharge maintenance

- Project Management
- QA Oversight
- Staff Augmentation
- Engineering Assessments
- Maintenance Program Management



Underwater Engineering Services, Inc.



LOWER COST, HIGHER QUALITY...

WIRELESS HEAT TREATING FROM THE WORLD'S LEADING HEAT TREATING SUPPLIER



As the world leader in field heat treating, Team now brings the benefits of Wireless Heat Treating to the power industry. Lower costs, higher quality, greater safety...you get all the advantages of Wireless Heat Treating in a highly advanced system.

Team's Programmable Logic Controller and SCADA® software provide the brains for its Wireless SmartHeat 400® system. Driven by interchangeable, Internet-enabled laptops, one Team technician controls multiple heat cycles from a single remote location. Real-time temperatures can be monitored via PDA or PC, giving you the peace of mind that the process is being executed exactly as required.

From small, complex fittings to massive turbines, Team Wireless Heat Treating delivers reliable, documented results that save you time and money. For complete information visit www.teamindustrialservices.com.

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REPAIRS

HOT TAPS

FIELD
MACHINING

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TREATING**

TECHNICAL
BOLTING

VALVE
REPAIR

NDE/NDT
INSPECTIONS

EMISSIONS
CONTROL

PIPE REPAIR
SERVICES

TEAM INDUSTRIAL SERVICES

TEAM®

Team provides specialized services and products for the world's nuclear power industry

Founded in 1973, Team is the largest specialized industrial service company in the U.S. Team's Mechanical Services and products include:

- Onsite and on-stream non-destructive leak sealing from vacuum to 6,000 psig, and from cryogenic to 1700° F
- Hot tapping in excess of 1400° F and 4300 psig
- Line stops through 48" diameter
- Line freezing up to 30"
- Turnaround, Shutdown, and Outage services
- Field machining
- Bolt tensioning and torquing
- Onsite and inline valve repairs
- Pipe Isolation and Weld Testing
- Field Heat Treating
- Weld preheating
- Post weld heat treatment
- Refractory dry-outs
- Wireless Heat Treating Equipment
- Fugitive emissions monitoring (LDAR)
- Mechanical Integrity Inspections/Quality Assurance Programs
- Digital and film radiography utilizing X-ray and gamma sources
- Alternating current field measurement (ACFM)
- Long-range guided-wave ultrasonics
- Positive material identification
- Dye penetrant testing

Team is a global company

Global in scope, Team operates from more than 100 locations in the U.S. and Canada, and serves international customers through its own wholly owned branch locations as well as through licensed agreements in 17 countries.

The company operates around the clock and works directly for manufacturing facilities as well as through some of the world's largest contractors; utilizing more than 3,000 trained, experienced technicians to respond quickly to industry needs.

These technicians are safety-trained and technically certified at the company's formal state-of-the-art training facility; long acknowledged as the standard for the industry. Here, technician training and safety records are computerized and available online to company and customer personnel alike.

Team manufactures one-of-a kind products and nuclear-approved sealants

Team's engineering, manufacturing, training, and headquarters facilities are located on an 11-acre industrial site strategically located near Houston to facilitate rapid land, air and sea shipments of its manufactured products. Customized (original) leak sealing and hot tapping hardware can be engineered and manufactured at this facility for customers anywhere in the world on a routine or emergency basis.

Special alloys, one hundred percent material traceability, and high pressure testing are available for these manufactured products upon request.

ISO-9001 certified, Team's manufactured products include a complete line of standard leak sealing pipe repair clamps, enclosures, and related hardware, plus more than 100 proprietary (asbestos-free) sealants, including nuclear-approved sealants for high temperature-high pressure applications.

These products are used by industry to prevent expensive plant shutdowns when leaks occur.

Plants can either stock and apply Team products on-line and under-pressure themselves, or have Team's certified technicians apply the products for them.

Utilizing these products, and through techniques developed after more than three decades of experience, Team can contain and seal virtually any industrial leak on-stream — regardless of temperature, pressure, or process.

Team also is known throughout industry for its exemplary safety record.










Listed as #3 on the Forbes Magazine list of 200 best small companies, Team's common stock is traded on the NASDAQ Global Select Market under the ticker symbol "TISI". Additional information and videos about Team may be viewed at: www.teamindustrialservices.com, or by calling 800-662-8326.

9 1 1

SERVICES

COMPANY

CONTRACT

		
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Hot Tap Services	Leak Repair Services	Technical Bolting
		
NDT and Inspections	Pipe Repair Services	Mobile Heat Treating

TEAM® Industrial Services

800-662-8326 www.teamindustrialservices.com

Ascendent Engineering & Safety Solutions, LLC

ASCENDENT Engineering & Safety Solutions, LLC is a veteran-owned small business providing technical services and staff augmentation to clients in the nuclear industry. Ascendent LLC was formed in Fall 2005 with corporate reach back to two affiliate companies:

- Hukari Technical Services, Inc.
- Nuclear Safety Associates, Inc. (NSA)



NuclearSafety
Associates



Both of these small businesses are nationally recognized for expertise in nuclear safety/licensing basis support (HUKARI) and criticality safety (NSA). HUKARI and NSA have been successful in their respective market niches due, in part, to the development of highly efficient, low cost support operations and strong, people-focused recruiting organizations. With Ascendent LLC, these business

systems have been successfully applied to a much broader spectrum of technical specialties.

Award-Winning Service

In 2007 and 2010 Ascendent LLC received the Administrator's Award for Excellence from the US Small Business Administration for Small Business Subcontractor of the Year. Our clients include CH2M Washington Idaho, LLC (CWI), Shaw AREVA MOX Services (MOX Services), and Washington Closure Hanford (WCH).

Integration and Transition

Headquartered in Wheat Ridge, CO with offices in Johnson City-TN, Aiken-SC, Oak Ridge-TN, Richland-WA, and Idaho Falls-ID, Ascendent LLC has succeeded as a subcontractor integrator. We assemble teams consisting of quality small and large businesses to cover all areas of expertise needed by

"Award Winning Support Services for the Nuclear Industry."

our clients, and to also provide depth of resources. Our experienced managers have successfully transitioned existing workforces to our contract on

several occasions. In each case, we have earned praise for improving employee's overall compensation packages while simultaneously reducing client costs, and for providing seamless integration with no disruption of service.

Ascendent LLC currently supports client missions in nuclear design and construction, environmental waste management, deactivation and decommissioning (D&D), licensing, regulatory affairs, project management and support, integrated safety management, safeguards & security, criticality safety.

Success Starts With Quality

At Ascendent LLC we believe that quality is customer-oriented, not just product-oriented. We emphasize continuous assessment, improvement and innovation. We are committed to quality at all stages of the project life cycle, including the interface between contractor personnel and the client.

Ascendent Engineering & Safety Solutions
4251 Kipling Street, Suite 580
Wheat Ridge, Colorado 80033
www.ascendentllc.com
866-942-3316



We all make choices

But it's the results that matter.

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The Right Choice.

Ascendent is known throughout the Nuclear Industry for providing experienced, problem-solving, customer-focused personnel. We provide professional technical support that is dependable, reliable, innovative, and quality-conscious. For solutions to your technical staffing problems, Ascendent has the answers.

Looking for a great and challenging employment opportunity? Check us out online and fill out the online application.

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ASCENDENT
Engineering & Safety Solutions, LLC

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The Nuclear Industry's Rigging and Transportation Experts

The unique nature of the nuclear power industry demands vendors with the skills and experience that can consistently perform at extremely high levels. Barnhart's Nuclear Services Group has proven its rigging and transportation expertise in seventeen years of working with the nation's leading nuclear energy producers, contractors, and engineers.

Life extensions, upgrades and major maintenance require the handling of critical components within operating plants. To perform this work during planned outages, a thorough knowledge of major construction techniques, advanced structural engineering, and ALARA is required. It is also crucial that the company has practical working knowledge of the demanding requirements of nuclear protocol, such as NuReg 0612. Barnhart exceeds that criteria and has developed unique tools and methods to perform the movement of major equipment such as:

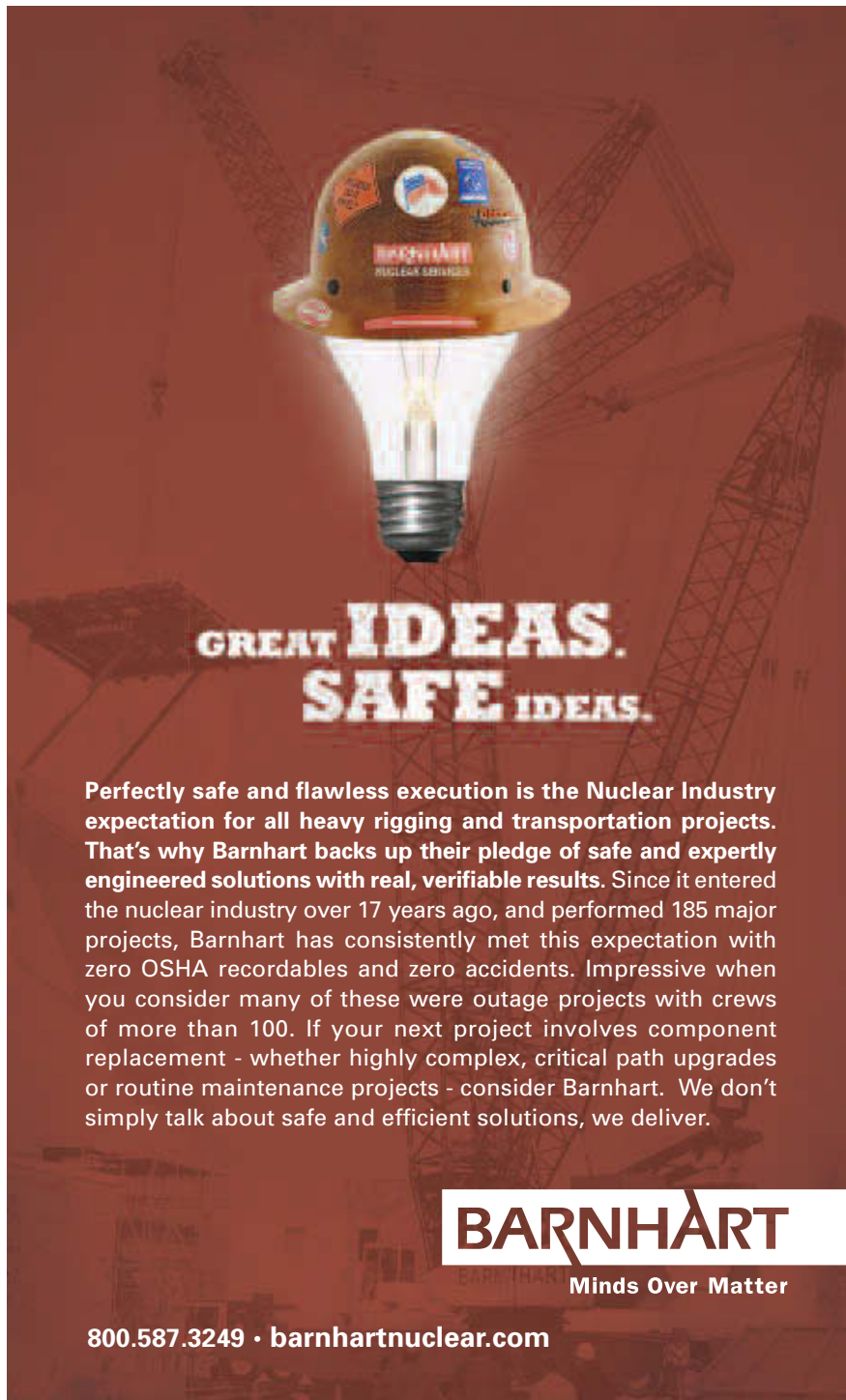
- RPV Closure Heads
- Moisture Separator Reheaters
- Pressurizers
- Feedwater Heaters
- Condensers
- Transformers
- Steam Dryers
- ISFSI Installations

Rigging supervision, lift planning, heavy rigging and crane services are provided through their team of professional supervisors, engineers, and project managers. Barnhart ensures the safety, quality, and timely completion of plant outages. Often they are called upon to participate in the "Readiness Planning" of various operating plants. These plans serve to limit downtime during emergency outages by coordinating the engineering, rigging plans, and transportation schedules. In some cases, heavy rigging in nuclear power facilities presents the challenge and opportunity for development of custom designed rigging tools. Barnhart's ISO9001 certified engineering and fabrication capabilities provide solutions, from concept through completion, to handle major components safely and on schedule.

Experienced and certified for Hazmat service, Barnhart also brings a working knowledge to the transportation of contaminated components to burial or processing. Barnhart's Heavy Lift Terminal

in Memphis serves as a transfer point and waste processing facilities of Studsvik - RACE and Energy Solutions Barnhart provides transportation of such components by barge, rail, or road. Barnhart rounds out their experience by providing warehousing services to support the Pooled Inventory Management (PIM) program administered by Southern Company. The PIM program is a

mechanism for nuclear plant owners to jointly procure and store critical plant spare equipment. Permanent PIM management resides at the Barnhart facility coordinating the maintenance and handling of the inventory by Barnhart personnel. To learn more about Barnhart's work experience in the nuclear industry, visit us at www.barnhartnuclear.com.



**GREAT IDEAS.
SAFE IDEAS.**

Perfectly safe and flawless execution is the Nuclear Industry expectation for all heavy rigging and transportation projects. That's why Barnhart backs up their pledge of safe and expertly engineered solutions with real, verifiable results. Since it entered the nuclear industry over 17 years ago, and performed 185 major projects, Barnhart has consistently met this expectation with zero OSHA recordables and zero accidents. Impressive when you consider many of these were outage projects with crews of more than 100. If your next project involves component replacement - whether highly complex, critical path upgrades or routine maintenance projects - consider Barnhart. We don't simply talk about safe and efficient solutions, we deliver.

BARNHART
Minds Over Matter

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What is UniStar Nuclear Energy?

UniStar Nuclear Energy is a developer of a standardized fleet of Generation III+ nuclear power plants—specifically, AREVA’s 1600+ MW net US EPR™ reactor. UniStar is unique in that we created a standardized system with multiple partners to optimize design, licensing, construction, training, ownership and operation.

The Story behind the AREVA EPR™ Design

AREVA is the world leader in nuclear production and services, providing nuclear steam supply systems (NSSS) to more than 100 pressurized water reactors (PWRs). The EPR™ design is the next step in PWR evolution, the first Generation III+ technology to be built in the world. By the time a U.S. EPR™ reactor is built, AREVA will have completed several other EPR™ reactors internationally, providing invaluable lessons in construction and operation.

UniStar Benefits

- Flexible ownership participation
- Direct operational involvement
- Uncompromised nuclear safety
- Multi-plant “fleet” operating and economic efficiencies



Installation of reactor pressure vessel at Olkiluoto, Finland in June 2010.



UniStar Value Proposition

While each facility will form its own project company, by being part of the UniStar fleet, owners and operators benefit from shared efficiencies and cost savings. Through standardization and fleet economies, we estimate savings of more than \$1.5 billion per plant.

Each fleet owner-operator will reap substantial advantages from shared training facilities; common enterprise software; joint negotiations for purchase of large, generic equipment, fuel contracts, and outage services; and by being part of a group sharing and implementing their experience and best practices.



Taishan Units 1 and 2 now under construction in China.



Preparation for Calvert Cliffs unit 3 continues, with installation of survey monuments at strategic locations.





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EDF's Flamanville construction site of AREVA's EPR™ facility (June 2010).

Your Partner for New Nuclear Energy. Today.

For those companies looking at new nuclear, UniStar Nuclear Energy provides economies of scale and scope through coordinated and systematic development of a standardized fleet of AREVA EPR™ new nuclear energy facilities.

To find out more about UniStar, call 410.470.4400 or visit www.unistarnuclear.com.

For information on AREVA's U.S. EPR™ technology, visit www.us.aveva.com

For monthly photo updates of construction progress, send your e-mail address to info@unistarnuclear.com.



Radiation Detection for a Safer World

Ludlum Measurements, Inc. has been designing, manufacturing and supplying radiation detection and measurement equipment in response to the worlds' need for greater safety since 1962. Throughout its nearly five decade history, it has developed radiation detection technologies and instruments in support of enhancing the safety of personnel and the environment. It offers one of the largest lines of radiation detection instrumentation available from one company and is widely respected for its legendary support and engineering excellence.



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Recent Product Introductions



Model 53
Gamma Portal Monitor



Model 54 Series
Small Article
Contamination
Monitors



Model 9-4

Model 9-3

Model 9DP



Model 9-7

Ion Chambers



Nuclear Programs Fuel Major Tool & Machine's Growth

Our Present...

Since 1946, Major Tool & Machine, Inc. has been providing engineering, fabrication, machining, assembly and testing services for critical application environments. Our customer-focused philosophy, coupled with continuous reinvestment in our capabilities, facilities and employees, has enabled us to evolve with and respond to the needs of our customers. Major Tool's best value approach provides our customers with the highest quality, competitively priced build-to-print services available.

Major Tool provides unsurpassed levels of capability and quality assurance. Maintaining over 300,000 sq. ft. of environmentally controlled manufacturing space under roof, Major Tool offers extraordinary capacity. Our continuous reinvestment in capital equipment allows us to provide prototype through production forming, welding, machining, assembly and testing services to meet the wide range of

application specific shape, size and configuration hardware required by the nuclear industry.

Our ability to execute this full spectrum of manufacture has allowed Major Tool to successfully participate in many critical government, industry and academia sponsored fission and fusion programs.

Our extraordinary capability, capacity and experience are driven by our commitment to quality assurance. Major Tool maintains ASME N, NPT, N3, NS, U and U2 certifications. Our Quality Assurance System is audited to ASME NQA-1, as is NRC 10CFR50, 10CFR71 and 10CFR72 compliant.

Your future...

It is bright on the nuclear energy horizon. Major Tool is committed to our future, your future, and the future of our generations by championing the growth of nuclear energy and the safe, successful remediation and disposal of radioactive waste.

We are well positioned to usher in the nuclear renaissance, and we will continue to apply all our resources and knowledge to provide our customers the quality critical hardware necessary to meet tomorrow's demanding nuclear requirements.

Nuclear power plant upgrades, next generation power plants, naval nuclear, radwaste transportation and disposal casks, canisters and tooling, fuel fabrication, magnetic and inertial fusion, and government, industry and academia supported energy sciences initiatives are all areas where Major Tool applies our hardware manufacturing expertise.

We look forward to the bright future that nuclear energy provides us all.

For more detailed information, or to schedule a visit to Major Tool & Machine, contact Hans Lissman at (317) 917-2621 or by email at hlissman@majortool.com, or Joel Manship at (317) 917-2619 or by email at jmanship@majortool.com



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MTM's Quality Assurance Program is compliant to NQA-1, 10CFR50 Appendix B, 10CFR71 Subpart H, 10CFR72 Subpart G



Lockheed Martin designs and manufactures a broad range of products for use in nuclear power generation.

Lockheed Martin is the world's leader in providing safety-critical nuclear instrumentation and control (I&C) systems for naval submarines, aircraft carriers and surface warships for over 50 years. For the past 30 years, Lockheed Martin has incorporated digital technology making I&C systems much more reliable, with finer controls, increased efficiency and longevity. Our systems are currently operating aboard all U.S. Navy nuclear submarines and aircraft carriers deployed worldwide.

Nuclear Instrumentation Systems

Systems that provide operator information and safety systems input relative to the neutron population within the reactor are identified as Nuclear Instrumentation Systems. Both in-core and ex-core monitoring equipment are included in this category. Lockheed Martin provides custom Nuclear Instrumentation Systems fit for purpose.

Safety System Hardware & Logic Design

In support to both our U.S. Navy and commercial customers, Lockheed Martin

proudly provides systems to protect the environment, personnel, community and investment. We have participated in safety system hardware and logic design for over 50 years including more than 30 years using digital solutions. Lockheed Martin continues to maintain an excellent safety record.

Primary Instrumentation & Control Systems

Primary instrumentation & control systems are used to monitor and control such plant parameters as water temperatures, flow rates, water levels and plant pressures. These systems also perform autonomous analysis to alert operators and provide inputs to protective systems in off-normal conditions. Lockheed Martin is responsible for primary instrumentation and control systems for mission critical systems with the U.S. Navy and other customers.

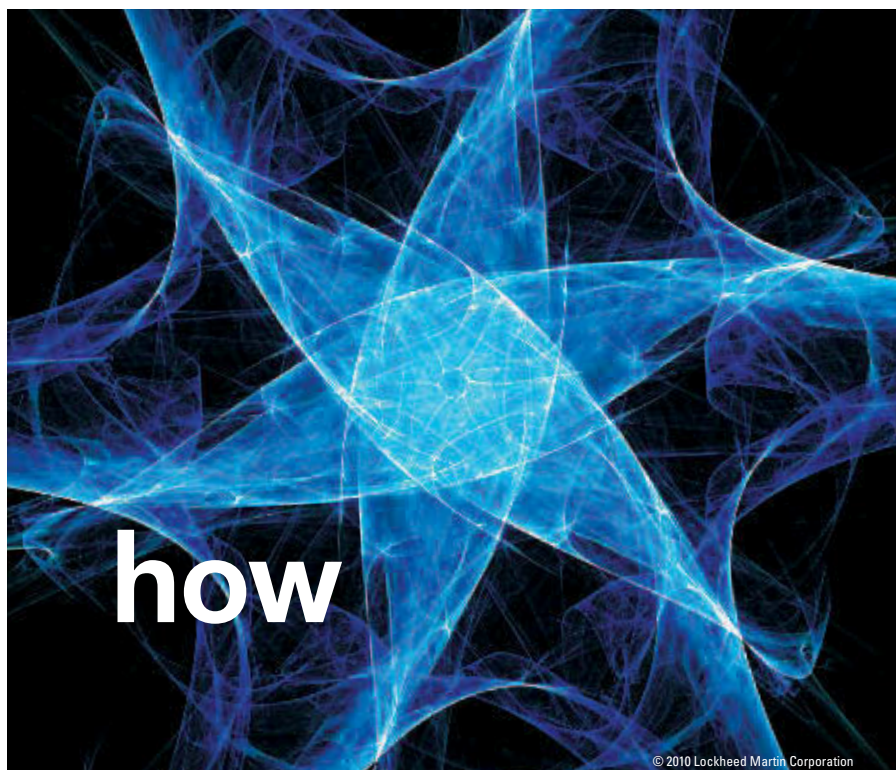
Highly Integrated Operator Control Rooms

Lockheed Martin provides superior control room solutions. Highly integrated operator control rooms employ modern protective, control and monitoring information to maintain safe, reliable plant operation under all conditions. Using state-of-the-art human factors and human performance engineering, our control room designs effectively address human resource needs providing user friendly and highly effective solutions.

Specialized Integrated Sensors

Specialized integrated sensors are employed in modern facilities to sense such parameters as water temperatures and pressures, neutron population in the core, control rod position and containment integrity. Lockheed Martin has specialized sensors that can be used in various systems allowing state-of-the-art answer to specific needs. This advanced solution approach uses devices such as high fidelity, ultrasonic, measuring systems allowing precision control. Data fusion is possible using information gathered from these innovative sensors and allows superior trending and proactive, predictive maintenance strategies.

As a full service supplier, Lockheed Martin delivers the entire solution including engineering, manufacturing, installation and support making our offerings truly turn-key. For more information, Contact Lockheed Martin Nuclear Systems & Solutions at: NSS.Solutions@lmco.com or call +1-570-803-2161.



BETWEEN HARNESSING DIGITAL TECHNOLOGY AND MANAGING NUCLEAR POWER, THERE IS ONE IMPORTANT WORD: HOW.

Over 50 years of integrating critical nuclear power systems for the military. More than 15 years of digital instrumentation and control design expertise. As a leading turn-key solutions provider, Lockheed Martin is a trusted partner in nuclear power plant safety, reliability, and operations. Advancing nuclear power in the digital age is all a question of how. And it is the how that makes all the difference.

LOCKHEED MARTIN
We never forget who we're working for®

lockheedmartin.com/mfc/nuclearsands/

Zachry offers full-service capabilities in emerging U.S. nuclear market

At the dawn of a new generation of nuclear power, Zachry uses its time-tested skills and innovative thinkers to take nuclear into the future. With full-service engineering and construction capabilities, Zachry, including its subsidiaries Zachry Nuclear, Inc. comprising Zachry Nuclear Engineering, Inc. and Zachry Nuclear Construction, Inc., brings 85 years of construction expertise together with more than 30 years of industry-specific engineering knowledge.

Zachry Nuclear

"Zachry Nuclear is an exciting, emerging player in the construction and engineering services portions of the nuclear industry," said Keith Manning, executive vice president of Zachry. "Zachry's 80-plus years of building major generation units coupled with the strong technical service capabilities of Zachry Nuclear Engineering is proving to be a formidable combination."

The formation of Zachry Nuclear and the full integration of Zachry Nuclear Engineering gives customers the unique option of a full EPC firm, providing services ranging from early design through startup.

"We build on our strong culture of safety, collaboration and values in the revitalization of

the nuclear industry," Manning said. "We stand ready to serve our customers with cost-effective, high-quality engineering, project management and construction of both ongoing plant modifications and new build nuclear."

Zachry Nuclear Engineering

Zachry Nuclear Engineering provides engineering, design and project management services to the nuclear power industry through the skills of experienced mechanical, electrical, controls, civil and structural design professionals. Engineers in both the Groton, Conn. and Chicago, Ill. offices are experienced in power plant systems, engineering analysis and modification package development.

"Zachry enjoys a long history of private ownership with shared values," said Mark Mills, president of Zachry Nuclear Engineering. "We look forward to a bright future and to strengthening our relationships and capabilities with the current fleet of operating nuclear facilities."

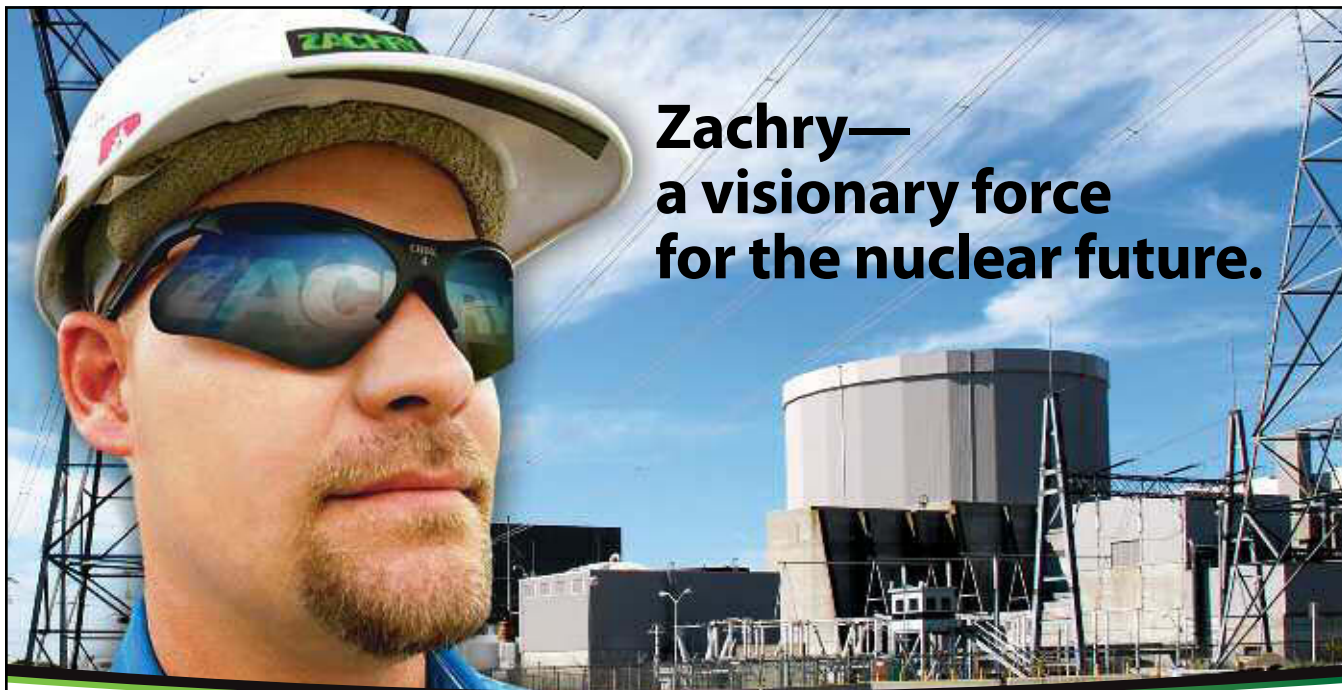
Zachry Nuclear Construction

Zachry Nuclear Construction, based in San Antonio, brings decades of experience in the power industry to the forefront of nuclear unit construction. As a top-ranked power provider, Zachry has led the industry in quality, service and integrity for more than 50 years.

"This industry represents a significant opportunity for growth over the short- and long-term horizon and is well-suited to Zachry's existing strengths in large-scale engineering and construction," said Ed Bardgett, Zachry Nuclear chairman.

A true EPC provider, Zachry is engaged in the *planning, building and renewing* of the world's most critical infrastructures including emerging energy, power, cement, refining and nuclear facilities. Zachry remains a family-owned, privately held company whose values—*Safety, Commitment, Trust, Integrity, Service, Economy and Skill*—lead every decision, every time. Founded in 1924, Zachry's long list of experience has led to more than 6,000 completed projects in the United States and abroad.

As a *collaborative, practical and visionary* force, Zachry is one of the largest direct-hire, merit-shop contractors in the United States. *Engineering News-Record (ENR)* ranked San Antonio-based Zachry No. 23 in the Top 400 Contractors 2009; No. 44 in the Top 500 Design Firms 2009; and as a top firm in the power, fossil fuel and nuclear markets. Please visit www.zhi.com for more information.



Zachry— a visionary force for the nuclear future.

The U.S. nuclear renaissance is on the horizon, and Zachry is ready with forward-thinking people, services and capabilities. Combining 85 years of construction expertise and 35 years of engineering experience, Zachry brings a rich history, comprehensive services and unwavering integrity. As the industry advances, we are a visionary force for the nuclear future.

www.zhi.com

ZACHRY



Founded in 1788, Joseph Oat Corporation is the **oldest, continually operated fabricator in North America**. Conveniently located on the Delaware River across from Philadelphia, Joseph Oat Corporation economically ships equipment to ports worldwide. Privately owned and operated, the company is internationally recognized as a quality fabricator of a variety of alloys and reactive metals for the most demanding and critical applications.

Joseph Oat is one of the largest providers of **nuclear safety related pressure vessels and heat exchangers**. Our equipment is operating in more than 70 power plants around the world, some for over 30 years. **One of the very few companies who have retained the nuclear "N" stamp since the inception of this designation by ASME**, we have continued to serve utilities through the active construction phase. We provide retrofit and replacement equipment on a continuing basis in the U.S. and we are currently participating in active nuclear plant construction in other parts of the world.

Technologically, Joseph Oat Corporation has consistently been one of the **true leaders in heat transfer technology**. We are not only users of internationally recognized software such as HTRI and BJAC, but we are contributors as well. Our unique experience with problems facing power plant designers allow us to often offer innovative and economic solutions to perplexing problems. We perform thermal and mechanical rating of all the heat exchangers we build. Joseph Oat Corporation performs vibration analysis, seismic and structural analysis, and fatigue analysis in-house.

Our engineers can participate together with engineers of nuclear utility companies to **solve problems dealing with water chemistry, vibration, erosion, and special safety issues**.

Joseph Oat's production facility encompasses approximately 120,000 square feet with 160 ton lift capacity. Shipments can be made by truck, rail, or ship. We maintain a fully enclosed, atmosphere controlled **clean room for the fabrication of reactive metals** and special equipment requiring full segregation from other fabrication work.

Joseph Oat Corporation possesses the ASME Sec. III "N", "NPT" and "NA" stamps and Sec. VIII Div. 1 "U" and Div. 2 "U-2" stamps. In addition, we are ISO 9001 certified by TUV.

Below are the products we have furnished to nuclear power plants:

- Safety related shell and tube heat exchangers
- Safety related air coolers
- Safety related pressure vessels and storage vessels
- Safety related filters
- Safety related strainers
- Spent fuel racks
- Nuclear waste canisters
- Orifice plates, venturies, and other flow restriction devices
- Components supports
- Pump supports, bedplates and columns
- Spray nozzles
- Piping
- Safety related special weldments
- Raw materials such as bolting, flanges, plate, etc.

Joseph Oat's Quality Assurance Program has been audited by most major nuclear plants and independent agencies, including the multi-utility consortium, NUPIC. Refined and honed over the many years we have participated in the Nuclear Industry, our Quality Assurance Program is an effective and crucial element in all aspects of the services and products we provide.

We are confident that you will find Joseph Oat well qualified to meet your nuclear design and product requirements, whether you are purchasing new or replacing old equipment. Should you require more information or would like to speak to us, please contact the undersigned:

Edward S. Marinock
Vice President

John McDonald
Manager, Marketing and Sales



Call, fax or e-mail us for a copy of our capabilities brochure.



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WE MAKE METAL WORK™

THE EXPERIENCED AND RELIABLE SOURCE
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† A 316 stainless RHR Heat Exchanger



▲ Clean Room for the fabrication of components requiring physical segregation



† Commercial nuclear reactor burial cask



▲ A titanium CCW Heat Exchanger

Over 100 power plants in 15 countries rely on Joseph Oat Corporation equipment.

- 35 continuous years of maintaining ASME SEC III CL. 1, 2 and 3 "N" stamp
- NUPIC audited
- Section III and safety-related heat exchangers & pressure vessels
- Plate fin air coolers
- Reverse engineering
- Pulsation dampeners
- Filters & Strainers
- Dry storage fabrication for spent fuel
- Yucca Mountain Waste Package Prototype
- MCOs, Model 9975s & other canisters
- Special weldments
- Heat transfer design services
- Seismic analysis
- Fatigue analysis
- Spare parts & miscellaneous materials



ESTABLISHED 1788

Joseph Oat Corporation

2500 Broadway
Camden, NJ 08104 USA
Voice: 856-541-2900
Fax: 856-541-0864
email: sales@josephoat.com
www.josephoat.com

Our **Quality Assurance Program** is qualified for ASME Section III Class 1, 2, 3, and MC, and Section VIII. It also conforms to 10CFR50 Appendix B, ANSI N45.2, NQA-1 and ISO 9001.



HAZ TANKER IN CHINA, INC.

We also hold a Chinese Safety Quality License

Nuclear Services

Day & Zimmermann is the leading nuclear plant maintenance and modifications contractor in the United States. We are the #1 O&M Contractor in Power according to the latest ENR ranking, and provide services to over 70 of the nation's 104 operating commercial nuclear power plants. We are solely focused on power plant maintenance and modifications as our core business and have built our company and service offering to support operating power plants. We have more than 35 years of in-depth and relevant experience in managing nuclear plant maintenance and modifications in support of refueling outages and online support, as well as in executing major projects.

Day & Zimmermann provides a complete range of cost-effective services to our clients, with a goal of becoming the most admired company in our business. This is what drives us to meet the challenges of today's changing utility environment. Our success has resulted from our dedication to a safe, productive work environment and assuming full ownership of our assigned workscope. We have extensive experience with individual major project execution including:

- Extended Power Upgrades
- Control Room Renovations
- ISFSI Construction
- Containment Sump Strainers
- Major Piping Modifications
- Plant Security Upgrades
- Feedwater Heaters
- Condensate Filtrate Systems
- RWCU Modifications
- Turbine Retrofits
- Iron Pre-filter System

- Water Treatment Mods
- Extraction Steam Piping & Expansion Joint Replacement
- Cask Handling Facility
- Cooling Tower Modifications

Nuclear Capabilities

Day & Zimmermann routinely provides the following full range of services to our customers:

- Maintenance & Modifications
- Condenser Services
- Valve Services
- Turbine Services
- Radiological Services
- Asbestos Abatement / Insulation
- Turnkey Scaffold Services
- Painting / Coating
- Professional Staffing
- Fabrication & Machining

We have the capabilities to manage and direct the full complement of projects and maintenance scopes including field engineering and work package planning, estimating, scheduling and cost tracking, project management, QA / QC and site access processing.

Alliance / Partnering Approach

Day & Zimmermann has extensive experience in working under "pay for performance" contracts, multi-unit / systemwide contracts and long-term alliance / partnering agreements. We believe these types of arrangements are the most economical and mutually beneficial means of providing maintenance and construction services, and recognize the benefits to both the owner and contractor in such agreements. We welcome the opportunity to earn our fee based on our performance and the performance of the units we work on. Our major customers include AEP, APS, Constellation Energy, Dominion, Duke Energy, Entergy, FENOC, FPL, NextEra Energy, NPPD, OPPD, Progress Energy, PSEG, SCE&G, TVA, WCNOG and Xcel.

Industry Involvement

Day & Zimmermann is actively involved on many fronts to address industry issues and advance the benefits of nuclear power and safe, cost-effective plant operations. We work with INPO, ANS, NEI, EPRI and numerous other industry organizations along with the Building & Construction Trades organization and their initiatives on labor availability, skills certification and training.



Day & Zimmermann

We do what we say.®

Safety, Integrity, Diversity, Success

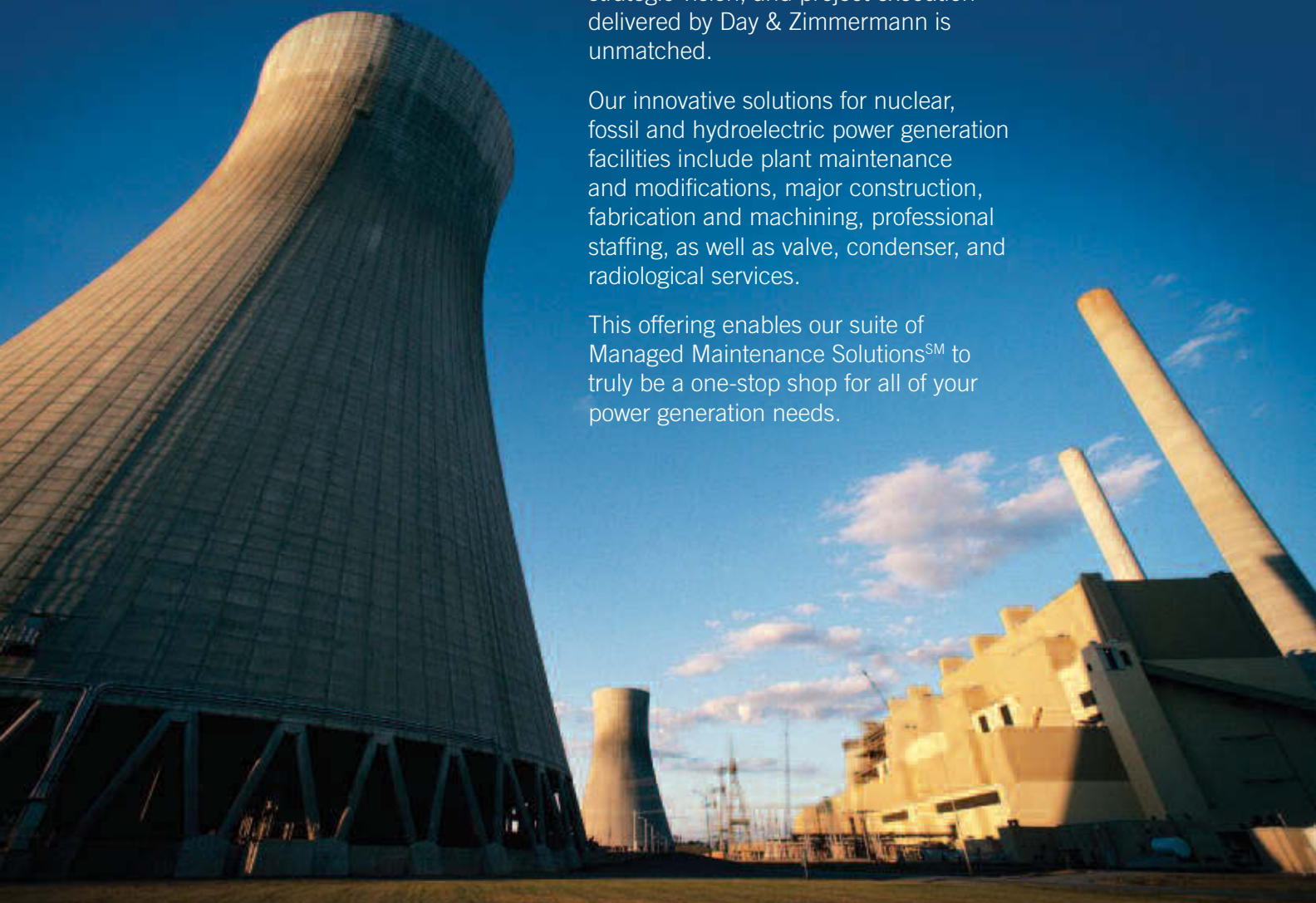
We look at power plant maintenance from a **different** angle.

We build customer-centered solutions from the ground up

In the power value chain, the breadth of services, experience, industry knowledge, strategic vision, and project execution delivered by Day & Zimmermann is unmatched.

Our innovative solutions for nuclear, fossil and hydroelectric power generation facilities include plant maintenance and modifications, major construction, fabrication and machining, professional staffing, as well as valve, condenser, and radiological services.

This offering enables our suite of Managed Maintenance SolutionsSM to truly be a one-stop shop for all of your power generation needs.



Day&Zimmermann

We do what we say.®

Safety, Integrity, Diversity, Success

www.dayzim.com

BECHTEL NUCLEAR



Bechtel Named Top U.S. Contractor for 12th Straight Year

Bechtel Corporation has been named the top U.S. contractor in 2010 by Engineering News-Record (ENR). This marks the 12th consecutive year that Bechtel has ranked first.

Who We Are

Bechtel Power Corporation—headquartered in Frederick, Maryland—is the leading contractor for fossil, nuclear, renewables, communications, and transmission services in the United States.

Bechtel Nuclear has been the active world leader in the nuclear industry for more than 60 years with more than 74,000 MW of nuclear design and construction. We have worked on more than 150 nuclear plants worldwide, serving as the architect/engineer (A/E) for 56 plants and the constructor of 37. To date, we have successfully completed 32 steam generator replacements. In all, Bechtel Nuclear has performed services on 88 percent of the U.S. fleet.

Engineering, Procurement, and Construction Experience

Our current or recent engineering, procurement, and construction (EPC) experience includes major modifications of existing nuclear facilities as well as key support for a new generation of nuclear power plants:

- Watts Bar Unit 2 completion
- 2 ongoing steam generator replacements
- 6 ongoing extended power uprates
- 3 siting studies for new units
- 3 early site permits
- 7 combined construction and operating license applications for four separate technologies
- Design certification support and first-of-a-kind engineering for four separate technologies.

Professional Resources and Industry Participation

By virtue of our long-term, continuous involvement in nuclear power activities, we have 20,000 employees with nuclear experience; 5,000+ are engineers; 3,000+ are on nuclear projects.

Our employees actively participate in:

- 215 code committees
- 17 industry task forces
- 6 NEI task forces
- 13 engineering and design code and standard boards and councils
- 27 patent holders.

Technical Credentials

As has been our longstanding policy, we stay abreast of nuclear industry standards and in the forefront of industry practices. Our nuclear quality assurance (QA) program has been approved by the NRC to ASME III NQA-1994 and SRP-17-5. In addition, we hold the following ASME III certifications: N, NA, NPT, MO, and NS.



BECHTEL POWER

Frederick, Maryland USA
301.NUCLEAR
www.bechtel.com

San Francisco Houston London Brisbane

NUCLEAR NEWS

August 2010



TriVis Inc. Growing To Meet Your Needs.

Staffing Services



Professional Engineering & Project Management Support

High Level Waste



Complete Pool-to-Pad Services

Wireless Communications



Tower Design & Construction

Engineering



Nuclear Licensing & ISFSI Design



Manufacturing Surety



Heavy Component Fabrication Management

Project Controls



Providing Complete Earned Value Systems

Construction



Nuclear Infrastructure & ISFSI

Power Substations



Substations Engineering, Procurement, & Construction

TriVis Inc - Expanded Crane and Rigging Capacity for COMPLETE Horizontal Support Module Transportation and Installation Services

You trust TriVis Inc. to provide the complete solution for your Nuclear High Level Waste (HLW) needs. Continuing our commitment to grow and invest to meet our customer's needs, TriVis has established the capacity to deliver the same outstanding Safety, Quality and Reliability from "Pool to Pad" services to the construction of NUHOMS HLW Horizontal Storage Modules and other heavy rigging projects.

TriVis personnel are nationally known for their extensive experience in establishing and operating ISFSI related equipment and programs. TriVis is the preferred supplier of services for the majority of all HLW canister designs used in the US nuclear market. We maintain a corporate quality assurance culture backed by our Quality Program Manual that is compliant with NQA-1, 10CFR50 Appendix B, 10CFR71 Subpart G, and 10CFR72 Subpart H.

TriVis is already in the field delivering HSM construction support. TriVis crews arrive at your site with fully certified cranes, rigging equipment, and personnel qualifications, ready to satisfy your stringent rigging and equipment operations standards. Each TriVis operator and rigger is highly qualified and brings extensive experience in Heavy Equipment Operation and Heavy Load Management, with all projects managed by TriVis senior project leaders.

TriVis HSM installation equipment backlog includes:

- Shuttlelift 100 ton ISL Mobile Gantry System
- 350 metric ton Hydrosplex Gantry Spindle Jack System
- Nicholas 13 line trailer, 28 metric tons per line capacity
- 90 Ton Crane Hydraulic crane
- Prime mover
- All necessary strong backs, headers and Certified Rigging to complement the OEM supplied HSM lifting beam



For more information, contact Business Development Manager Lisa Littrell at LLittrell@trivisinc.com

Westerman: Continued Success...for nearly a century

In the brief span of two decades, The Westerman Companies emerged as a trusted supplier to many large firms in the Energy industry.

The company has long been one of the world's largest producers of enriched uranium hexafluoride (UF6) storage and transportation cylinders.

A Legacy of excellence

Behind the Westerman Companies' success is a corporate history of manufacturing and service excellence that began with the production of natural gas and petroleum equipment in 1909. Today Westerman also produces a variety of containers, pressure vessels and equipment for use in *all three segments of the nuclear market; enriched uranium storage & transportation radio active waste and remediation containers, and power plant components and subassemblies.* In addition Westerman has the capability to certify material for use in nuclear applications.

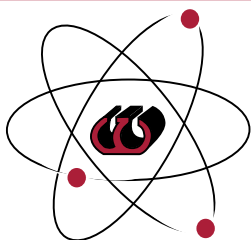
The demand for Westerman products is growing rapidly in both U.S. and International markets. Although still considered a small company by SBA standards, Westerman has both custom build and production run manufacturing capability, and can

accommodate limited orders as well as large quantity demands. The company's manufacturing and fabrication facilities have steadily grown in size and now exceeds 250,000 square feet...and is still growing.

Above & beyond quality assurance

The scope and depth of Westerman's manufacturing experience combined with established quality assurance processes enable the company to meet stringent **NQA-1** standards set by **A.S.M.E.** and those of the **NRC** (Nuclear Regulatory Commission) including **10 CFR 50** (Appendix B) and **10 CFR 21** subpart (h) requirements.

Westerman's Nuclear Division, is proud to have achieved **A.S.M.E.** Nuclear Certification in five (5) areas, "**N**" (manufacturing of vessels, piping, storage tanks, support structures), "**NS**" (fabrication), "**N3**" (storage and transport containments), "**NA**" component assembly and "**NPT**" (material certification).



Westerman Nuclear *World Class*

NQA-1 and ISO 9001/2000

10 CFR 50 APPENDIX B

ASME SECTION III & VIII

Nuclear Subassemblies
Reactor Components

Radwaste Containers
Pressure Vessels

Material Certifications
Heat Exchangers



800-338-8265

www.westermancompanies.com



Dedicated to
QUALITY PRODUCTS
and **SERVICE** since 1909



THE WORLDWIDE LEADER IN NUCLEAR
DIVING FOR MORE THAN 40 YEARS



Unparalleled Support for Commercial and Government Facilities

Leverage
The **UCC** Advantage

- Committed to Nuclear Excellence
- 24/7 Emergent Support
- Global Response Capabilities
- Exceptional Safety Record
- Innovative Underwater Solutions
- Unmatched In-water Experience

Visit UCCDIVE.com

Call (800) USA-DIVE

DIVE EXPERIENCE COUNTS

Underwater Construction Corporation (UCC) is the leading global underwater service provider specializing in nuclear dive services. In 2010, UCC is proud to have safely completed more than 90% of the world's nuclear dive projects that required our highly trained divers.

UCC's boasts an exceptional safety record and unmatched in-water experience with its 200+ dive team. This experience and commitment to safety has recently earned them prestigious service awards from two of the world's largest nuclear OEMs. These awards are a testament to the long standing tradition of success and reliability UCC has provided to the global nuclear industry for the past 40 years.



VISIT UCC ON THE WEB AT UCCDIVE.COM

August 2010

NUCLEAR NEWS



EXPERIENCE + INNOVATION A POWERFUL COMBINATION

When the first nuclear power plant in the U.S. was built more than 60 years ago, we were there. Today, we're building the nation's first new nuclear plants awarded in 30 years, featuring Westinghouse's innovative AP1000™ technology. We're proud to build the world's leading source of carbon-free electricity by introducing a new generation of safe, reliable nuclear power.

ENGINEERING & DESIGN

PROCUREMENT

CONSTRUCTION

UPGRADES, UPRATES & RESTARTS

LICENSING SUPPORT & SAFETY ANALYSIS

MAINTENANCE & MODIFICATION

SPENT DRY FUEL STORAGE



POWER • ENVIRONMENTAL & INFRASTRUCTURE
ENERGY & CHEMICALS • FABRICATION & MANUFACTURING

www.shawgrp.com



STRONG LEGACY—BRIGHT FUTURE

**ENGINEERING • NEW PLANT SERVICES • MAINTENANCE • CONSTRUCTION • LICENSING
PIPE FABRICATION • PROCUREMENT • MODULARIZATION • STARTUP & TEST**

When Shaw acquired the assets of Stone & Webster Inc., it gained a rich legacy of expertise in the nuclear industry, dating back to the first commercial nuclear power plant in the U.S. at Shippingport. Today, the company continues that legacy by providing full nuclear plant lifecycle capabilities to the global community.

Shaw's diverse nuclear solutions are backed by more than 60 years of nuclear industry leadership and an uncompromising commitment to safety. As the largest nuclear maintenance contractor in the U.S., Shaw leads the nuclear industry in power uprates and refueling outages. Shaw also provides quality-driven services to more than 100 nuclear power plants worldwide, including 95 percent of the operating plants in the U.S.

A History of Firsts

- First NRC-approved Nuclear Quality Assurance Program
- First-of-a-kind projects for U.S. DOE, including Mixed Oxide Fuel Fabrication Facility being constructed in Aiken, SC
- First license application for spent dry fuel storage facility
- First private U.S.-designed enrichment facility
- Engineer/constructor for 18 U.S. nuclear plants, totaling 14,385 MW

Along with its consortium team member, Westinghouse, Shaw is building the world's first AP1000™ nuclear power plants at two project sites in China, featuring the safest and most economic design available in the commercial nuclear marketplace. The first plant is scheduled to begin operations in late 2013, with the remaining three plants expected to follow in 2014 and 2015.



Containment Vessel 2nd Ring placement at Sanmen Unit 1, China

In 2008, Shaw and Westinghouse were awarded the first contracts in nearly 30 years to provide EPC services for six new nuclear units in the U.S. The plants, consisting of twin AP1000 units at three sites, are expected to begin commercial operation in the 2016–2019 timeframe.

Shaw also provides expertise in the areas of licensing support, safety analysis, and quality assurance. With a large equipment inventory, skilled technical and construction labor, regulatory expertise, and the successful completion of more than 31,000 decontamination projects—including the largest nuclear plant decommissioning projects in the U.S. to date—Shaw is poised to meet the growing energy demands of the future.

AP1000 technology is based on standard Westinghouse pressurized water reactor technology that has more than 2,500 reactor years of proven and highly successful operation.



Advanced design features

- Passive safety systems
- U.S. design certification
- Short engineering and construction schedule
- Reduced components and commodities
- Modular construction
- Severe accident mitigation features

Sanmen photo used with permission of site owner

Holtec International: a global leader in power generation technologies and nuclear waste management.

Holtec International provides engineered equipment and services under 10CFR50, 10CFR71, and 10CFR72 regulations and IAEA standards (where applicable) to nuclear plants around the world. Holtec prides itself on the substantial number of awarded turnkey contracts wherein Holtec engineers, manufactures, and installs the equipment and associated systems with an undivided responsibility for completion.

Holtec is a proven innovator that continually discovers how to stay a generation ahead. Holtec essentially invented the ultra-high-density wet storage technology during the '80s and is credited with pioneering Multi-Purpose-Canister (MPC) technology in the '90s (Holtec was the first in the U.S. to license and manufacture systems that employ the MPC technology). The technical staff employed by Holtec formulates innovative solutions to operational and technological problems. The company secures, on average, five patents each year. Our most recent innovation is the HI-STORM FW, which is uniquely

designed to maximize storage capacity and heat load, minimize occupational dose, permit storage of severely deformed or canisterized fuel, and to be extremely resistant to deleterious flood and wind. The HI-STORM FW basket is manufactured entirely from METAMIC®-HT. This advanced material provides structural support, neutron absorption, enhanced heat transport, and is low weight. The basket is configured to hold either 37 PWR assemblies (MPC-37) or 89 BWR assemblies (MPC-89), in addition to VVER 440, VVER 1000, or RBMK fuel types. Holtec is also proudly licensing the first underground storage system, HI-STORM 100U, which is essentially impregnable to the post-9/11 terrorist threats. In addition to wet and dry systems for managing spent nuclear fuel, Holtec also provides custom engineered steam surface condensers, feedwater heaters, and safety related heat exchangers designed by Holtec's Power Plant Component Division (PPCD).

Holtec's vertical integration allows control over quality, schedule, and cost

and provides customers fully integrated solutions. Holtec Manufacturing Division is a wholly-owned plant in Pittsburgh, Pennsylvania with over 450,000 sq. ft. of manufacturing space, 400 tons of lift capacity, state-of-the-art machinery and all needed ASME nuclear and non-nuclear stamps (N1, N2, N3, NDT, etc.). At the end of 2008, Holtec expanded its manufacturing capabilities with the purchase of two aluminum manufacturing plants in Ohio and the purchase of METAMIC® LLC (now Nanotec Metals Division or NMD). With these acquisitions, Holtec expects to synergize the ongoing R&D work in powder metallurgy at NMD and the manufacturing savvy of the Ohio plants to develop and offer a new generation of supermetals to users in need of advanced materials.

Holtec International is headquartered in Jupiter, Florida with the technology center located in Marlton, New Jersey. Holtec has operational centers around the globe. To learn more about Holtec, call Joy Russell at 856-797-0900 Ext. 655.

A Generation Ahead By Design

www.holtecinternational.com



- ❄ WET & DRY STORAGE EQUIPMENT FOR SPENT NUCLEAR FUEL
- ❄ HEAT TRANSFER EQUIPMENT FOR NUCLEAR PLANTS
- ❄ MANUFACTURING OF SAFETY SIGNIFICANT CAPITAL EQUIPMENT
- ❄ INNOVATIVE SOLUTIONS TO OPERATING PROBLEMS
- ❄ ENGINEERING CONSULTING IN CRITICALITY, THERMAL HYDRAULIC, RADIOLOGICAL AND STRUCTURAL DISCIPLINES
- ❄ SITE CONSTRUCTION & LOADING SERVICES



HOLTEC
INTERNATIONAL

555 Lincoln Drive West · Marlton, NJ 08053
Ph: 856-797-0900 · Fx: 856-797-0909



Reliable Quality, Capabilities and Capacity

AT&F Nuclear, Inc., and the family of companies privately held by American Tank and Fabricating Company, have the experience, quality culture and unique equipment capabilities to meet the demanding needs of today's nuclear industry. From new build and nuclear waste containers to pressure vessels, heat exchangers and reactor internals, our certifications and capabilities make us your best choice for a reliable metals provider and fabrication partner.

- A new high bay facility built to handle the growing demand for nuclear components, with one of the first 100-ton crane capacities built in decades and up to 40 feet under crane hook. (read more at www.atfnuclear.com).
- Multiple N-stamp certifications from the American Society of Mechanical Engineers meeting NOA-1 quality requirements; AT&F's U-Stamp is number 14, the earliest issued, active stamp in the world.

- Experienced professional nuclear staff for meeting the most demanding fabrication projects correctly and on time.
- All contemporary welding methods including "state of the art" advanced processes like robotic and hybrid laser arc (HLAW).
- Metalworking equipment for processing thin and thick wall plate includes; large laser, oxy fuel, robotic contour beveling, plasma cutting, long, precise forming, rolling, processing and fabricating.
- Nuclear qualified metal service center utilizing material strategies saving customers time and money.

Rely on AT&F Nuclear, Inc.'s technology, production capacity and nuclear industry experience to take you from design to quality component fabrication. **800-544-5316**, www.atfnuclear.com

Components for Nuclear Power Generation Include:

- Reactor Internals
- Structural Supports
- Containment Parts
- Heat Exchangers
- Pressure Vessels/Tanks
- Piping Systems
- Tanks
- Heavy Lift Rigs
- Radioactive Material Containers
- Metals, Alloy and Ferrous



AT&F Is Your Nuclear Metals Service Center

For qualified nuclear materials needs, AT&F Nuclear is the proven source. The market relies on us for everything from replacement parts to finished fabrications for new builds.

Let AT&F Nuclear's experience, capacity, and technology take you from renaissance to reality.

*AT&F Nuclear's **NEW 100 TON CAPACITY**, high bay facility represents our dedication to serving a renewed industry.*



Visit us at www.atfnuclear.com

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AT&F Nuclear Inc.
800-544-5316



Siempelkamp

Products and Services for Nuclear Power Plants

Power generation utilising nuclear power plants is experiencing a worldwide renaissance. Countries such as Finland, China, Russia, Great Britain, France and the USA already count on nuclear power and will increasingly secure their energy demand through a new generation of low CO2 emission nuclear power stations. Siempelkamp Nuclear Technology, Inc. headquartered in Walnut Creek, CA, and its subsidiary Siempelkamp Nuclear Services provide comprehensive support to the nuclear power sector.

High quality and field-proven technology

Siempelkamp business units supply customers with products and services that ensure the secure operation of nuclear facilities. With our highly qualified and experienced engineers and project managers Siempelkamp is well equipped to deliver to the exacting requirements of customers providing solutions to new challenges. Customer confidence is reinforced by our world class delivery record that continuously demonstrates our attention to safety and quality and to the provision of effective field-proven technology operated by highly experienced staff.



Nuclear portfolio

The supply and operation of components and equipment around the reactor are a core competence of our business. Furthermore, Siempelkamp are setting new milestones in the extension of the service life of nuclear power plants through analyses and calculations together with the retro-fitting of components and equipment. Last but not least, decommissioning of nuclear facilities provides confidence of the ability to successfully manage the complete nuclear power lifecycle. Our employees supporting nuclear facility decommissioning are the most experienced specialists in the dismantling and disassembling of nuclear reactor vessels and internals worldwide. Their innovative ideas combined with practical and cost effective equipment designs for reliable mechanical segmentation guarantee exceeding customer requirements and meeting the highest levels in safety and quality.

New and Operating Plants

- Engineering
- Refuelling Bridges
- Cranes incl. Polar
- Multi-purpose Lift Rigs
- Core Catcher Cooling Elements
- Stud Turning and Tensioning Tooling
- Sealing Heads
- Waste Handling Facilities

Life-time Support

Information Technology

- Process Information Systems
- Turbine Generator Diagnostic Systems

Consulting

- Nuclear Physics

Operational Support

- Engineering
- Modernization of Components
- Assembly, Start up
- Services

Decommissioning / Waste Management

Decontamination / Decommissioning

- Project Management
- Engineering



- Specialty Mechanical Segmentation Tooling
- Planning and Cost Estimating

Equipment for Waste Handling

- Hot Cell Technology
- Remote controlled Handling Equipment

Contact us and learn more about:

Siempelkamp Nuclear Technology, Inc.

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Walnut Creek, CA 94596

Phone: 925.932.4000

Fax: 925.932.4010

john.mageski@siempelkamp.com

www.siempelkamp.com

Siempelkamp Nuclear Services, Inc.

3229 Sunset Boulevard

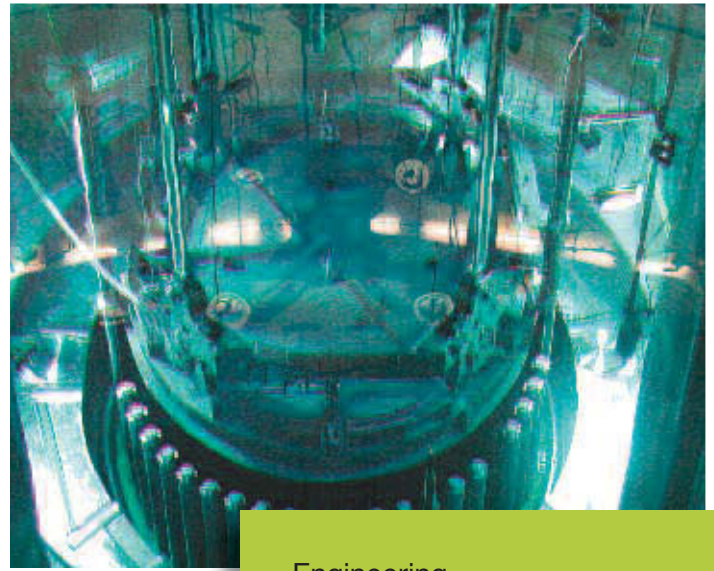
West Columbia, SC 29169

Phone: 803.796.2727

Fax: 803.939.1083

steve.garner@siempelkamp-sns.com

www.siempelkamp-sns.com



Engineering

Components

Siempelkamp is your partner for the Planning, Manufacture, Supply and Life-time Support for a highly reliable Range of Equipment including: Refuelling Bridges, Core Internal and Reactor Head Lifting Devices, Stud Turning and Tensioning Tooling, Cranes incl. Polar, Sealing Heads, Fuel Element Storage Racks, Core Catcher Cooling Elements, Waste Handling Facilities etc. for Operating Plants and New Build.

Products and Services for Nuclear Power Plants

Compliance with the highest requirements in safety and quality in the nuclear sector is our business.

We supply services, equipment and life-time support within the nuclear power industry. Our extensive know-how and experience over many years forms the basis for our successful delivery.

With the formation of Siempelkamp Nuclear Technology, Inc. in 2008 and the 2009 acquisition of MOTA Corporation – creating Siempelkamp Nuclear Services, Inc., Siempelkamp now offers our unparalleled expertise, experience and extensive nuclear portfolio to the U.S. Nuclear Industry.

Get more information about our innovative nuclear technology:

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john.mageski@siempelkamp.com

www.siempelkamp.com

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steve.garner@siempelkamp-sns.com

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Nuclear Technology US



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energysteel



Perfectly Integrated Solutions



SUB-COMPONENTS



LARGE COMPONENTS



SPECIALTY WELDING



PRECISION MACHINING

ASME Section III, Class 1,2,3 Pumps and Valves

- Main Steam Isolation Valves
- Containment Spray Header Valves
- Feedwater Isolation Valves
- Automatic and Manual Strainers
- Positive Displacement Pumps
- Horizontal Sump Pumps
- Vertical Sump Pumps

ASME Section III Class 1,2,3 Piping Systems and Supports

- Reactor Coolant System Pipe Spools
- Feedwater Pipe Spool Pieces
- Rolled and Welded Pipe
- Steam Generator Upper Lateral Supports
- Main Steam Whip Restraint Supports
- Core Support Structures
- ESW Pipe Supports
- Cable Tray Supports

ASME Section III, Class 1,2,3 & MC Pressure Vessels

- Accumulator Vessels
- Auxiliary Feedwater Tanks
- Nitrogen Accumulator Tanks
- Heat Exchangers
- Spent Fuel Pool Heat Exchangers
- RHR Heat Exchangers
- RBCCW Heat Exchangers
- Emergency Diesel Generator Heat Exchangers
- Coil Type Heat Exchangers

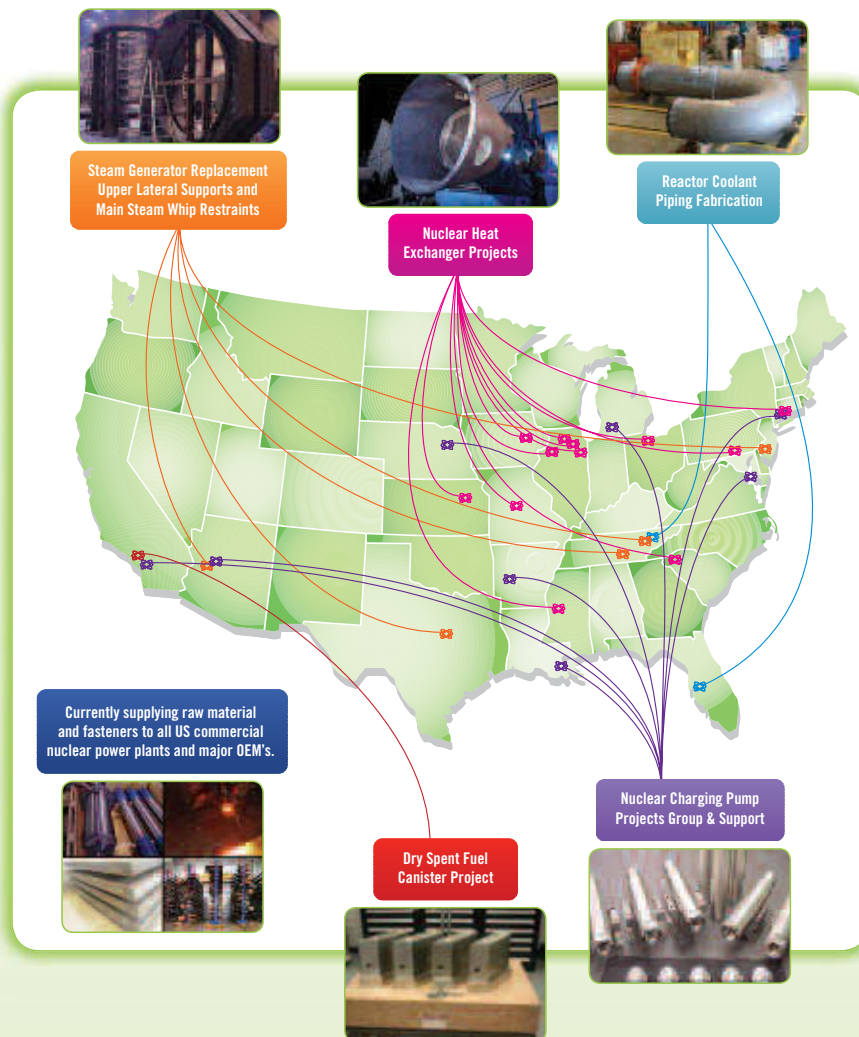


Ameritube Selects Energy Steel & Supply Co. for Exclusive Nuclear Distribution



Ameritube and Energy Steel announce an exclusive agreement whereby Ameritube, a domestic manufacturer of copper alloy tubing, will exclusively distribute nuclear certified material through Energy Steel & Supply Co. As a nuclear supplier with nearly 30 years of experience, Energy Steel will provide the Ameritube products and services to all NSSS, Utility, A&E, OEM and other distributors. Together, the two will provide the quality engineered and integrated solutions demanded by the nuclear industry.

Preview of Major Projects



To learn more about extended nuclear support, please visit

www.energysteel.com



Energy Steel & Supply Co.
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Phone (810) 538-4990 Fax (810) 538-4940
sales@energysteel.com

Energy Steel & Supply Co. is a
Certified Woman Owned Small Business



*Over 30 Years of Providing
Quality Radioactive Waste Management
Services & Solutions to the Nuclear Industry*

OUR COMPANY

WMG, Inc. has been serving the nuclear industry with its engineering services, project management skills, and software development capabilities for over 30 years. A privately held small business, WMG has been headquartered in New York State for its entire corporate history with field offices located in Salt Lake City, Hanford and Chicago.

With an earned reputation as experts in radioactive materials and waste management, WMG is considered the premier authority in understanding the myriad of rules and regulations that govern the transport, storage and disposal of low-level radioactive waste (LLRW). We are well respected by government agencies such as the Nuclear Regulatory Commission (NRC), Department of Energy (DOE), Department of Transportation (DOT), as well as the operators of the various radioactive waste disposal facilities. WMG has experience with managing the radioactive materials, including GTCC waste, mixed waste, Transuranic (TRU) waste, LLRW, filters, sludge/resins and spent fuel. Our technical staff has worked at virtually every US nuclear power plant and at a number of government facilities, such as West Valley, Savannah River, Hanford, Rocky Flats and Fernald.

Why choose WMG? One reason is our Small Business Award for Excellence received from the U.S. Small Business Administration. Another reason is our ability to assist our clients in managing their most challenging radioactive waste issues. From comprehensive evaluation of their practices to providing a design for licensing a reactor vessel shipping package, WMG can meet your radioactive needs.

OUR SERVICES

WMG's service capabilities include large component disposition (e.g., reactor pressure vessels and heads, and steam generators), D&D Planning and Support (e.g., Big Rock Point, Humboldt Bay, and West Valley), Specialty Package Design and Spent Fuel Pool Management Services (e.g., characterization, packaging plans). Our comprehensive record in material characterization, packaging, licensing and regulatory training continues to improve the operating capabilities of each WMG client.

Engineering Support Services

WMG provides a full spectrum of technical services to support operating or decommissioning of a nuclear facility. Our projects have ranged from shielding design and analysis of a spent fuel transfer system to development and implementation of plans for dispositioning unique forms of radioactive waste.

Major Component Disposition

WMG supports the disposition of major nuclear components such as reactor vessels, reactor heads, steam generators, pressurizers, and other large radioactive components. Services include characterization, package design and supply, transportation, and disposal.

Spent Fuel Pool Services

WMG provides technical services for cleanup of spent fuel pools, including project planning, characterization, and transport and disposal documentation for waste shipped for disposal.

Package Licensing and Permitting

WMG provides turnkey technical support for NRC licensing of both spent fuel and waste shipping packages, and DOT approval of exempted packages.

D&D Support

WMG has supported all the commercial D&D projects with characterization services for reactor vessel disposition. Our experience is unmatched and extends to projects such as supplying D&D, waste management and ALARA plans; performing cost estimating, design and licensing for large component packages, planned cavity and spent fuel pool cleanup projects; acted as liaison with regulatory agencies; and supplied packaging and transport for processing and disposal.

Regulatory Training

WMG provides a series of training courses that address the regulatory and practical aspects of processing, packaging, shipment and disposal. Several of our courses have received approval for Continuing Education Credits (CEC) from the American Academy of Health Physics (AAHP)

OUR SOFTWARE

Since 1982, WMG has been the leader in software development providing the commercial and government sectors with radioactive material and waste management applications. Our RADMAN™ software operates at nearly every US nuclear power plant, at several DOE and commercial waste processing facilities, and in Canada. Standard commercial software includes:

- RADMAN™
- OSM™
- MegaShield™
- FILTRK™
- RAMSHP™
- FILTRSAVR™

WMG offers customized software for specific client needs. These customized programs integrate WMG's many years of experience to characterize, manifest and manage all forms of radioactive materials including spent fuel.

*Over 30 Years of Providing
Quality Radioactive Waste Management
Services & Solutions to the Nuclear Industry*



Nuclear Grade Software & Services

- ◆ *Engineering Support Services*
- ◆ *Project Management*
- ◆ *Software Solutions*
- ◆ *Class B & C Waste Minimization*
- ◆ *Major Component Disposition*
- ◆ *Fuel Pool Management*
- ◆ *Specialty Package Design & Licensing*
- ◆ *Regulatory Training*
- ◆ *Shipper Support Services*



WMG Inc
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Peekskill, NY 10566

<http://www.wmginc.com>

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CONTAINER PRODUCTS CORPORATION

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Tel: (910) 392-6100 Fax: (910) 392-6778

Web Page: <http://www.c-p-c.com> E-mail: sales@c-p-c.com

Container Products Corporation has been in the business of supplying equipment and waste containers to the nuclear industry since 1981. We supply containers/packaging to the commercial nuclear world, Department of Energy Facilities, Department of Defense Facilities, and Universities. We also have experience in design and manufacturing of Hydraulic Systems such as the Box or Drum Compactors, and Decontamination Units.

Our products are also sold to Canadian Nuclear Power Generation Facilities, Laboratories, and a number of foreign countries in Europe, the Far East (Korea and Japan), South America, (Argentina), Mexico, and Russia to name a few.

Our container product line includes IP-1, IP-2, IP-3, U.S. DOT Type A, (IAEA) and IATA, in all shapes and sizes, with a wide range of payloads, lift lugs, fork pockets, safety arms, hinged lids, and door options to meet most any customer's needs. Our containers can be manufactured out of carbon steel, aluminum, stainless steel or a combination of these materials.

We feature a full Engineering Department, with a PE on staff, and a QA Department, with a NQA-1 program. We are also qualified to Canadian QA standards, ANSI/ASME standards and meet most of ISO 9001:2000 requirements.



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Key to our ability to produce quality deliverables is the leading engineering, design, analysis, and project management know-how that we maintain current through our highly experienced staff and extensive state-of-the-art applications. And, of course, we are the company that always manages to get it done.

Our Nuclear Commitment

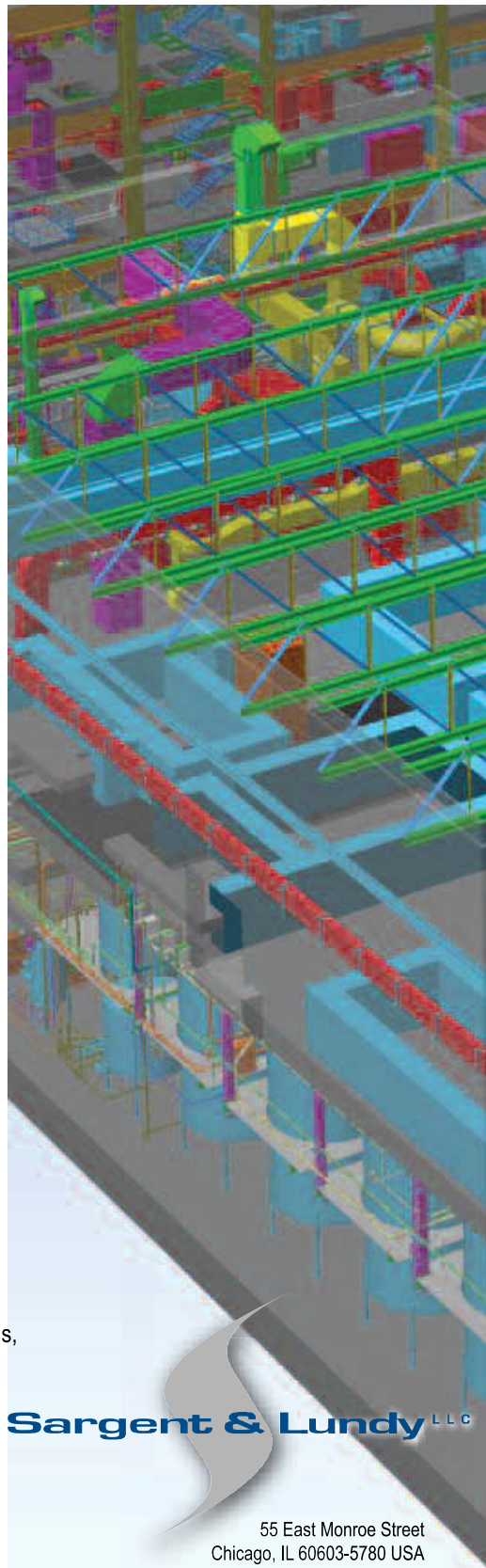
Nuclear power clients have been a primary part of our power focus since 1954, pretty much when it all started. Nuclear clients have good reason to have confidence in our capabilities, not only from our quality, expertise, and focus, but also from knowing we will be here for them when needed with what they need, as we have been for more than 50 years. Owners enlist our broad support as their preferred engineer and rely on our expertise for specialized problem-solving. Our current activities encompass new nuclear plant design and licensing activities, emerging issues, and leading edge initiatives such as:

- New plant engineering, detailed design, procurement activities, and EPC Technical Requirements development
- Combined Operation License (COL) preparation, Owners Engineer, and early site permit preparation
- Security upgrades and power uprates
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That's in addition to our extensive on-going engineering, design, and analysis for nuclear station owners for diverse projects including:

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During its three decades of service Divesco has evolved into a full service supplier of I&C, electrical and mechanical parts and components to the nuclear industry worldwide. Divesco assists utilities with their Investment Recovery Programs, giving them economically feasible alternatives when faced with reduction of their inventories. Additionally, Divesco specializes in the supply of obsolete or hard-to-find parts and components back to nuclear plants in need.

Divesco’s 25 years of experience in the nuclear field has given them credibility in the handling, shipping, and storage of the parts and components they own. Their NUPIC audited Quality Assurance Program ensures that their 50,000 square feet of Level B warehouses conform to exacting standards. A standing inventory of more than 15,000 items is accessible on the web 24/7. And for parts that are not available immediately from

stock, Divesco expedites the sourcing of emergency items via a network of partners to assure plants get what they need, when they need it.

Powering Divesco’s expansive inventory is the Divesco team and their industry-leading Priority One Expediting™ service. Divesco has learned through years that there is no time for down time. Their location, adjacent to **Jackson, Mississippi** Airport, has enabled Divesco to ensure that orders are delivered within the most critical timeframes and deadlines.

Whether it is helping utilities reach their investment recovery goals, providing the supply of obsolete and hard-to-find parts, or their Priority One Expediting™, Divesco has put a world of qualified nuclear surplus at their client’s fingertips. The scope of their services and the scale of their inventory have earned Divesco the distinction of being the leader in the nuclear surplus industry.

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Success with Digital Retrofits

Successfully applying digital control technologies in any established industry requires a learning curve. The US nuclear industry is no different.

To evaluate the success of digital controls retrofits in nuclear plants, industry-wide metrics must be adopted. Establishing the metrics, however, requires a learning curve of its own.

Two metrics agreed upon by most industry professionals are: 1) Project did/did not meet budget/schedule, and 2) project did/did not contribute to post-installation/commissioning trips.

Using these two metrics to evaluate implementation, the message is clear: Hurst Technologies has led numerous successful retrofit projects. One such project, which met both metrics, took place at Omaha Public Power District's (OPPD) Fort Calhoun Station.

Template for success. Work on the OPPD retrofit started in 2002 with a strategic plan that included budgetary cost estimates for each system. Based on this plan, separate implementation plans were developed for replacement digital control systems for plant computer data acquisition system (DAS), control rod positioning system (SCEAPIS), feedwater regulation, and feedwater heater level. An overall digital I&C architecture map provided a guide for future upgrades to ensure successful integration of new systems as they come on-line.

Two critical components of the project were implementing a plant data network as a basic infrastructure investment and ensuring a high degree of integration of current stand-alone functions into the new systems.

In 2004, a bid specification was issued for a distributed control system (DCS), based on off-the-shelf technology, that would serve as the platform for the plant in this and upcoming projects. To date, all functions except the feedwater heater level (originally scheduled for 2012 outage) have been completed on time, on budget,

and with zero nuisance trips.

Complex, multi-year projects, such as OPPD, result in valuable lessons-learned that are being applied to other digital retrofits including:

DAS Replacement. Involve Operations early-on in planning and design. A dedicated project manager assigned for the project duration is mandatory. Recognize the selected DCS vendor may not be fully conversant with the unique project requirements.


SCEAPIS replacement. As a system that is associated with alarming vital conditions in the plant, it is critical to involve operators—from the outset—in the development of an alarm management plan, especially since digital systems can create 'alarm avalanches.' Because existing wiring and terminations as well as other interfaces are used, pay particular attention in planning stages to the handling and reuse

of these, especially safety cabling.

Feedwater regulation. Success of a retrofit project in this or any other operating area of the plant hinges on the use of the plant simulator for site acceptance testing to validate correct operation, correct response to plant failures and ultimately for writing new or updating existing O&M procedures to reflect the new system(s).

Experience counts. The Hurst engineering team worked with OPPD to review current and anticipated cyber-security needs. Hurst created a holistic vision for the overall plant I&C program based on current knowledge of both NERC and NRC requirements as well as cyber and physical security-related solutions.

For a more detailed review of the OPPD success story, contact us for a copy of Hurst's 2010 POWID presentation. And for more information on digital retrofits, cyber/physical security or the ISA POWID conference, contact Timothy McCreary, VP-Operations (and program co-chair for POWID 2011), call 979.849.5068 or e-mail tmccreary@hursttech.com.



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The advanced reactor pressure vessel stud tensioner, the SCT, is a unique self-contained unit – needing only a power source, but no hydraulic connections or remote pump-control unit or operator.

In live tests, the SCT has reduced typical tensioning time from up to four hours to under an hour, with 40 per cent less manpower – meaning lower potential RAD exposure time and greatly-reduced reactor downtime.

“The unit has been in development for over three years: the Biach SCT is a major advance in RPV tensioning and operator safety,” explained Jon Slocum of Hydratight.

“The new system eliminates the separate control unit: each of the tensioners has its own 10,000psi pump unit and can be easily moved into position. Most importantly, each SCT networks to the other units, and each one displays the readings of the others in use. This means one operator can control all devices in a typical setup. It’s a remarkable piece of equipment.”

In other systems, tensioners must be connected to a central control unit, which means the speed of the slowest crew member is the speed of all of them. It also means having potentially dangerous hydraulic cables and manifolds on the reactor floor and one man, usually out of the immediate area, to operate the control unit. The SCT streamlines the whole process.

The recent acquisition of Biach Industries – one of the world’s foremost nuclear reactor equipment companies – by global engineering and joint integrity specialist Hydratight, gives the outstanding SCT a well-deserved global market.



To find out more visit

hydratight.com/biach

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MIRION
TECHNOLOGIES

Mirion Technologies Sensing and Imaging Systems Divisions, featuring IST™ branded products, are present in a majority of the worldwide power generation facilities.

Mirion Technologies offers products with a range of operational safety and non-safety radiation monitoring equipment such as its IST, IST-Rees, and IST-Conax Nuclear® brands.

Sensing Systems Division

The Sensing Systems Division, maker of the IST and IST-Conax range of products, provides the nuclear power industry with in-core and out-of-core detectors and electrical penetrations. In addition, Mirion manufactures the associated electronics, temperature sensors, thermocouples, special purpose valves, connectors, cable/connector assemblies and electrical conductor seal assemblies.

Imaging Systems Division

The Imaging Systems Division is a global provider of highly specialized closed circuit camera systems used for inspection and surveillance in difficult and hazardous environments, supplying cameras for all stages of the nuclear life cycle, from construction through operation, to decommissioning and waste management. Our products are used in nuclear power plants, nuclear reprocessing plants and waste management facilities. The IST-Rees™ product line also includes a wide range of accessories, such as lighting attachments and positioning devices, that allow operators to carry out a variety of monitoring and inspection tasks. From small, low-cost cameras to high performance viewing systems, the Imaging Systems Division provides an imaging solution for the nuclear market.

Mirion Technologies

For more than 50 years, our products and services have helped to ensure the safe and efficient operation of nuclear facilities. Our customers rely on our solutions to protect people, property and the environment from nuclear and radiological hazards. Mirion's strength stems from its five divisions: Sensing

Systems, Imaging Systems, Health Physics, Dosimetry Services and Radiation Monitoring Systems. Our products and services include: dosimeters; contamination & clearance monitors; detection & identification instruments; radiation monitoring systems; electrical

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Northrop Grumman Instrumentation & Control for Nuclear New Build and Ongoing Operations

Northrop Grumman Corporation's (NYSE: NOC) Commercial Energy business unit in Sykesville, MD., develops and deploys Instrumentation and Control (I&C) solutions that meet the nuclear industry's demanding quality and production requirements. Today, Northrop Grumman I&C products protect and control the equipment and personnel in over 200 reactors for both commercial and military applications worldwide. We've developed I&C products for both new build and existing nuclear power plants.



AFFORDABLE MANUFACTURING CAPABILITIES THAT KEEP YOUR PROGRAM ON TARGET

We design, manufacture, and test I&C equipment for original equipment manufacturers in the nuclear industry. Today, we are building plant protection control electronics for a power station currently under construction. By building the highest quality cabinets in full compliance with customer specifications, and performing continuity and integrity testing, we ensure total customer satisfaction.

Benefits of our new build I&C work include:

- Evolving designs easily accommodated by our flexible manufacturing processes and experienced personnel
- Quick response to manufacturing anomalies, thanks to our comprehensive quality assurance programs
- Compliance with 10CFR50 Appendix B, 10CFR Part 21, and NOA-1



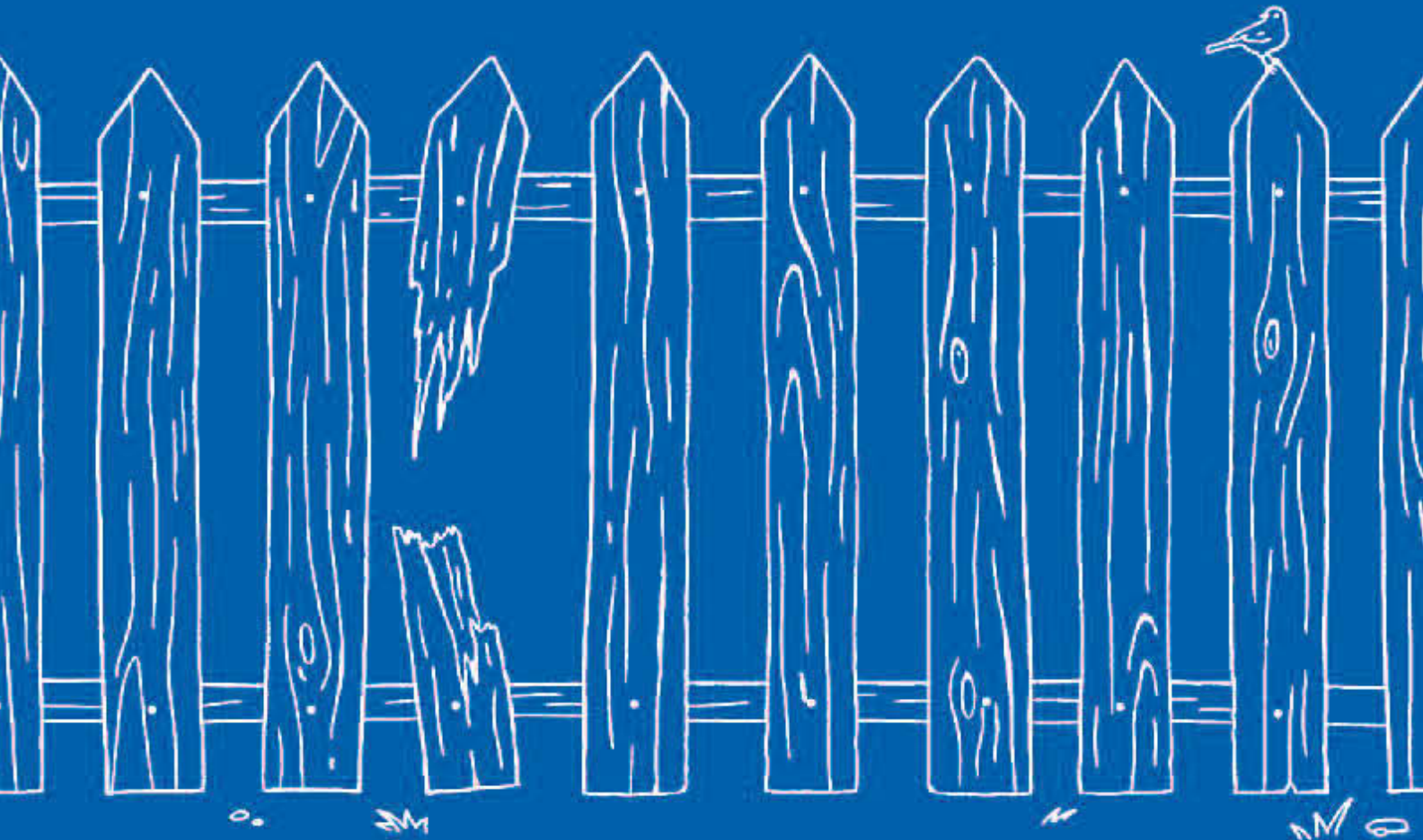
DIGITAL ROD POSITION INDICATION (DRPI) REPLACEMENT REDUCES COST, RISK

Upgrading your plant with our DRPI system enhances the performance and reliability of your rod position indication system. We use a surgical replacement approach that reuses many existing components to reduce installation time, cost, and risk. Replacement displays mimic existing user interfaces to minimize impact to operations. Installation can be phased over multiple outages to meet specific schedule and budget constraints. Benefits of the DRPI system include:

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- Cost savings from reuse of existing components make the DRPI upgrade more affordable
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Northrop Grumman's I & C solutions reduce risk and cost by providing upgrades to aging systems. These upgrades give you the ability to replace data cabinets, control room electronics, or both — all without disrupting production. So when you're ready to minimize risk and cost while staying on schedule, contact the I & C experts at Northrop Grumman.

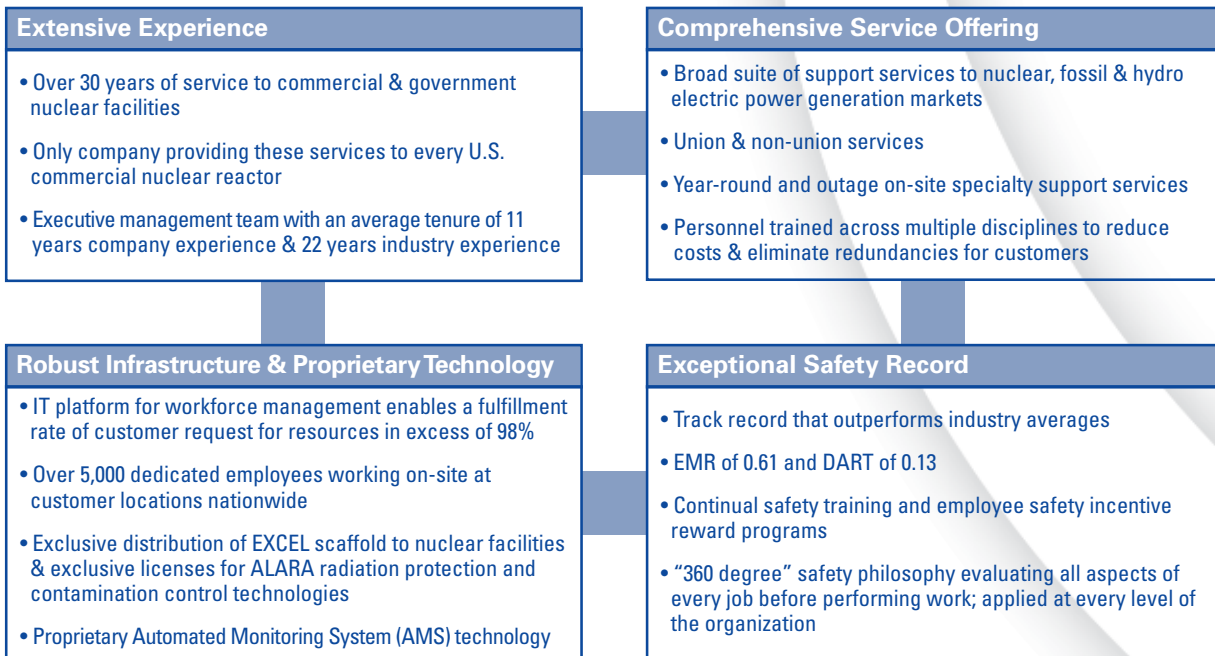


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BHI Energy is a leading provider of specialty project and staffing solutions to nuclear, fossil, wind and hydroelectric power generation facilities (both union & non-union). BHI Energy's operating units provide a qualified and experienced workforce to support all your operational needs.

Our companies maintain a customer focus, servicing 88 power generation customers at over 150 project locations worldwide. We have developed longstanding relationships with our customer base, many lasting more than two decades. Our unique platform of on-site specialty support solutions enables us to develop long-term strategic partnerships where our core objectives and goals are integrated with those of our customers.

BHI Energy distinguishes itself through its extensive industry experience, comprehensive service offering, robust infrastructure and proprietary technology, and exceptional safety record.





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Featured Project: PEM-Team One Supports Power Upgrades with Specialty Condenser Scaffold Work Platform Package



MECHANICAL SERVICES

PEM-Team One Mechanical Services (Team One) and Bartlett Support Services, Inc. (BSSI) were subcontracted to provide a condenser specialty scaffold package for a large commercial nuclear utility. The plant completed a total change out of their

three LP turbine units as part of a fleet power uprate program to increase plant generation. Similar condenser outages will take place at other plants over the next several years.

The finished package was a collective effort using laser scanning and 3D modeling by CSA, Inc. custom fabrication of scaffold components by Deltak Manufacturing and supervision and craft labor provided by BSSI and Team One. The project staff consisted an 80-person craft and supervisory team running parallel crews, working on all three condensers. This configuration proved to be successful in exceeding the clients' goals.



PROJECT RESULTS:

- COMPLETED WITH ZERO SAFETY INCIDENTS
- INSTALLATION COMPLETED IN < 24 HRS (2 SHIFTS), COMPARED TO PREVIOUS TIME OF 60 HOURS (5 SHIFTS)
- MET UTILITY GOAL OF SAVING CRITICAL PATH TIME BY WORKING ALL THREE CONDENSERS SIMULTANEOUSLY





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PEM-Team One Mechanical Services, Inc.'s Scaffold Reduction Program utilizes Excel Modular Scaffold to make permanent, long-standing scaffold platforms and shielding racks at nuclear power plants. This program can be integrated into our customers' continuous process improvement programs, producing the following results:

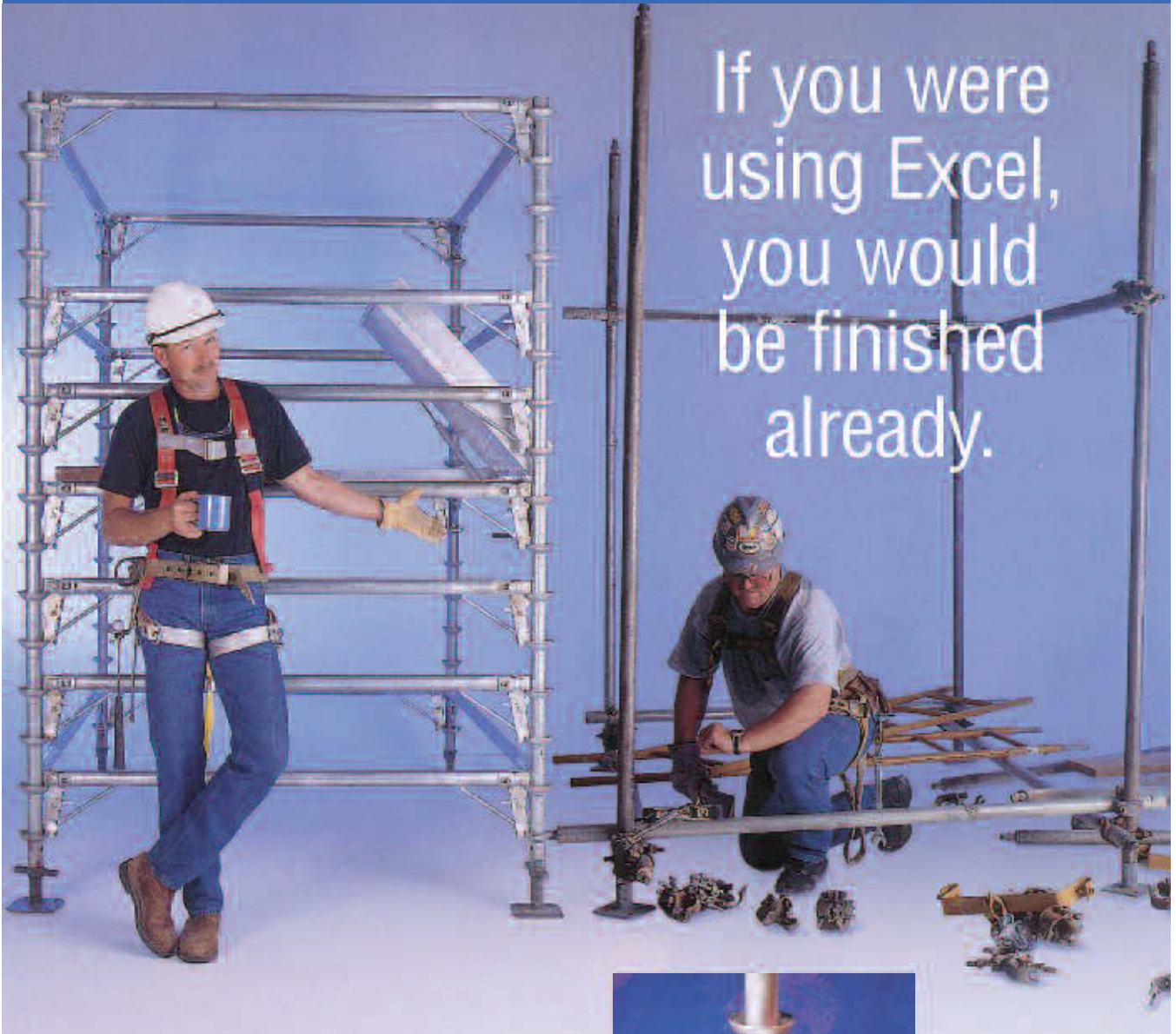
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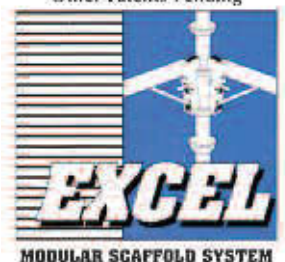
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Other Patents Pending



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Excel at President Bush's Inauguration



Excel at an Oil Refinery



Commercial Nuclear Power Plant Use

INDEPENDENT EVALUATIONS

1. Boston Edison/Global Supply Evaluation (CD-ROM)
2. International Union of Operating Engineers Evaluation for the Department of Energy (Printed Material)
3. International Union of Operating Engineers Technical Safety Data Sheet (Printed Material)
4. DuPont Engineering Independent Industrial Safety Evaluation (CD-ROM)
5. Innovative Technology Summary Report from the DOE Evaluation at INEEL (Printed Material)

ADDITIONAL EXCEL INFORMATION

6. ISO 9001:2000 Certified Quality Assurance Program-Certificate of Registration Available (Printed Material)
7. Seismically Bench Tested and Qualified by Wyle Laboratories-Test Report Available (Printed Material)
8. Safety and Training Video (CD-ROM)
9. Technical Manual (Printed Material)
10. Client References (Printed Material)
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Transnuclear, Inc. is the leading U.S. supplier of used fuel storage casks, with nearly 600 casks housing more than 20,000 assemblies at 31 sites. TN provides Storage, Fuel Racks, Site Services, Engineering and Licensing, and Transportation Logistics.

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No other storage cask is as versatile as NUHOMS®, Transnuclear's flagship product. The system is robust, practical and simple to operate. It uses advanced technology but supports a low life-cycle cost. For special applications, Transnuclear can also provide metal storage casks.

The NUHOWS Solution

The NUHOWS system is an ideal on-site interim storage solution for Class B and C irradiated reactor hardware components. Comprising a Rad Waste Container, Horizontal Storage Module, Transfer Cask and Ancillary Equipment, NUHOWS seamlessly integrates with NUHOMS®. And the RWC is transportable.

The Site Services Solution

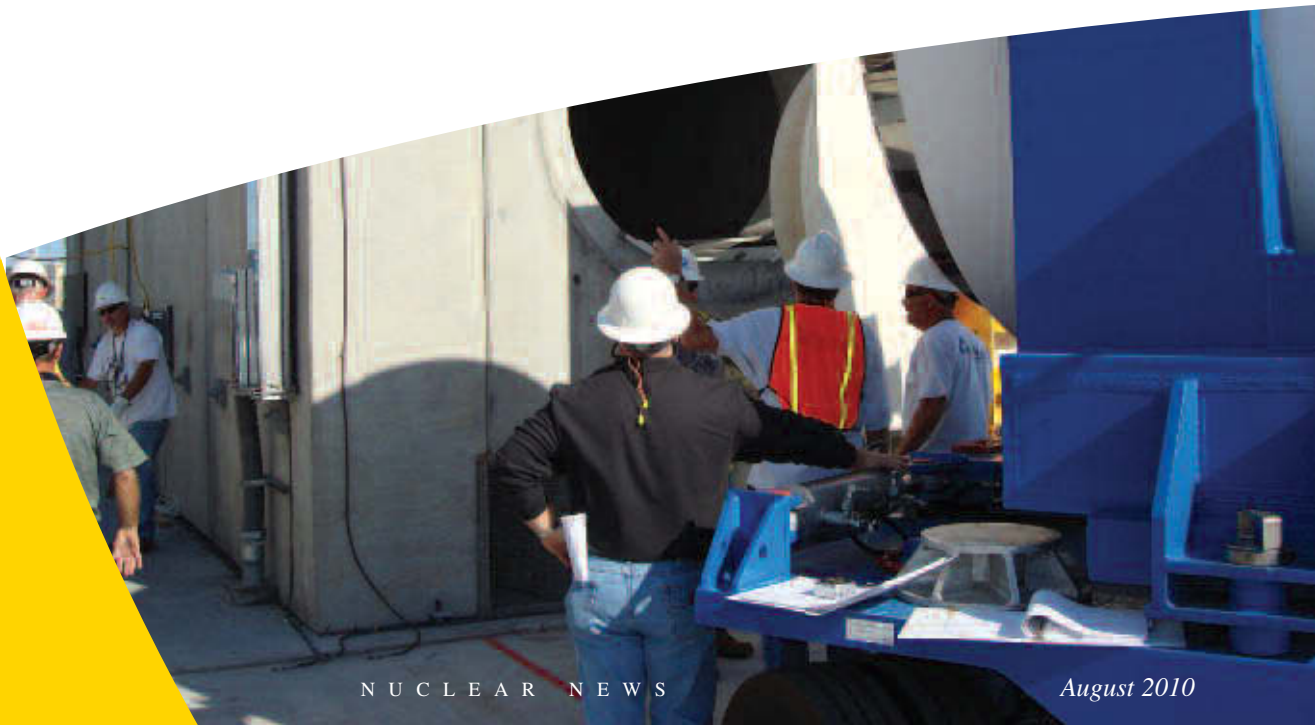
With the Transnuclear pool-to-pad team, utilities receive a proven, comprehensive used fuel management solution that minimizes cost and risk.

The NUSTOR™ Solution

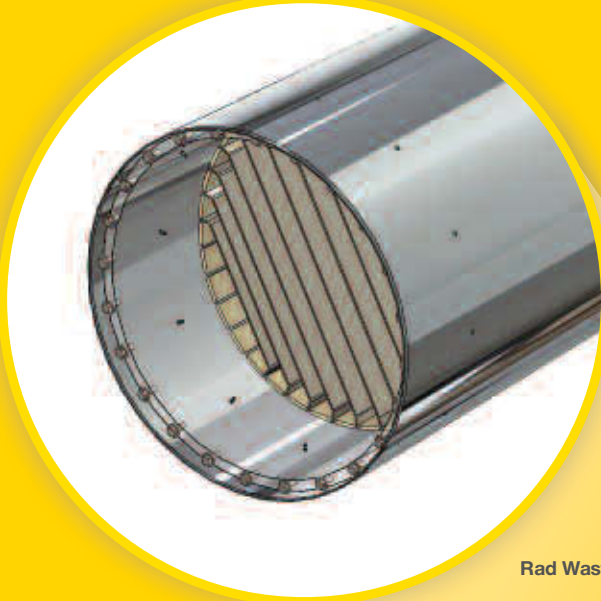
Designed for the U.S. EPR™ reactor, Transnuclear's NUSTOR™ spent fuel racks are adaptable for use in all reactor types, offering customers flexible fuel management options.

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Irradiated Hardware Disposal Problem? Transnuclear's NUHOWS Is the Solution



Rad Waste Container

Today, reactor operators face limited options for disposal of irradiated components. With the NUHOWS system, Transnuclear, Inc. provides an onsite storage solution for Class B and C wastes such as control rod blades, jet pumps and fuel channels.

NUHOWS is designed intentionally to mirror TN's proven NUHOMS® Dry Shielded Canister system for spent fuel storage.

The Rad Waste Container, like the DSC, is stored in a Horizontal Storage Module and transportable via TN's MP197HB shipping package.

In addition, the RWC minimizes size reduction requirements, eliminates under water component segmentation and allows for multiple loadings. One RWC accommodates up to a decade of irradiated components.

With its seamless integration into an existing NUHOMS® storage facility, NUHOWS offers customers a low-risk, low cost solution.

Contact: Michael Williams
Vice President, Business Development
7135 Minstrel Way, Suite 300
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TRANSNUCLEAR

Quality Inspection Services, Inc. (QISI)

QISI has been providing the nuclear industry with quality related services for over 20 years in the civil/concrete material testing, geotechnical and environmental drilling, non-destructive examination (NDE), heat treating, QA/QC services, auditing, vendor surveillance, and health & safety services.

QISI has 15 offices located throughout the United States and has successfully mobilized temporary laboratories to jobsites where ever necessary. Our company was formed in 1987, and currently employs approximately 300 fulltime trained and certified individuals.

Our employees are highly skilled and dedicated professionals qualified/certified in accordance with the following organizations: ASME NQA-1 for Inspection Personnel and Lead Auditors; American Welding Society as Certified Welding Inspectors (CWI), Certified Welding Educators (CWE); ASNT-SNT-TC-1A, NAS410, CP-189, and Mil-Std-271 for Nondestructive Testing; and ACI, ICC and NICET for Concrete and Soils.

Press Release Dated February 25, 2010:

Quality Inspection Services, Inc. a Buffalo, New York based company founded in 1987 was acquired by APPLUS-RTD, a subsidiary of the Carlyle Group on February 25, 2010. Company President and Founder, John E. Sisson did not disclose the terms of the sale but stated; *"this acquisition brings tremendous growth opportunities to our company and its employees. The transaction does not change the*

Management staff and allows us to further invest in our growth strategy. We will continue to be based out of Buffalo, New York serving our clients as we have for the past twenty three years!"

APPLUS-RTD is one of the world's largest providers of Nondestructive Testing Services, with over 3,000 employees servicing 32 countries worldwide. Sisson went on to say; *"the new automated testing technologies APPLUS-RTD has developed, will enable us to provide an enhanced array of services to our existing customer base".*

Our team is able to support all projects from the ground up...from your civil work to Project Commissioning & Turnover. QISI is the team to trust, start to finish, utilizing our NQA-1 Quality Assurance Program (ANSI/AMSE 1984-2004 Editions and ISO 9001 Compliant).

Partial listing of current nuclear projects under our NQA-1 Program includes:

- Remote Handled Waste Facility (West Valley, New York). Work includes: QA/QC, Civil, NDE and Safety Management. Overall programmatic implementation.
- National Enrichment Facility (Eunice, New Mexico). QISI mobilized an onsite Civil Material Testing Laboratory and a staff of 25 technical personnel within 30 days of the Notice to Proceed. The project also follows the 10CFR50 Appendix B Program Requirements.

- River Protection Waste Treatment Plant (Hanford, Washington). QISI mobilized an onsite Civil Material Testing Laboratory and technical personnel within 90 days of the Notice to Proceed.
- Idaho Cleanup Project (INL) – Work includes: QC field engineers, civil material and Level III NDE services.
- Constellation Group: (Ginna, Nine Mile & Calvert Cliffs Nuclear Facilities). QISI supported these nuclear sites with NDE personnel for their plant outages and pre-outage work. Work included: visual, liquid penetrate, magnetic particle, digital and conventional radiography, and ultrasonic testing. Additionally, QIS has supported Ginna's dry cask storage project with civil and soils testing along with subsurface infrastructure identification.

QIS maintains a leading edge in providing consistent and thorough services through technological investment, research and development. This is what keeps us on the cutting edge of our industry for the most effective and safe inspection and testing process.

We will be responsive to our customer's needs and fulfill their expectations by delivering a quality service on or ahead of schedule, and at or below budget; with the utmost attention to Safety and Quality. *"For Job Satisfaction-Think Quality!"*

Call 1-877-QIS-4-NDE (1-877-747-4633) for more information.



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- License Renewal Projects
- Power Uprate Projects
- Security Program Upgrade Projects
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- Containment Building Inspection and Testing
- Reactor Vessel Visual Inspection Retrieval
- Specialty Tooling Design and Fabrication
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- Vendor Surveillance
- Field Engineering
- Test and Operating Procedures



How can we help you grow?

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Fairbanks Morse Engine

Supporting the nuclear industry yesterday, today and tomorrow

Fairbanks Morse Engine is the leading supplier of emergency diesel generator sets (EDGs) to the nuclear power industry. Our EDGs are designed, manufactured, and tested in Beloit, Wisconsin in compliance with NRC requirements. With over 100 generator sets currently in nuclear service, next generation plant operators can look to our proven track record delivering reliable power, onsite service support, factory-direct engineering services, and OEM replacement parts.

Our leadership role in nuclear standby power dates to the earliest development of the technology. When the U.S. Navy needed diesel generators to support the emerging nuclear fleet, they turned to Fairbanks Morse Engine. As the first generation of nuclear plants came online in the 1960s, our Opposed Piston EDGs were chosen based on their performance under the Navy's rigorous operating conditions. Nuclear construction peaked in following decades, and the Fairbanks Morse Colt-Pielstick engine line entered service at plants throughout North America. Currently, over 60% of U.S. nuclear owner/operators depend on Fairbanks Morse for standby power.

With the next generation of nuclear plants expected to generate electricity for 60 years or more, the industry is looking for a proven engine manufacturer to build EDGs that will meet demanding NRC requirements and last for the life of the plant. Our engines are manufactured in accordance with USNRC Regulatory Guide 1.9, 10 CFR 50 Appendix B, IEEE387, and ASME Section III, Class 3. Additionally, we maintain a commercial-grade nuclear dedication program audited by NUPIC. Dozens of satisfied plant operators take advantage of our OEM replacement parts, onsite service support and factory-direct engineering services.

RECENT NEWS

Fairbanks Morse Engine recently announced that it has been awarded a contract to supply six safety related Fairbanks Morse Colt-Pielstick PC2.6B Emergency Diesel Generator sets (EDGs) to Toshiba America Nuclear Energy Corp. (TANE) for installation at Units 3 & 4 of the STP Nuclear Operating Company in Matagorda County, Texas.

The EDGs will be manufactured and tested at the Fairbanks Morse Engine facility in Beloit, Wisconsin, in accordance with U.S. Nuclear Regulatory Commission (NRC) requirements for 1E safety related equipment. This milestone contract represents the first manufacture of 1E-qualified EDGs for new U.S. nuclear construction in nearly three decades. Each unit will have a continuous power output of 8130 kWe.



For more information about our role in the future of the nuclear power industry, visit us online at fairbanksmorsenuclear.com.

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DIESEL GENERATOR SETS

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EDGEN MURRAY GOES NUCLEAR



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ACCREDITATION: ACCOMPLISHED

Edgen Murray Goes Nuclear – QSC-614

Edgen Murray Corporation, a leading global distributor of specialty steel products, has been awarded a Quality System Certificate (QSC-614) as a Material Organization by ASME. This accreditation allows Edgen Murray to supply materials to the nuclear industry in accordance with the strict provisions of the ASME Boiler and Pressure Vessel Code. Additionally, Edgen Murray's nuclear operations has been NIAC Member Audited.

With a long established history of serving energy infrastructure customers, including material supply for fossil fueled and renewable power generation applications, Edgen Murray began building a program to expand operations to the nuclear supply market in early 2009.

"With input from our existing customers participating in the nuclear industry, we created a nuclear material platform that we believe offers a fresh approach and will exceed the needs of our partners now and in the future,"

said Jim Berger, Director of Nuclear Operations.

Edgen Murray's nuclear scope of supply includes ferrous and non-ferrous:

- ASME Section III, Divisions 1, 2, & 3 Metallic Materials
- Pipe
- Tubing
- Fittings
- Large Custom Forged Fittings
- Flanges
- Plate
- Shapes
- Bar
- Fasteners
- Valves
- Reinforcement Bar (Div 2)

And, meets the strict Quality Assurance requirements defined in:

- 10 CFR 50 App. B
- ASME Section III NCA/WA 3800
- NQA-1
- 10 CFR Part 21

All nuclear related operations are handled from Edgen Murray's Charlotte, N.C. office located at 5801-A Orr Road. Although Edgen Murray has locations globally, the Charlotte location is the single point of contact for nuclear opportunities, handling all nuclear inquiries worldwide.

Based in Baton Rouge, La., Edgen Murray is a global distributor of high performance steel products manufactured for use in specialized applications throughout the energy infrastructure markets and individual industrial segments. Supplying both new construction projects and maintenance, repair and operational requirements, Edgen Murray offers a broad range of materials, technical expertise, and customized solutions through its 30 worldwide locations spanning the Americas, Europe, Middle East, and Asia-Pacific. For more information, visit www.edgenmurray.com.

PCI's Engineered Systems Group Provides Solutions to BWR Strainers

40 Years Experience with Past & Current Nuclear Technology

Experts At Resolving Strainer Issues

PCI's team is ready to bring you the best and most up-to-date BWR strainer technical solutions, from plant walk-downs to:

- Debris Generation / Transport Analysis via CFD Modeling
- Head Loss Testing Including Chemical Effects
- Debris Bypass Testing with a Chugging Facility
- Downstream Effects for Plant Equipment and Reactor Fuel

PCI is the industry leader in supplying quality Sure-Flow® strainer upgrades for the GSI-191 issue. In addition, PCI's Sure-Hold® Band System can help reduce the ZOI/debris generated and transported in a post-LOCA event for insulation systems.



PCI Brings KAEFER Reflective Metal Insulation to the U.S. Nuclear Market

This year, we are introducing the KAEFER Reflective Metal Insulation (RMI) product to the U.S. market, applying the best RMI technology. The RMI can also be installed by our insulation professionals.

We Have Built Our Business On Service

We have the ability to effectively interact with the NRC and conduct full-scale performance testing. In addition, we understand short turn-arounds and will work with your tight deadlines.

Combine PCI Nuclear Services

- Installation/Supervision of Reflective Metal Insulation
- Installation/Supervision of Conventional Insulation (For Maintenance & New Construction)
- Scaffold Services
- Rigging Services
- Industrial Cleaning Services
- Abatement Services
- Custom Metal Fabrication



Give Us A Chance To Help.

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PCI is Ready to Support New BWR ECCS Issues

Offering the Best Strainer Fabrication Capabilities and Testing Support for 40+ Years



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METAL FABRICATION



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WorleyParsons

resources & energy

How do we think Globally...

Our comprehensive geographic presence enables us to provide our customers with a unique combination of extensive global resources, world-recognized technical expertise, and deep local knowledge.

To enhance our understanding of our customers' nuclear energy needs around the globe, we are increasing our support in some of the most innovative regions for the industry, including:

United States

Canada

Brazil

France

Sweden

Bulgaria

Lithuania

Jordan

Egypt

Ukraine

Russia

Slovenia

Slovakia

Czech Republic

Armenia

United Arab
Emirates

South Africa

Japan

40

countries

137

offices

nuclear
experience in

15+

countries

about Nuclear? with **local** delivery.

At WorleyParsons, effective service to our customers means frequent, face-to-face engagement at their facilities. We have built an organization with regional and local components to harness our extraordinary global capabilities and deliver nuclear services at local sites.

Our new Nuclear organization in the U.S. and Latin America/Caribbean region focuses on delivering nuclear services regionally & locally to commercial facilities across the United States through our offices in Reading, PA; Chattanooga, TN; Chicago, Ill; Richland, WS; Los Altos, CA; and Phoenix, AZ, as well as through site offices at our customers' nuclear plant locations. Locally, WorleyParsons is able to deliver world class services, including:

- Established power industry architect-engineer for nuclear (>22,000 MW) and fossil (>71,000 MW) stations
- Planning, selection, and conceptual development for large new nuclear projects
- Extensive experience in PWR & BWR power up-rate and plant modification
- Leadership in Asset Management, Plant License Renewal, and Aging Management
- Specialized Engineering Services, including
 - Alternate Source Term (AST) development and licensing
 - Emergency Preparedness
 - State-of-the-Art Consequence Analysis (SAORCA)
- Nuclear facility Deactivation, Decontamination, Decommissioning, and Demolition (D4) services

Nuclear Professionals: Need to control ever-changing information? Think Bentley.



They say change is good. That depends, of course, on your ability to adapt to it. Within the nuclear world, change WILL happen, whether you are ready for it or not, and it is critical that it be managed effectively. In particular, the change must be managed to ensure compliance with the facility's design basis. To manage change, you have to be aware of it and understand its effects on anything and everything interrelated – from electronic documents to physical assets to requirements and persons.

In any nuclear enterprise – whether a research facility, single plant, or fleet of plants – operations must always strive to meet regulatory requirements, maintain safety, and improve operational efficiency. To succeed at these goals, information must be timely, accurate, in context, and shared. Everything and every process within a nuclear facility is underwritten by information that exists in paper or electronic form encompassing a myriad of formats. However, as different as the information is, it is all interrelated.

It is this “interrelatedness” that complicates the management of change. Some document management systems are very good at document revision control. But seldom does a single document change without impacting something else – other documents, electronic files, requirements, and so on. As a result, you need an information management system that links related information regardless of the silo it is stored in – a system built on industry best practices. Moreover, this system must be able to manage changing information and provide change effects analyses that ensure the best operational decisions are being made based on information that is 100 percent accurate.

You need eB from Bentley.

Bentley is the leading company dedicated to providing comprehensive software solutions for the infrastructure that sustains our world. Unlike software solutions that silo information, and document management solutions that simply manage revision change, eB is an interoperable platform that reaches across silos to link vital changing operational information for improved efficiency, safety, and knowledge management.

eB for Nuclear is an integrated suite of information management applications that ensures the integrity of controlled information by uniquely managing its connectivity to all other relevant information. It captures, stores and manages structured data and unstructured content such as records, specifications, engineering drawings, procedures, reports, personnel certifications, emails, and design and licensing documents, and identifies and relates this content through object modeling to physical items such as equipment, systems, structures, and components that comprise the plant. It further allows both content and equipment to be related to certain events that may occur in the plant, such as conditions adverse to quality (CAQ's), corrective actions, operating experience (OE), and human performance observations.

By building information bridges between documents, records, assets, people, events, processes and projects, eB for Nuclear creates an information management ecosystem for the rapid access of accurate information in context.

eB's nuclear applications include design engineering, human performance, corrective action, knowledge management, document control, records management, and cable/raceway management, among others.

Think eB and realize these benefits:

- Easy to deploy and maintain
- Ease of integration with other enterprise software
- Cost-effective modular approach
- Easy learning curve requiring little IT assistance
- Proven among industry leaders

Bentley serves nuclear industry leaders, including:

- AmerenUE
- CH2M HILL
- Constellation Energy
- Energy Solutions
- Entergy
- Florida Power & Light
- Lockheed Martin ATS
- Nuclear Fuel Services
- NuStart Energy
- Wolf Creek Nuclear Operating Corporation
- Westinghouse Nuclear

For more information and to schedule a discovery meeting, or to request a referral meeting with one of the users of our eB nuclear applications, contact us at +1-858-625-3000.

www.bentley.com/eb



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Power Generation
Wastewater
Land Development
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Factories
Roads
Oil
Rail
Factories
Wastewater
Buildings
Factories
Rail
Transit



Meet your regulatory requirements, improve safety and increase efficiency with eB.

eB for Nuclear is an integrated suite of information management solutions that ensures the integrity of controlled information by uniquely managing it's connectivity to all other relevant information.

With applications for design engineering, compliance, information management, performance improvement and knowledge management, eB helps ensure that the facility fully meets NRC and other regulatory guidelines and remains consistent with its design basis, and, as such, compliant with its operating license.

Bentley Systems has acquired Enterprise Informatics

Consistent with Bentley's mission of Sustaining Infrastructure, eB will play a key part in the company's strategic initiative for improving infrastructure asset operations.

Learn more at www.bentley.com/assetwise and www.bentley.com/eb.

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Anatec International and LMT, Inc, leaders in inspection services for the nuclear industry for over 30 years, offer the following services tailored to your needs:

- PWR Steam Generator Eddy Current Examination
- Eddy current examination of balance of plant heat exchangers
- Section XI ISI examinations and PDI qualified UT examiners
- Automated and semi-automated UT systems, including Phased Array
- FAC (Flow Accelerated Corrosion) inspection
- Surface Methods
- ISI Program review and development, NDE Program development and implementation
- NDE Certification Training
- Advanced NDE Training
- QC Inspections
- Audits / Vendor Surveillance
- Visual Testing

Visit us at the following events!

BOP EPRI NDE Symposium
Skamania, OR - Aug 9-11

8th Intl Conference on NDE
Berlin, Germany - Sep 29-Oct 1

Our Electromagnetic Testing training courses:

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Mooresville, NC - Nov 8 - 12

ECT Level II
Mooresville, NC - Nov 15 - 19

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Services listed above are fully compliant with current ASME Code and Regulatory requirements.

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Performance-Tuned HE Products For Nuclear Power

Tranter plate heat exchanger technology addresses the special demands posed by nuclear power applications. Tranter offers a wide range of plate & frame and welded HEs proven under the most demanding operating conditions. Our patented plate technology enables us to optimize the thermal and hydraulic design to bring you the best blend of cost-efficiency, performance, small footprint and reduced maintenance requirements.

Efficiency and ease of maintenance mark the versatility of Tranter plate HEs in power applications. Consider the benefits of thermal efficiency and compactness offered by plate HEs in applications traditionally handled by S&T HEs, such as:

- Interchangers, preheaters and coolers
- Vent, flue gas and general duty condensers
- Turbogenerator condensate coolers
- Turbogenerator lube oil coolers
- Turbogenerator stator intercoolers
- Closed loop system and spent fuel pool coolers
- Reactor drain and LP feedwater heat exchangers

Plate HE program for nuclear power

Plate HE types applied in nuclear power applications include:

- SUPERCHANGER® Gasketed Plate Heat Exchanger
- SUPERMAX® Shell & Plate Heat Exchanger
- SPIRAL HE Spiral Heat Exchanger
- MAXCHANGER® Welded Plate Heat Exchanger
- PLATECOIL® Prime Surface Heat Exchanger Banks

For HEs in critical service, Tranter can provide all major types of calculations and stability analysis, including motion load, wind load, seismic load, nozzle load and even detailed finite element analysis calculations if required. A dedicated Document Control Department produces documents in accordance with the most stringent of customer requirements.

Tranter fabricates in accordance with all major design codes, specifically ASME Section VIII Division 1 with U stamp, and PED 97/23/EU with CE stamp. All Tranter manufacturing centers worldwide are certified according to ISO 9001:2008.

At the forefront for more than 70 years

Tranter products are on the job in demanding power generation applications around the world. Backed by our comprehensive experience and worldwide presence, Tranter offers exceptional applications assistance and local service. Tranter is close to its customers, with subsidiary companies, agents, distributors and representatives located worldwide.



Heat exchanger types, from left: SPIRAL HE Spiral Heat Exchanger, MAXCHANGER® Welded Plate, SUPERCHANGER® Gasketed Plate, PLATECOIL® Prime Surface Banks, SUPERMAX® Shell & Plate.

RENAISSANCE-READY HEAT TRANSFER



SUPERCHANGER® Plate & Frame and SUPERMAX® Shell & Plate out-perform shell & tube.

Manage thermal processes more efficiently with Tranter plate HEs.

Tranter leads in cost-effective efficiency with a wide range of gasketed and welded heat exchangers rated for pressures and temperatures up to 1000 psig and 1000°F.

Compared to shell & tube, these compact, plate-type units typically take up only 1/10 the installed footprint and save weight, material and maintenance costs. Their proven performance in feedwater heating, condensing, thermal isolation circuits, component cooling and many other applications translates into a tighter thermal loop.

Our products are manufactured 100% in the USA, and we are ready to meet your needs from production facilities in Germany, Sweden, China, Brazil and India. Call or visit our factory for more information.

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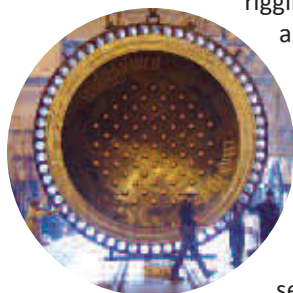
We are nuclear experts with valuable solutions for the commercial nuclear industry.

An Original Equipment Manufacturer

With ASME N-stamp certified manufacturing facilities, The Babcock & Wilcox Company (B&W) is the only North American manufacturer of major reactor plant components, including new and replacement steam generators, reactor vessels, RV closure heads, safety-related heat exchangers, pressurizers, control rod drive mechanisms, and other primary-side auxiliary equipment. With more than 50 years in the nuclear industry, B&W is poised to provide quality nuclear components to both operating and new nuclear power plants.

Providing Component Installation and Maintenance Support

B&W has the detailed planning, engineering and construction expertise to successfully install a wide range of large-scale components for the nuclear industry. Our capabilities include steam generator replacement, main condenser replacement, reactor vessel head installation, containment vessel or liner plate fabrication and installation, piping replacement, as well as modularized assemblies and BOP component installation. Our maintenance services include scheduling, rigging and heavy lift analysis



and design, procurement and transportation, and safety management. Building on our experience with power plant and environmental equipment installation, B&W provides exceptional engineering and construction services to the nuclear industry.

Inspection and Repair Services

Our work doesn't end after manufacturing or installation. B&W offers a full spectrum of services for steam generators and BOP equipment. Eddy current, visual inspections and a variety of field service activities are performed with more than 250 engineers and technicians available to deploy worldwide. B&W also offers comprehensive material evaluation as well as chemical and radchem analytical services through B&W's Lynchburg Technology Center. Licensed by the Nuclear Regulatory Commission, the laboratory is equipped with a hot cell and hot machine shop for conducting NDE and testing on contaminated specimens. B&W continues to develop capabilities in concert with EPRI to meet industry inspection needs.

At the Forefront of Innovation

B&W is shifting the landscape of global energy markets with the B&W mPower™ Reactor – a modular, scalable source of energy with zero-emission operations. The scalable design allows B&W to match the generation needs of the power industry. Each reactor module will be capable of generating 125 MWe, but multiple modules may be arranged in parallel to produce additional power in 125 MWe increments. This Generation III++ design embraces standard nuclear technology that the industry knows to be reliable and efficient without the risk of deploying untested fourth generation concepts.



Additional B&W mPower Reactor Features:

- Passive safety systems
- Spent fuel storage capacity for the 60-year life of the reactor
- Integral nuclear system design
- Up to five-year operating cycle between fueling
- Modular assembly and construction
- Secure underground containment

With a network of ASME N-stamp certified facilities in North America, B&W is able to design and manufacture components for the B&W mPower Reactor – streamlining construction and reducing field construction costs.

B&W mPower statements are based on the expected final, certified design.

We are Babcock & Wilcox.

For more information on how B&W can provide you with expert, valuable solutions, contact us today.

Babcock & Wilcox Nuclear Energy, Inc.

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Delivering Proven Results

Nuclear capabilities for global energy needs

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With more than 50 years of uninterrupted service, The Babcock & Wilcox Company (B&W) is an industry leader in commercial nuclear innovations. Through our North American nuclear operations companies, we provide quality solutions in construction, heavy component manufacturing and inspection and repair services, to enhance plant capacity, efficiency and reliability.



www.babcock.com



Schulz Electric's History in Serving Nuclear Plants

Bucking the Trend

Back in the early 1990s, the Schulz Electric Company did something that few companies have done since the 1970s: Established a QA Program for supplying safety-related services under 10CFR50 Appendix B. Why? Because customers asked. For the same reason, Schulz Electric has recently opened an in-house decon shop for the processing of radiologically contaminated motors. Schulz Electric has now completed projects for every nuclear utility in the United States and for several non-U.S. nuclear utilities as well.

Welcome to the Neighborhood, Nuclear Plants!

Schulz Electric was founded in 1927. When nuclear plants came along, it quickly established an excellent reputation with them for

repairs of key balance-of-plant motors. Several nuclear utilities then asked Schulz Electric to become a non-OEM source for inspecting and maintaining Class 1E equipment. Establishing in-house Appendix B QA for motor repair was a natural outgrowth of these inspection services, and Schulz Electric has since been audited by joint NUPIC-member teams, the U.S. DOE, and non-U.S. audit teams.

With over 80 years' experience in electric motor repair, Schulz Electric is just a few years younger than the introduction of the first AC induction motors and has accrued the experience needed to repair motors from any OEM source. Schulz Electric processes almost a thousand motors a year and has repaired motors and generators from every manufacturer you've heard of (and some you almost certainly haven't). Even OEMs use Schulz Electric for

inspection, test, and repair.

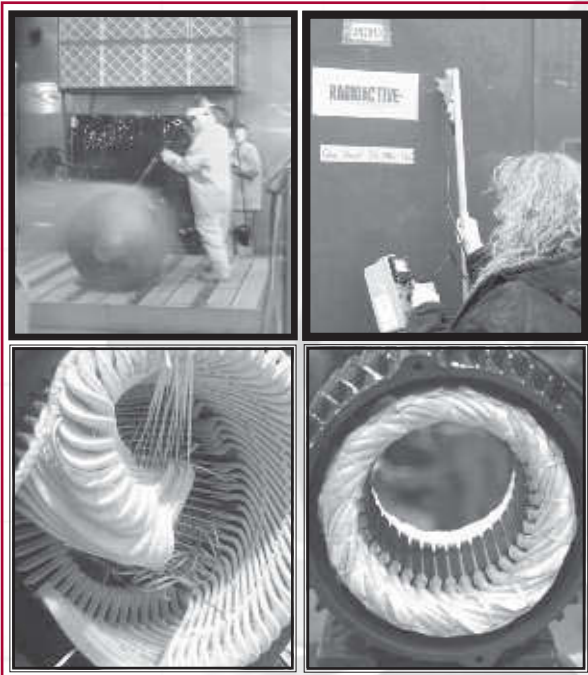
Schulz Electric's Growth

As needs for these services have grown, Schulz Electric has expanded its plant capabilities and QA staff to cover even the largest projects on the tightest schedules.

For example, a recent EDG repair included the rewind of all eight rotor pole pieces for a plant in a refueling outage. It was completed in 16 days, including materials procurement and dedication. This quick turnaround kept the plant from extending its outage.

Schulz Electric's responsiveness in this and hundreds of other nuclear power-plant projects, large and small, is evidence of its commitment to a future of serving the nuclear industry.

In-House Decontamination, Engineering & Repair



- In-House Decon Facility
- MOV Motor Repair & Testing
- Contaminated Motor Repair
- EQ (Inc. MOV) Insulation Systems
- EDG Repair
- Upgraded Crane Capacity
- On-Site Services
- Engineered Motor Test Bed
- Vertical Test Stand
- Prox Probe Test Capabilities
- MOV Motor Repair & Testing
- Class 1E Motor Repair
- New Safety-Related & EQ Motors
- 24 Hour Emergency Service

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MAINTENANCE

CTTI will preform preventative maintenance as well as troubleshoot any specific problems. We offer routine Service Contracts scheduled at the Clients convenience to prevent large scale repairs.

NEW TOWER CONSTRUCTION

Turn-Key Projects or partial supply, New Construction Projects are no problem. Our experience, location, and specialized equipment gives CTTI the competitive advantage

THERMAL UPGRADES

CTTI can evaluate your tower on a total system approach that assures you all the parts work together for the greatest total performance.

REPAIRS & EMERGENCIES

CTTI has a long record of responding to any disaster; natural, fire, explosions, etc. We are committed to getting you up and running in the fastest time possible. We are able to respond to your disaster with the appropriate equipment and supplies within such a quick time frame because of our advantageous location, flexible management, and our fabrication capabilities.

CTTI

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White Castle, LA 70788

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Fax: 225-545-4151



American Crane & Equipment Corporation

Ready for the Nuclear Renaissance

American Crane & Equipment Corporation (ACECO), a privately held U.S. company with headquarters in eastern Pennsylvania, is the leading manufacturer providing cranes and material handling equipment for nuclear applications. The design and manufacture of custom equipment meeting the rigors of nuclear quality assurance is the company's primary business. American Crane has 3 patents related to this industry. Customers include nuclear utilities, Department of Energy sites and laboratories, military facilities, and aerospace clients.

American Crane has made significant investments to meet the nuclear industry's demand for high quality cranes and next generation equipment design. To prepare for the next generation of nuclear power plants and meet the needs of the specialty lifting equipment market, American Crane has expanded its operations to include a total of 3 locations near Philadelphia, PA. In addition, American Crane has been adding to its workforce. By having the expanded manufacturing capacity and highly skilled labor, American Crane now has the scalability to meet future market demands.

American Crane completed plant expansions this year at its corporate headquarters. This facility houses 5 manufacturing bays with lifting capacity available up to 100 tons. To assure machining capacity, one of the largest boring mills in the northeastern United States has been installed. In addition, this facility has an on site 200 ton load testing tower.

American Crane's Service, Parts and Standard Crane Division moved to a new location in early 2008. Located just 3 miles from corporate headquarters, this facility has room for additional office expansion.

American Crane's Lester Division is located near the Philadelphia International Airport, about 50 miles from corporate headquarters, and has extensive manufacturing space. This includes 1 bay with (2) 75 ton capacity cranes (150 ton lift capability). Both cranes have a clearance of 40 feet under their hooks. It also has access to rail and barge service for large shipments.

Early on, American Crane made the strategic decision to maintain the in-house resources for engineering, manufacturing and field service needs. The engineering staff consists of seasoned mechanical, electrical and structural engineers, including world class nuclear seismic experts. This assures consistent quality and schedule adherence.

Company Wide Plant Capacity

- 220,000 sq ft
- 150 ton lifting capacity
- Rail and barge service

Keys to American Crane's Nuclear Success

- Resume of completed projects
- Company-wide focus on nuclear
- NRC licensing experience
- Mature Appendix B QA Program
- In-house engineering staff
- Extensive seismic background



New manufacturing plant with 150 ton lifting capacity



7" Spindle Horizontal Boring Mill with X = 30', Y = 14' and Z = 5'

Engineering Capability

- Mechanical and machine design
- Structural design and analyses
- Dynamic modeling and seismic
- Failure modes and effects analyses
- AutoCad, MathCad, Solidworks, SAP2000 and ANSYS
- Complete control system design
- Remote systems
- Automated systems
- Software development including real time graphics
- Complete licensing success with NRC
- Support for 50.59 evaluations

Quality Assurance

As a supplier to the nuclear industry, American Crane has maintained a Quality Assurance Program since 1996 that meets both 10 CFR 50, Appendix B, and ASME NQA-1 standards. Its quality program has been audited by commercial nuclear utilities, NUPIC, and DOE contractors.

- 10 CFR 50, Appendix B / NQA-1 Quality Program for nuclear projects
- NUPIC audited
- Welding controlled to AWS D1.1 or D14.1
- SNT-TC-1A qualified personnel
- In-house non-destructive testing

Service

- Load testing
- Product support
- Outage support
- Retrofit and upgrades
- Inspections
- Spares
- Custom fabrication

Training

- Safety training
- Operator and maintenance training
- Custom programs

American Crane is well equipped to provide cranes for the next generation of nuclear power plants. In addition, American Crane's conceptual design for single failure proof cranes currently provides for up to 350 tons capacity with the ability to meet requirements for design and manufacture of higher capacities through 1,000 tons.

American Crane has extensive experience with nuclear power plant requirements and has demonstrated its ability to meet customers' specifications and schedules. By successfully providing the majority of single failure proof crane upgrades for dry spent fuel storage in the United States, American Crane is ready to supply cranes for the next generation of nuclear power plants.

Entrust your future crane needs to the nuclear industry's innovative and committed leader.

For more information about how American Crane can solve your nuclear material handling needs, visit www.americancrane.com, email us at sales@americancrane.com or call us direct at 1-877-877-6778 x224.

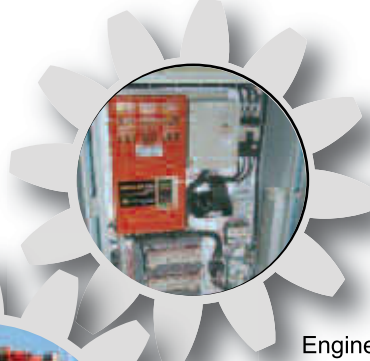
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Nuclear Power: Paving the Way to a Clean Energy Future

Question: What do nuclear-focused clients expect when selecting a firm to help them meet their power generation needs?

Answer: Clients are looking for ways to further diversify their power generation portfolios, yet, provide economical energy to consumers. Concern for clean air is resulting in more stringent and increasingly tight restrictions on air emissions.

Environmentally speaking, coal is challenged in the U.S.; renewable energy is gaining a larger foothold, and there is renewed interest in natural gas-fired power generation. Nuclear energy accounts for one-fifth of U.S. electric generation, and it offers environmental benefits over present day fossil fuel technology. Nuclear energy makes up more than 70 percent of all U.S. clean air electricity generation.

An increasing number of clients are seeking companies that are nuclear experienced and technically qualified to provide solutions to key issues facing the nuclear industry. Finding nuclear savvy engineering/construction resources with a proven track record for delivering nuclear projects represents a current challenge to those deploying the next generation of nuclear plants around the world.

Black & Veatch offers experienced teams of professionals who are ready and able to provide solutions to clients' most complex nuclear challenges from project development to implementation. Concerning new-build applications, our recent Lungmen advanced boiling water reactor (ABWR) nuclear project in Taiwan, which is built to U.S. standards, gives our professionals firsthand experience in sourcing equipment in today's global supply chain environment. Additional new-build expertise includes: Black & Veatch's ongoing design support of advanced technology for several leading nuclear steam supply system vendors (Boiling Water Reactor (BWR) and Pressurized Water Reactor



(PWR); our hands-on support of clients through the combined operating license application (COLA) regulatory process; and owners engineering services. Specific to existing operating plant modifications, Black & Veatch brings decades of nuclear expertise, including on-site spent fuel storage, digital control system modifications and security enhancement services.

At Black & Veatch, we are helping to pave the way to a clean energy future. Our nuclear expertise extends beyond our teams of nuclear professionals. It

taps into the Black & Veatch breadth of diverse skills and experience gained from decades of successfully implementing large engineering, procurement and construction projects.

When you think nuclear, think Black & Veatch. We have experienced teams of professionals who can help you get your project to completion, on time and on budget, regardless of your preferred technology or the complexity of the work associated with your existing nuclear plant.

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consulting, design, procurement and construction for your nuclear project.

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Battery Testing: Doing It Right.

Internal battery problems can be detected by increased internal cell resistance.

In today's demanding environment, battery performance cannot be taken for granted. The cost of failure makes the cost of testing insignificant, especially in large enterprises, where even a momentary power outage could result in millions of dollars in losses. Battery testing increases power system reliability, optimizes battery life, and provides savings by reducing maintenance costs. Testing detects problems by measuring the internal resistance of each cell or module in the system. The resistance of a cell is a proven, reliable indicator of a battery's state of health. This method is matched only by true battery capacity testing. However, capacity testing requires specialized equipment and taking the batteries offline.

Identifying problems early increases battery system reliability.

The importance of battery testing is well documented, and battery users must understand why batteries fail and what influences battery life; otherwise, a sound decision in selecting a testing device for

the application cannot be made. Internal battery problems can be detected by an increase in internal cell resistance. This testing method provides early indications of several problems, including sulfation, grid growth, corrosion, dry out and manufacturing defects. The right battery testing system will significantly improve battery system reliability while providing a continuing return on investment. By using internal cell resistance measurement as part of your quarterly battery maintenance program, your approach will change from reactive to proactive. The Albér Cellcorder CRT-400 is the industry's most popular hand held battery resistance tester. Designed to meet IEEE standards for battery testing, this next generation resistance tester offers USB memory and Bluetooth technology.

The Cellcorder records three critical parameters: cell voltage, internal battery resistance, and intercell resistance. Its Bluetooth technology lets you hear status in noisy environments, and it features six newly designed, rugged probe choices and jaw options for all battery types. The Cellcorder's easy to use Battery Analysis

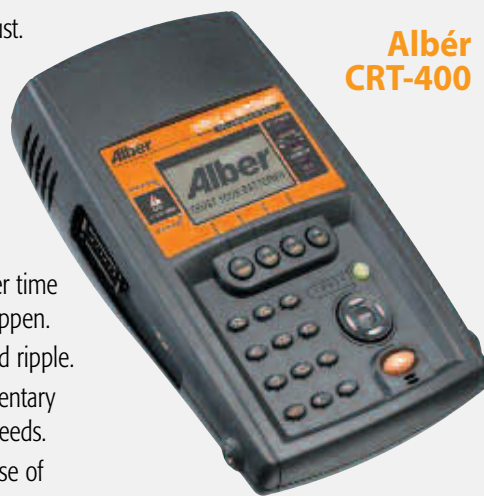
Software, with a variety of report options, and Albér's patented internal resistance method will ensure you'll detect the early signs of battery degradation before problems escalate. To learn more about your DC system and ensure its performance, Albér offers a two day, noncommercial seminar on properly and safely installing, maintaining and testing your battery system. You'll learn how to better maintain your battery system and stay up to date on the latest standards. The Stationary Battery Basics seminar covers industry standards, equipment and methodologies and offers 1.6 CEU's at course completion. Albér also organizes the annual, three day Battcon Stationary Battery Conference, the world's leading conference and trade show for stationary battery users. Whether you're a professional in the data center, UPS, power station, electrical, telecom, utility, government, petroleum, or nuclear industry, if you maintain or service mission critical operations, you'll find Albér products and service will exceed your expectations. From portable test equipment and permanent monitoring installations, custom-tailored installation and service, to education and training, Albér is the most experienced and respected name in the battery monitoring industry.

Day Time

Night Time

Down Time
It's Cellcorder® Time.
Avoid downtime with Albér.

- Fast battery test results you can trust.
- Measures 3 Critical Parameters: Voltage, Resistance, Internal Cell Resistance
- The Alber Cellcorder CRT-400 uses the patented DC Internal Cell Resistance test method.
- The Cellcorder allows trending over time to detect problems before they happen.
- Results are unaffected by noise and ripple.
- Software has versatility to be elementary or advanced depending on your needs.
- Many connection options allow ease of use for any battery configuration.
- Bluetooth option relays voice test status to speed up testing.
- Streamlined design makes carrying easy.
- Custom carrying case holds accessories such as lighted probes, different jaw options, Bluetooth headset and printer.
- Optional hydrometer sends data to Cellcorder software for easy exporting to Excel.



**Albér
CRT-400**

Alber
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Contact Jennifer Stryker at Albér for more info jennifer.stryker@alber.com
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S.A.Technology has extensive experience in decontamination and decommissioning projects. We have established ourselves as an industry leader and are committed to developing revolutionary technologies to keep workers safe by eliminating the need to place them near hazards.

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Through our experience and development of waste processing systems and specialized tooling S.A.Technology has developed an array of custom skids and modules. When it comes to developing process systems that have the capabilities to get the job done right S.A.Technology is your one stop shop.

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Feedwater heater systems updated to digital at STP

BY INSTALLING ADVANCED digital controllers to replace old pneumatic controllers on selected feedwater heater systems, the two-unit South Texas Project nuclear power plant has gained benefits in operations and economics. The new technology consists of digital level measurement devices (DLMD) and digital valve controllers (DVC) that work together in independent control loops to efficiently maintain feedwater tank levels, resulting in lower costs and greater energy output. These digital devices receive inputs from transmitters and then calculate whether to open or close tank valves.

The South Texas Project (STP) site in Wadsworth, Texas, is operated by STP Nuclear Operating Company. The site has two Westinghouse pressurized water reactors, each rated at 1250 MWe. Unit 1 started commercial operation in August 1988, and Unit 2 in June 1989.

The purpose of feedwater heater systems at nuclear power plants is to capture internal energy from spent steam and use that energy to help pre-heat condensate feedwater. Each feedwater heater tank has a specific water-level point at which it operates most efficiently.

Under the old pneumatic control at STP, feedwater heater levels fluctuated by as much as 30 percent, meaning that energy was lost. The fluctuations were the result of inaccuracy in pneumatic positioners. When coupled to local pneumatic controllers, these positioners could not be adjusted properly for optimum performance. This loss of efficiency also had a negative financial impact: For one of STP's reactor units, a 0.1 percent drop in efficiency due to poor heater level control translated into \$280 000 in lost revenue per year at typical market rates.

In addition, because of the pneumatic equipment's poor control of water levels, STP was sometimes forced to divert flow to a high-level dump so that maintenance workers could go in and correct the problem. This meant powering the reactor down by 7 percent for five or six hours per occurrence, costing the plant in maintenance

Replacing pneumatic controllers with digital controllers has improved plant performance, lowered costs, and enhanced worker safety.

and operations time.

Looking for ways to improve plant performance and reduce maintenance costs, STP's management approved a program to convert 56 pneumatic level gauges at both reactors to Rosemount 3051 DLMDs, with a review of the new equipment's performance planned for five years down the line. The conversion took place in 2000 and was the plant's first use of fieldbus digital instruments.

The next year, seven DVCs were installed. The purpose of each DVC is to receive inputs from a transmitter and calculate whether to slightly open or close the valve on which it is mounted in order to maintain the water level in the tank being monitored. Each control loop is isolated and totally independent of other systems in the plant, but each one can have a positive or negative impact on plant efficiency. STP modifications engineer Rajesh Mehta said that a key point is that the fieldbus approach eliminates the need for a separate controller in the loop. Instead, the DVC and the level sensor work together, utilizing what is typically called "control in the field."

The DVCs installed at STP are micro-processor-based digital-to-pneumatic valve-mounted instruments that rely on fieldbus communications protocol to obtain information from the DLMDs. Each DVC receives direct feedback on the valve travel position, along with data on supply and actuator pneumatic pressures. The instrument diagnoses itself, and it can also diagnose the valve and actuator on which it is mounted. This predictive maintenance information enables users to perform required maintenance on the instrument or valve only when necessary, according to Mehta.

The new digital loops have been operating flawlessly for more than eight years, providing steady flows and optimizing tank levels. The digital system is also easy to demonstrate. A worker has only to walk out to one of the tanks

equipped with a digital valve controller and look at the sight gauge. Instead of swings of up to 30 percent, the water level in the tank is where it is supposed to be, within 1/2 inch. The tighter control of levels means that feedwater temperature is maintained where it needs to be to optimize efficiency, and the 7 percent power derates that once happened at the plant are now ancient history.

Another plus is that the DVCs are mounted near the floor, making it easier for workers to access them than the old pneumatic controllers, which were installed high up near the tank in a hot environment. The DVCs are also easily tuned during planned outages by hooking up a laptop to a nearby junction box, where changes can be made to the instrument configuration. With the use of AMS ValveLink software, workers can run diagnostic tests and check the health of valves and instruments to identify issues that should be addressed during the planned maintenance period.

Maintenance costs have been driven down due to the fact that all the components in and around the heaters are lasting longer because of their stable operation. For example, the heater drain valves move less, and so they incur less wear. This means that the digital devices require less worker attention to stay up and operating, reducing the manpower needed for instrument maintenance. There is also a personnel safety factor in that it is no longer necessary to send workers into high-temperature areas of the plant in order to tune or replace pneumatic components.

Continued expansion of the digital capability is part of long-term planning at STP. More digital controls will be added as budgets permit. Mehta said that STP engineers also envision tying these independent loops together in a fieldbus informational network so that workers can monitor diagnostics on each loop from a central location.

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Remote Vision Systems

R. Brooks Associates, Inc. has been a pioneer in Audio/Visual technology for the power generation industry since 1991. Their product portfolio covers a wide range of applications from remote monitoring and remote visual inspection to communications hardware and complete solutions for network video management.

ICH-4 UPDATE - The Brooks ICH-4 (Integrated Camera Head) was on the cutting edge of innovation when released in 2009, boasting a 360° continuous pan and tilt feature, accompanied by a Brooks exclusive integrated laser pointer designed for more efficient job coordination. The most recent upgrade to the ICH-4 comes in the form of an ultra lightweight, ultra rugged PC/ABS blend plastic housing, reducing the cameras overall weight by more than 2 pounds. The introduction of the new lightweight housing reduces internal system stresses enabling a longer life while not compromising durability.

Custom Engineering

The Brooks Engineering team provides the power generation industry with unmatched experience in areas ranging from custom robotics

and delivery systems to specialty tooling and inspection systems.

Navigator Update - (Navigator featured in advertisement below) Brooks has officially released Navigator for use in their service work of industrial piping systems. Originally designed for the Department of Defense, Navigator serves as a sophisticated workhorse for the inspection, characterization, cleaning, sampling and measurement of virtually any industrial piping system. Navigator comes fully equipped with a full color PTZ camera, non-contact laser scanning measurement capabilities and multiple contingency end effectors with abilities ranging from gripping and scraping to suction. A 20 lb. payload capacity gives Navigator the unique ability to transport various other forms of NDT equipment including Eddy Current, Ultrasonics and Liquid Penetrant.

Metrology

Brooks' laser scanning methods are the most accurate and efficient method for acquiring dimensional control data about your facilities and components. From single components such as steam generators and turbines to facility piping systems and complete floor plans, Brooks can produce fully interactive 3-D

models within tolerances ranging from .001 in. to .005 in. for anything from as build documentation, component deformation to load path simulations and reverse engineering modeling.

Inspection & Retrieval Services

Brooks performs upwards of 200 inspections for the nuclear and power generation industry on a yearly basis. Our unique capabilities bring us to facilities around the world where our knowledge of power generation systems and experience performing specialty inspections can be utilized to the fullest extent. **CIS / CCM Update** - Brooks has brought image, data and foreign object tracking to the next level. Their in house developed CIS (Component Information System) and CCM (Capture Connect Mapping) give their customers the exclusive ability to view inspection data in real time, cutting characterization and decision making time to a minimum. Images and tracking data are stored on a password protected, secure server and are accessible twenty four hours a day, seven days a week. Get more information to subject matter experts and site decision makers faster and easier than ever, all while saving valuable time and money.

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Bigge Crane and Rigging Co. is manufacturing the world's largest capacity crane at radius that will forever change large scale modular construction. Bigge's Super Heavy Lift Cranes are set to be deployed at multiple nuclear power plant construction sites in 2011 and will revolutionize new plant construction.

Bigge's Super Heavy Lift Cranes have unequalled capabilities - Bigge offers the only machine in the world capable of sitting in a single location and making every large scale super lift on a single or multi unit nuclear power plant site.

Imagine the flexibility of having a crane hook capable of lifting any load, anywhere, at any time on your project.

With a Bigge Super Heavy Lift Crane...

- Multiple heavy lift machines and/or multiple locations will not be required – all locations on both units of a two unit construction site are able to be serviced by one crane, from one location
- No loss of service from crane relocation down time
- Construction erection sequences will be much more flexible
- Construction schedules can be managed in real time knowing the crane capacity and availability are not a constraint
- Excavations will no longer need to be completed and filled prior to having heavy lift equipment ready for service
- Module heavy lift pre-assembly and staging locations can be more flexible and conveniently located



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Established 1916

CRANE and RIGGING CO.

The Bigge Solution to New Nuclear Power Plant Construction - Bigge Super Heavy Lift Cranes Change the Game!

With its super high capacity and long reach, high speed performance, enhanced safety features, and ease of operation, one Bigge Super Heavy Lift Crane, set at one location changes the approach to new nuclear plant construction.

The enormous Super Heavy Lift Crane product line is easily scaled to meet the size and lifting capacities required for every nuclear plant manufacturer or site specific location imaginable.

Bigge's new Super Heavy Lift Cranes significantly improve new nuclear power plant construction schedules and lower cost –

- No crane relocations or multiple heavy lift cranes
- Long boom and high capacity for significant excavation setback
- No boom or counterweight reconfiguration required
- High speed hoisting, booming and slewing
- Exceptionally low ground bearing pressures and low cost foundations
- Fast and cost effective assembly and disassembly
- Minimal site real estate requirements/minimal site obstruction
- State-of-the-art Safety features
- Robust structural design for operation in high wind conditions
- Flexible real time management of schedule and construction sequence
- Direct hook access to lay-down/module preassembly locations
- High crane utilization for cost effectiveness

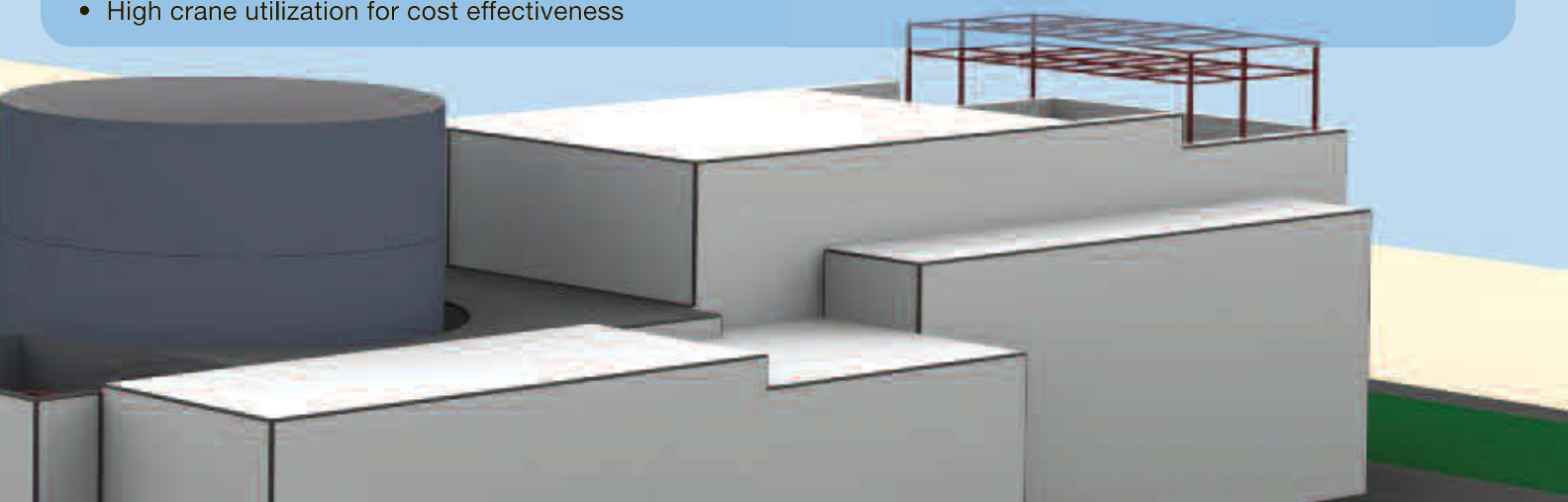
Off the Drawing Board and Into Production!

Unlike others whom have lesser machines on the “drawing board”, the first two Bigge Super Heavy Lift Cranes are currently in production and are scheduled to be in service constructing the next generation of nuclear power plants in 2011.

The Bigge Super Heavy Lift Cranes are currently designed in two very flexible models called the Bigge125D and Bigge180D, which can be scaled up or down to meet specific applications. Both the Bigge125D and Bigge180D models can be configured to meet the needs of all single or multiple unit nuclear power plant general arrangements.

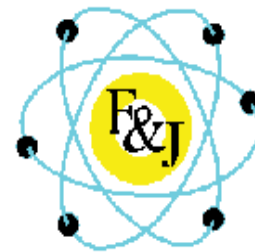
Sample load capacities of Bigge's Super Heavy Lift Crane.

Radius (Feet)	Capacity (Short Tons)	Radius (Meters)	Capacity (Tonnes)
240	4,000	73	3,640
640	836	195	760
790	500	241	455



Please contact:
Bigge Crane and Rigging Co.
Pete Ashton, Vice President
+1 510-638-8100
biggsolutions@bigge.com

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F&J SPECIALTY PRODUCTS, INC.*The Nucleus of Quality Air Monitoring Programs***F&J Customer Profile**

F&J is seeking customers with a passion for scientific excellence illustrated by their desire to achieve the greatest possible accuracy in their air sampling and airflow calibration measurements.

F&J wants customers that require rugged, reliable and technologically advanced instruments that will provide scientifically and legally credible measurement results while at the same time providing the customer with monetary savings by reducing expensive manpower required for the operation, maintenance, calibration and manual data crunching involved with the use of traditional air sampling and airflow calibration systems.

The ideal F&J customer prefers to purchase products implementing current technology which are user friendly and posses many features that automate the air sampling phase of the pollutant measurement process. Several of these user selectable features are as follows:

- 1) Automatic flow control and automatic shut off
- 2) Digital display of flow and volume values corrected to a reference temperature and pressure (4 options available)
- 3) RS232 port and data storage options
- 4) Fabrication to CSA, UL and CE electrical safety standards

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— Air Sampling Systems

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- ✓ Portable and Fixed Station Low Volume
- ✓ AC/DC Emergency Response Air Samplers
- ✓ Tritium Collection Systems
- ✓ Personal Air Samplers

— Airflow Calibration Systems

- ✓ Digital Venturi Calibrator
- ✓ Digital Laminar Flow Element Calibrator
- ✓ Bubble Calibrator
- ✓ Digital Mini-Calibrator

— Consumables

- ✓ Filter Media (glass fiber, cellulose, membrane)
- ✓ Radioiodine Collection Cartridges (charcoal and silver zeolite)

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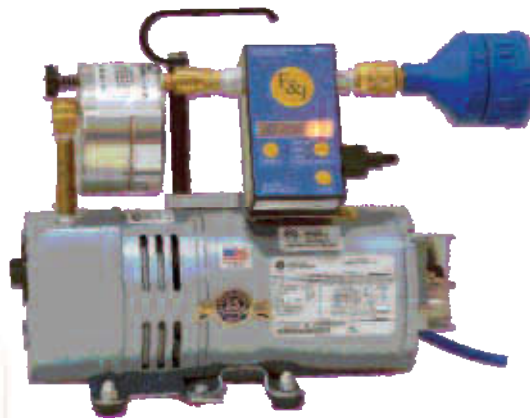
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Over the past few years **NETZSCH** has become the leading supplier of thermal analysis and thermophysical properties instrumentation to the nuclear industry. Based in the Bavarian town of Selb, Germany, **NETZSCH-Geraetebau GmbH** builds instruments ideally suited for rigorous nuclear applications. Our instruments are reliable, robust, accurate, and easy to use. All of these attributes are necessary for instruments operating in harsh environments such as gloveboxes and hot cells. The modular design of our instruments makes them ideally suited for incorporation into these environments. Finally, the costs of operating in hot cells and gloveboxes are extremely high, making downtime critical. Our exemplary global service is therefore a key reason for our success in the nuclear field.

NETZSCH offers a broad line of analytical instruments to measure thermophysical properties, both transport and thermodynamic. Transport properties include thermal conductivity, electrical resistivity, and thermal diffusivity. Thermodynamic properties include specific heat, transportation energetics, and thermal expansion (bulk density).

NETZSCH provides instruments to measure:

- thermal conductivity & thermal diffusivity (laser flash technique - LFA)
- solidus & liquidus temperatures, transition energetics (differential scanning calorimetry – DSC)
- specific heat (LFA and DSC)

- thermal expansion (Dilatometers)
- mass change & evolved gases (thermogravimetric analyzers coupled with gas analyzers – TGA-MS/FTIR)

NETZSCH has just published a new comprehensive booklet on thermal characterization of nuclear materials detailing methods, instrumentation, and applications. Application examples shown include:

- thermal conductivity of oxide & carbide ceramics, actinide nitrides, and uranium nitride
- specific heat of graphite
- heat flow in a zirconium alloy
- thermal expansion of nitride ceramics & POCO graphite
- mass change of hyperstoichiometric UO_2
- thermal diffusivity & specific heat of a waste glass
- evolved gas measurement on surrogate waste materials
- densification of CeO_2
- O/M ratio of CeO_2 during sintering
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From the beginning of nuclear power technology, Dyson has supplied large diameter domestic fasteners, forgings and machined parts to nuclear power plants across the globe.



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By performing machining in-house, Dyson is able to streamline production, giving its customers better lead times, higher quality and lower costs.

Dyson has broad in-plant capabilities including open or closed die forging, heat treating, machining and strict quality control. By controlling every facet of the manufacturing process, Dyson can assure you of unsurpassed quality.

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Dyson has some of the most modern heat treating equipment in the industry.

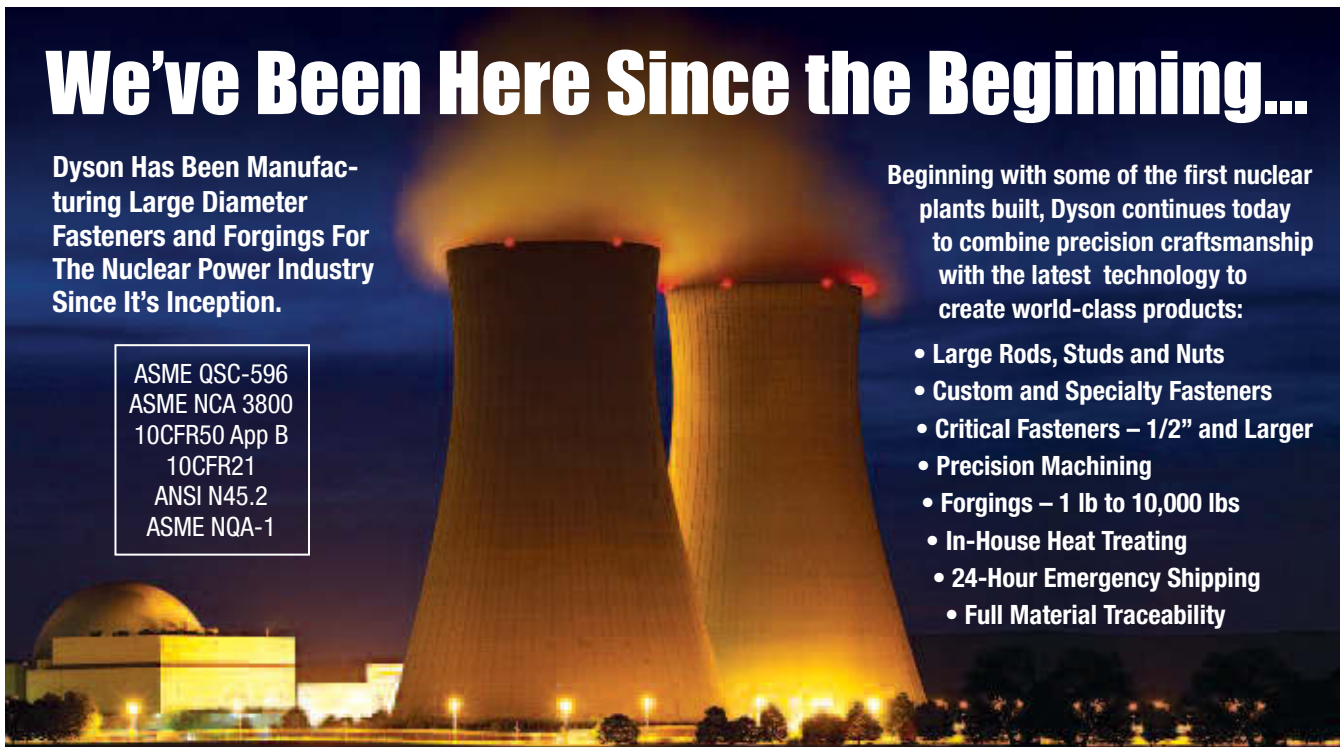
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Dyson Has Been Manufacturing Large Diameter Fasteners and Forgings For The Nuclear Power Industry Since It's Inception.

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Cut Protection – Engineered Softeners

CornerMax® pads are shown at right. The pad creates a “tunnel” of cut protection – a no-touch zone. Therefore, the edge does not come in contact with the pad or sling. Note that the sides of the pads must be completely supported in order to create and maintain the “tunnel”.



CornerMax® sleeves (left) may look like traditional protection sleeves, but ours are made of Dyneema® fiber that is specially woven to provide cut protection for a variety of edges and surfaces. Most commonly used sleeve material cannot stop an edge from cutting the sleeve and possibly the sling too. Ask your Slingmax dealer for test results.

SLINGMAX®
RIGGING SOLUTIONS

A New Day is Dawning in the Simulation Industry

As plans to develop Generation III+ and Generation IV nuclear power plants increase around the globe, the use of simulation is changing to meet new industry demands. At least at one such simulation company is GSE Power Systems, Inc. (GSE), based in Baltimore, Maryland.

The real-time simulator has become an integral part of the plant design process. This multi-faceted tool provides a Human Factors Engineering (HFE) platform for new digital control rooms, a design and validation platform for Digital Logic and Controls and a dynamic engineering tool for systems design. What results is a more efficient plant design that is proven effective and safe.

Human Factors Engineering

New reactor designs necessitate a rethinking of the current control room operations. New opportunities for task automation and cognitive workload management are challenging the traditional control room design. Significant improvements in communication, instrumentation and control technologies over the past 30 years will allow individual operators to monitor and manage huge amounts of data without reducing reactor safety and security. For Small Modular Reactors, control room staffing levels for multiple reactors are a significant factor in the plant economics.

GSE is working with several new reactor designers to conduct HFE evaluations and usability studies, develop navigation techniques and conduct the testing required to apply for exemption from the U.S. Nuclear Regulatory Commission's licensed operator staffing requirements.

HFE for new reactor designs includes developing methods for information display, configuring the screens for multiple operators and testing for operator comprehension that will ultimately establish reasonable baseline metrics for such things as cognitive workload and situation awareness.

Simulation rises to the challenge of new reactor design and the changing face of the nuclear industry.



Simulators used for HFE provide a valuable demonstration capability for new design functionality for regulators and plant designers.

Verification and Validation (V&V)

Customers are rapidly gaining added value from their simulation investment with V&V. Simulators are now being used to verify and validate new control room designs and make a more efficient transition from hard panel control rooms to new Distributed/Digital Control Systems (DCS). Plant control strategies, new operating procedures and training materials are all being verified through the use of high-fidelity simulation models.

On average, GSE simulators find well over 100 DCS control strategy, implementation, or graphics interface related issues by testing the DCS with the interactive plant models of the simulator.

Advanced Models

The bar has been raised for the fidelity of real-time simulators due to the need for advanced models to provide accurate, predictive results based on design data. Simulators can now run real-time versions of advanced models including engineering codes such as RELAP5-3D®, S3K and the MAAP (Modular Accident Analysis Program). GSE leads the industry with the implementation of

its RELAP5-HD™ technology for nuclear reactor thermo-hydraulic effects. Further, the latest version of GSE's JTopmeret™ modeling tool not only provides advanced modeling of balance of plant systems, but also includes Liquid Metal and Advanced Gas variants to support the development of the next generation of nuclear plant designs.

Workforce Development

Traditionally, a significant part of the U.S. nuclear power operating workforce was trained by the U.S. Nuclear Navy. That feedstock of trained and proven operators has shrunk. Considering that a utility will spend over half a million dollars to license a single operator, the cost of failure is tremendous.

Utilizing GSE's interactive visual training simulator technology, VPanel™, and the Operator Jump Start Program, operator candidates can be screened for their ability to complete the Utilities Licensed Operator Program before entering. With the national average throughput at 60%, this screening ability can SAVE MILLIONS in training expenses and guarantee that the necessary number of new operators needed to cover attrition or to staff new builds will be trained and ready when needed.

GSE Power Systems, Inc. will continue to adapt, grow and improve its ability to provide superior engineering and training solutions to meet the changing demands of the nuclear industry.

*RELAP5-3D® is a product of Idaho National Laboratory

S3K is a product of Studsvik

MAAP is a product of Fauske & Associates, LLC

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For over 40 years, GSE Power Systems, Inc. has been the world leader in real-time simulation and training solutions for the nuclear industry.

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Teledyne Brown Engineering, Inc. (TBE) is the company to turn to for Nuclear Systems Engineering and Manufacturing. Headquartered in Huntsville, Alabama, with operations and offices throughout the United States and abroad, TBE is an industry leader in Engineered Systems, providing full life-cycle systems engineering, integration, manufacturing, and technical/management services. TBE provides innovative and proven systems engineering, advanced technology application, software development, and manufacturing solutions to military, environmental, commercial nuclear, and Department of Energy (DOE) customers.

TBE personnel have unique experience with the regulatory requirements such as 10 CFR Part 70, 10CFR50 Appendix B, Domestic Licensing of Special Nuclear Material, and the Standard Review Plan (SRP) for the Review of a License Application for a Fuel Cycle Facility (NUREG-1520). Our manufacturing facilities operate under an approved NQA-1 Nuclear Quality Assurance Program.

TBE's Chemical, Biological, Radiological and Nuclear (CBRN) work dates back to 1965, when the company began providing a full range of radiochemistry laboratory services to research facilities, nuclear power plants, and the DOE. During the past four and a half decades, TBE has continually expanded its technical CBRN Systems Engineering capabilities. Teledyne Brown has manufactured hardware for the nuclear industry for over 35 years. The company has delivered thousands of canisters, fabricated to ASME nuclear quality standards that are used for the storage of high-level radioactive wastes. We have also manufactured Experiment Boiling Water Reactor fuel square bundle tubes for the storage of nuclear fuel. TBE supports the energy industry by manufacturing Gas Centrifuge Service Modules (GCSMs) for the American Centrifuge Project, a key component of a gas centrifuge uranium enrichment plant that will supply fuel for commercial nuclear power plants. TBE is also developing and producing Gas Turbine Generators (GTGs) for use as an emergency backup power supply for use in multiple nuclear power plants.

Teledyne Nuclear is a family of companies that work together to provide solutions to the Nuclear Market. Teledyne Nuclear offers engineering, design, manufacturing, radiological analysis and services, analytical equipment, specialized equipment and analysis, MOV/AOV testing, hydrogen generators, containment hydrogen monitors, electrical containment penetrations, pressurizer heater cables, RPI/CRDM cables and connectors, and precision flow instruments. TBE is the Engineered Systems hub of this group serving numerous customers, including commercial nuclear, DOE, Navy Nuclear, and NASA.

Teledyne Brown and its family of nuclear experts are ready to fulfill your nuclear needs. Contact us at: **256-726-1385** or at www.teledynenuclear.com

Engineered Heavy Lift Rigging and Transport Solutions

In May 2009 Sarens acquired Rigging International (RI) of Alameda, California, USA. Over its forty year history, RI has led the nuclear heavy lift industry in executing safe, complex and successfully engineered nuclear heavy lifting and transportation solutions in new and existing facilities in the USA, Japan, Taiwan, Korea and Brazil.

Going forward into the Nuclear Renaissance, the combined and enhanced capabilities of the Sarens Group and RI offer nuclear clients worldwide support.

BACKGROUND

As one of the largest heavy lifting specialists in the world, the Sarens Group can provide global Engineered Project Heavy Lifting and Transportation solutions and services for the nuclear and fossil power, process and petrochemical industries.

With headquarters in Wolvertem, Belgium and offices worldwide, Sarens has been active in crane rental and heavy lifting and special projects since 1955. They operate in 33 countries, with over 2,700 employees, 1,400 cranes ranging in capacity from 50 to 3,200 Tonnes, a fleet of 1,200 axle lines of Self-Propelled Modular Trailer equipment and various alternative lifting and skidding equipment systems.

Sarens successfully performed major module heavy lifting operations at Sizewell "B", the last

new nuclear plant built in the United Kingdom; recently completed heavy lifting operations at Olkiluoto 3 Nuclear Power Plant in Finland and are contracted to perform similar heavy lift services at the Flamanville Nuclear Power Plant in France.

In addition to these, Sarens is currently providing crane services and engineering support to UK decommissioning operations at Sellafield and other locations.

MODULARISATION

Adapting to the increasing sizes and weights of modular designs for construction - particularly in the Petrochemical, Offshore, and Nuclear and Fossil Power industries - Sarens have become a world expert in dimensional load engineering, providing integrated solutions for worldwide delivery and installation of process modules - some as large as 13,000te installed to heights of 40m and more.

THE FUTURE

We are ready to meet future requirements of the nuclear industry. We have commenced production of the next phase of super heavy lift cranes, repositioned ourselves through strategic acquisition and introduced Safety Case Management to our team.

The Sarens Nuclear Division can be called upon at all stages of project execution, from

Sarens' SGC-120 Super Heavy Lift Crane



Sarens Proudly Introduces the SGC 120 Super Heavy Lift Crane

The SGC 120 is the only Third Generation, 120,000 TeM crane (3,200 metric ton lifting capacity) in production, designed to accommodate future modular heavy lifting requirements for refinery, petrochemical, offshore platform and third generation nuclear plant components.

preliminary evaluation and FEED through engineering and execution.

For further information about RI's and Sarens' Nuclear Services, please contact Vic Rollandi at +1 (510) 865-2400 or Hendrik Sarens at +32 52 319 319.



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Over 40 Continuous Years as a Nuclear Safety Related Fabricator

SSM Industries, Inc. (formerly Schneider Sheet Metal) is the largest Safety Related HVAC designer / fabricator / supplier / installer in the United States. SSM entered the nuclear industry over forty (40) years ago as the metal fabrication division of Schneider Power.

The Power Division of SSM Industries Inc. provides design, qualification, fabrication, and installation support to utilities in today's nuclear market. Over \$100 million of safety and non-safety related HVAC ductwork and components has been designed, tested and fabricated by our existing personnel at our facility. We have supplied equipment to virtually every Commercial Nuclear plant in the United States, as well as Nuclear Plants worldwide.

We have developed a complete Nuclear HVAC product line specifically addressing industry issue such as:

- Bubble tight dampers with "Double Acting Pivot Arms" to assure bubble tight performance for 40+ years
- Four different Tornado and High Energy Line Break (HELB) damper designs to assure correct product design is used
- Patented UL rated 3 hour Dynamic Fire Dampers to allow penetrations to be completely sealed

SSM Industries fabricates and installs an average of over 5 million pounds of ductwork a year. 80% of that ductwork is for close tolerance, high quality and regulated applications such as Commercial Nuclear Power Plants, Department of Energy (DOE) facilities, laboratories and hospitals.

SSM maintains a complete 10 CFR 50 / NQA-1 (including all Supplements) Quality Assurance Program. SSM is listed in the NUPIC data base as a pre-qualified vendor to supply Safety Related HVAC equipment and services, including the commercial dedication of components fabricated by others, to all of the commercial nuclear plants in the United States.

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 - ☑ Backdraft
 - ☑ Balancing
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 - ☑ Control: Manual, Electric & Pneumatic
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 - ☑ Fire & Smoke
 - ☑ Guillotine
 - ☑ HELB
 - ☑ Isolation
 - ☑ Tornado

• SPECIALTY FABRICATIONS

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- ☑ Cable Trays & Covers
- ☑ Control Cabinets
- ☑ Doors: Access, Heavy-Duty & Blast
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- ☑ Filter Boxes
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- ☑ Sealed Enclosures
- ☑ Seismic Supports
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- ☑ Heating Coils
- ☑ Heat Exchangers
- ☑ Tanks

- ☑ Ductwork & Supports
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- ☑ Flexible Connections
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- ☑ Sleeves

• RADIATION SHIELDING

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• MATERIAL PROCESSING

- ☑ Material Bins, Tanks & Chutes
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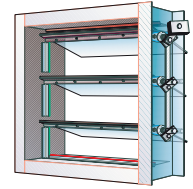
➤ SERVICES ◀

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- ☑ Installation Supervision & Craft
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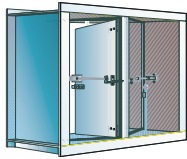
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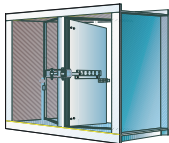
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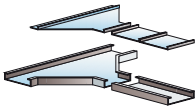
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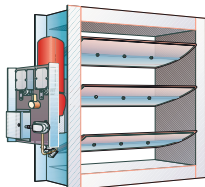
TORNADO DAMPER



HELB DAMPER



CABLE TRAYS AND COVERS

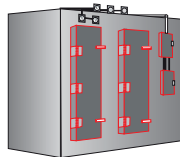


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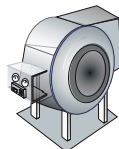


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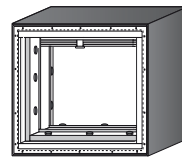
Grilles, Registers & Diffusers



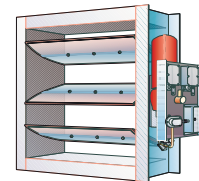
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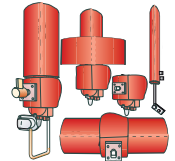
COMPLETE FAN ASSEMBLIES
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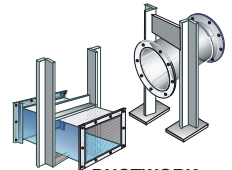
INTERNAL EXPANSION AIRFLOW RATED 3hr FIRE DAMPER



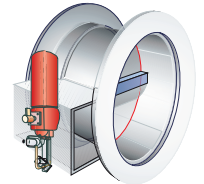
CONTROL DAMPER



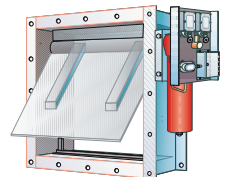
Actuators Pneumatic, Electric, & Electrohydraulic ("fail safe")



DUCTWORK & SUPPORTS



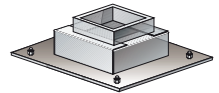
BUTTERFLY DAMPER



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How To Tackle Tough Bolting Problems:

Multi-Jackbolt Tensioners prove to be an ideal bolting alternative for nuclear applications.

Critical large-diameter bolting applications have traditionally been difficult to safely and accurately tighten. The problem is that while the strength of a fastener increases with the square of its diameter, the torque required for tightening increases at an even greater rate – to the third power. Because of this, standard nuts and bolts larger than one inch in diameter cannot be effectively tightened with hand tools.

Nuclear bolting applications in particular can face tough challenges with time restrictions and radiation exposure to workers. Various methods have been introduced to handle this problem – stud heaters, hydraulic wrenches and nuts, and hydraulic tensioning. Depending on the application, these can be used with success, but these methods present some of their own challenges and may not be effective in certain circumstances.

Another solution to the inherent challenges of large-diameter bolting is the Multi-Jackbolt Tensioner (MJT). Instead of having to generate enough torque to tighten an entire hex nut, MJT's break those torque requirements

down by utilizing a series of hardened jackbolts threaded through the body of a round tensioner. This enables the user to generate the needed clamping load while using only hand or air tools for installation and removal.

This is a huge advantage in that you no longer need cumbersome or expensive tooling to tighten the joint. Worker safety is greatly increased, and also MJT's boast an accuracy of +/- 5% when calibrated torque wrenches are used. Time savings is another advantage of MJTs. Even though MJT's have several jackbolts to tighten on each tensioner, they have reduced installation times compared to other methods. The use of air tools also greatly speeds up the tightening process (Fig. 1), and in many applications multiple workers can be used. Here's how they work:

To install, you first place the hardened washer over the stud or bolt and then thread the tensioner on, hand tight. With simple hand tools, the jackbolts are tightened uniformly. Turning the jackbolts creates a thrusting of the nut body away from the washer surface, creating a large bolt

tension and imparting a stretch on the main thread. MJT's flex slightly, adding elasticity to the system which helps keep the joint tight, even when there are temperature changes and fluctuating



Figure 1: Multi-Jackbolt Tensioners only require hand/air tools to install or remove.

loads. Common problems such as stud seizure and thread galling are greatly reduced as MJT's are loaded in pure tension.

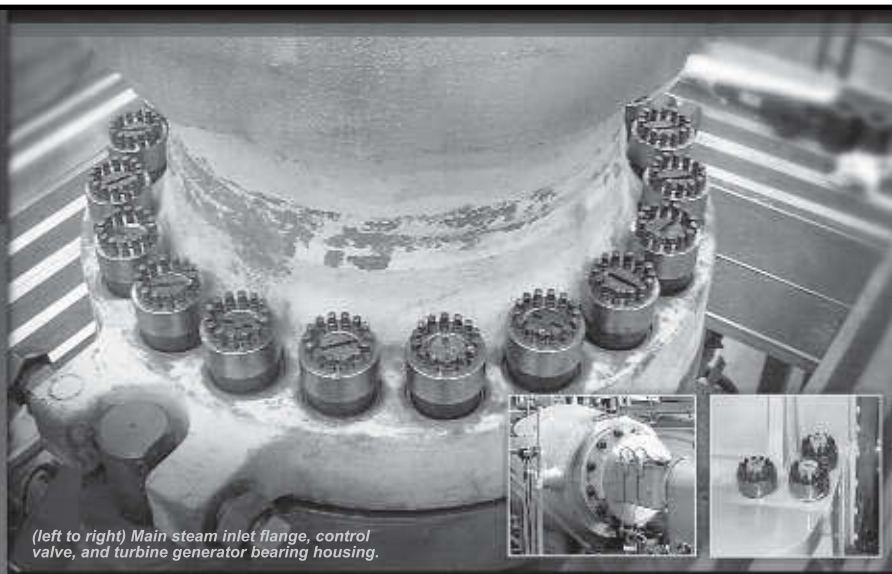
Multi-Jackbolt Tensioners offer a bolting alternative that may be an ideal fit for your applications. For more information visit www.superbolt.com.

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(left to right) Main steam inlet flange, control valve, and turbine generator bearing housing.

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Using state-of-the-art micro-processor-based technology, OTEK equipment is designed to replace outdated electro-mechanical and analog instrumentation, performing critical as well as customer-specific functions. Form-and-fit replacements for a variety of OEM's, many OTEK units can be used as a stand-alone com-

ponent or as a remote display for PLC, DCS, and SCADA. Easy to read, accurate, reliable, and featuring contemporary design, OTEK units meet standard MMI, HFE and HSI requirements.

Next to a full range of single, dual, and triple externally powered bargraphs, OTEK also offers a series of AC-signal powered as well as loop powered meters, which provide for ease of installation and substantial cost savings (wiring!). Many units are nuclear qualified and meet various IEEE / ANSI standards and EPRI guidelines

(EPRI TR-102323).

O TEK is thoroughly familiar with control room requirements of nuclear power plants. Over the years OTEK has demonstrated its ability to meet customers' special needs, whether these involve unique operating modes, custom housings or "open frame" units, for example. A long list of satisfied customers is our testimonial.

General features of OTEK digital bargraphs include, but are not limited to:

- Automatic tricolor with programmable limits
- 51 or 101 segments
- 4 or 6 digit display with bright LEDs or backlit LCDs
- Isolated RS232/422/485 serial I/O and USB
- Multiple analog inputs/outputs including PID
- Optional relays
- Math functions, X-Y tables and polynomials (9th)
- Optional EMI/RFI shielding
- All metal construction.

The high quality and reliability designed into its products allow OTEK to grant (an industry-unique) Lifetime Warranty.

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Miller Pipeline Corp.

Whether it's circulating water or safety related piping, Miller Pipeline has a cost effective solution that can be installed quickly and professionally. The flagship of Miller's service offerings in nuclear power plants has been our internal joint sealing product, WEKO-SEAL®, which is used to provide corrosion protection from brackish water or terminate troublesome leaks at joints.

The WEKO-SEAL is a cost effective solution that provides outstanding long-term results in part because of the installation techniques we use when placing them. Their design and the physical properties of the seal itself, which is made from a flexible EPDM (Ethylene Propylene Diene Monomer) rubber compound is held in place with hydraulically expanded stainless steel retainingbands that ensure a bottle tight installation.

The WEKO-SEAL® is installed via man-entry in pipelines with penetration distances in excess of

1,000 feet. The WEKO-SEAL comes in a variety of widths but can also be used for continuous coverage of any distance through our Sleeve/Seal capabilities.

In addition to the WEKO-SEAL, we offer a cured-in-place pipe (CIPP) that is used to reline an existing pipeline of virtually any size or configuration.

The resins used in our MPC ToughTube® CIPP can be designed to meet specific service requirements. Whatever the need might be, or whatever product used, our technicians work closely with staff engineering personnel to formulate and execute all desired outage objectives.

For over 25 years, Miller Pipeline Corp. has served the nuclear industry by providing inspection services, coating repairs, ultrasonic testing, internal joint sealing corrosion prevention, maintenance, video

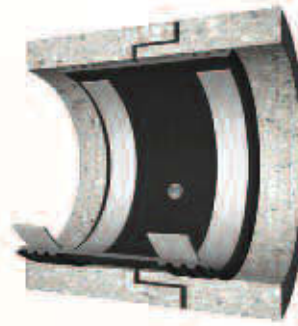
inspection and pipeline cleaning, pipe relining and replacement and more. Miller Pipeline is an industry leader in a number of various trenchless technologies which ensure little to no disruption to above ground facilities or operations. All of Miller Pipeline's technicians are confined-space trained and certified to comply with all requirements of 29CFR 1910.146 Federal OSHA's Permit Required Confined-Space Regulations. Our technicians can quickly gain unescorted access and are able to perform all required activities with short notice.

At Miller Pipeline we understand the stress of refueling outages and view our role as an extension of plant personnel to achieve assigned tasks, on time and in a professional and safe manner.

For additional information regarding Miller Pipeline Corp. please visit our website at millerpipeline.com or call us at 800-428-3742.

Specialized Services

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Cross section model of WEKO-SEAL®

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Evolving to Serve You Better

We offer nuclear power customers a broad spectrum of high-level application solutions from a single point of contact. We work to bring superior products, services and the expertise you require. Choose from a variety of instrumentation, sold under the Thermo Scientific brand, to optimize your process.

Our products and services help power producers satisfy regulatory and safety requirements. They help customers achieve maximum efficiency and profitability to meet demand while generating low cost, clean and reliable power. Our integrated solutions assist you in exceeding customers' demands while delivering peace of mind.

Integrate Thermo Scientific products throughout your power process (see Fig. 1). Look to one company that can offer you solutions with a depth of products to fit your application and your environment throughout your operations.

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- Service and Training

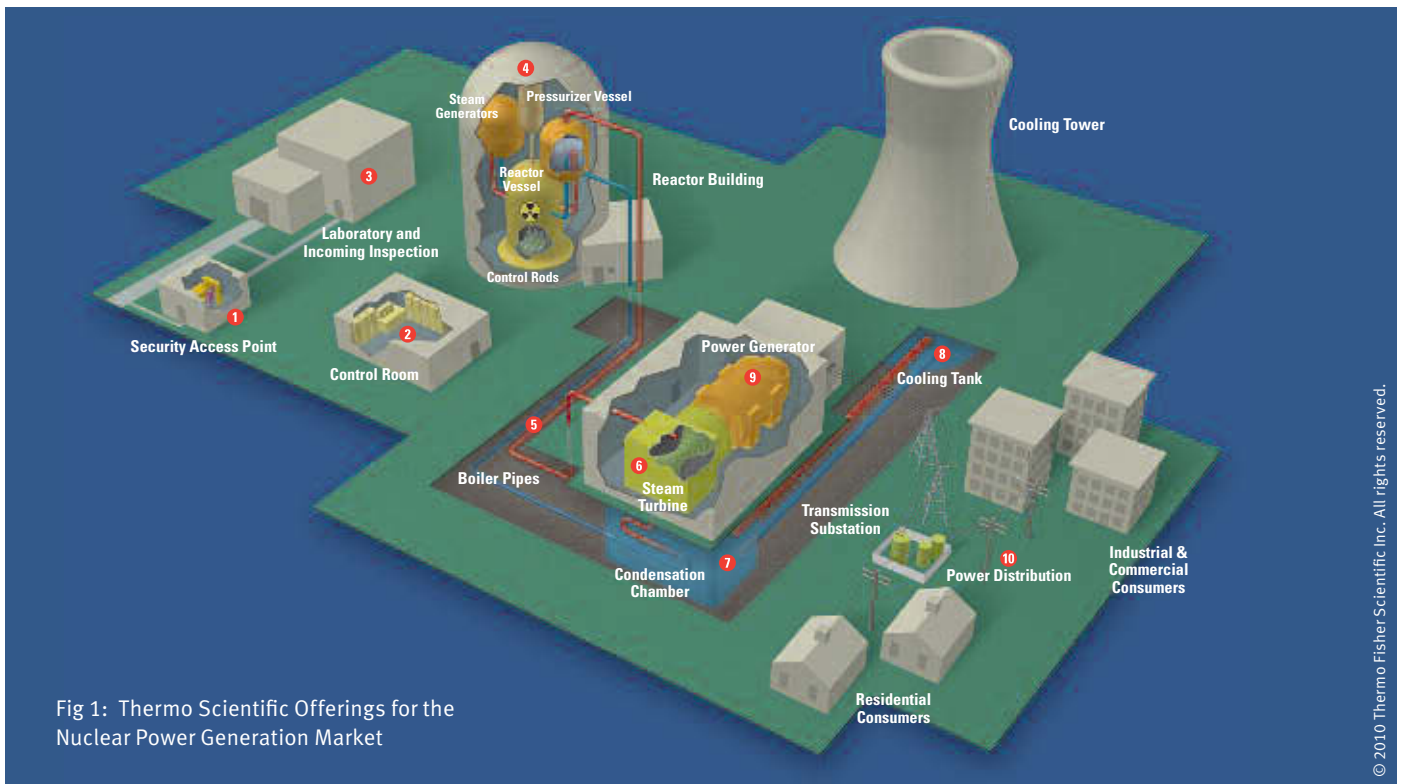


Fig 1: Thermo Scientific Offerings for the Nuclear Power Generation Market

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Thermo Scientific Products in Nuclear Power Generation

1 Security Access Point

- Radiation measurement and protection monitoring

2 Control Room

- Radiation measurement and protection monitoring
- Data acquisition, monitoring and management
- Alarm monitoring
- Neutron flux monitoring
- Reactor protection systems
- Audible count rate drawers
- Boron dilution monitoring
- Thermal margin monitoring
- Class IE qualified safety-related cabinets
- Class IE qualified power supplies
- LCD digital meters

3 Laboratory and Incoming Inspection

- Radiation measurement and protection monitoring
- Data acquisition, monitoring and management
- Weld and alloy verification
- Informatics

4 Reactor Building

- Radiation measurement and protection monitoring
- Data acquisition, monitoring and management
- Level measurement
- Radiation hardened solid-state camera (black/white or color)
- Ex-core neutron flux detectors for source range, intermediate range and power range reactor power monitoring
- Class IE safety-related post-accident qualified cable assemblies
- Audible count rate during shutdown maintenance periods
- Installed gamma area monitors
- Boric acid storage monitoring
- Water analysis monitoring

5 Boiler Pipes

- Cooling water and condensate flow measurement

6 Steam Turbine

- Radiation measurement and protection monitoring
- Data acquisition, monitoring and management

7 Condensation Chamber

- Data acquisition, monitoring and management
- Level measurement

8 Cooling Tank, Cooling Tower and Reservoir

- Data acquisition, monitoring and management
- Influent and discharge flow measurement
- Density and level measurement
- On-line water analysis

9 Power Generator

- Data acquisition, monitoring and management

10 Power Distribution

- Data acquisition, monitoring and management



Reducing your overall cost of ownership while setting a higher standard for personnel contamination

The protection of your employees from radiation contamination is always a concern. How do you reduce workload and scan times while increasing detection capabilities? Easy - the new Thermo Scientific iPCM12 Installed Personnel Contamination Monitor.

Our QuickScan technology provides fast and accurate counting, while the 21 detectors arrayed in a sculpted geometry design monitor body, hands and feet. The monitor allows access to all detectors from the front and the identically-sized detectors, plus a purged spare, reduce down-time and cost for maintenance.

Built upon the breakthrough electronics of the Series 12 products, the new iPCM12 is easy to operate, maintain, and monitor.

For more information on the iPCM12 and the full line of Thermo Scientific radiation detection products:

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Thermo Scientific iPCM12
The Series 12, next-generation installed personnel contamination monitor

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Anvil Engineered Pipe Supports can trace its pedigree to the mid 1800's and its history as Grinnell Corporation through the nuclear power building activity of the 1970's, and since 1999 as Anvil EPS.



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1st - Nuclear pipe support company to qualify as an ASME Material Supplier

1st - ASME NPT Stamp



N-3054

1st - ASME NS certificate of accreditation

1st - LCDS Package for ASME NF qualified supports



N-2802

1st - DRS Package for ASME NF qualified supports

1st - ISO 9001 Certificate of registration in the U.S.

1st - Hydraulic snubbers to meet new ASME QME/QDR requirements.

Leadership

- Since 1974 our people have served more than 200 membership years on six nuclear related ASME Section III committees - We currently have 5 members on four committees.
- Our engineering and technical staff have more cumulative nuclear experience than any of our competitors - Resulting in worldwide leadership in products, engineering innovation and customer service.
- Since the 1950's Anvil has maintained continuous membership on MSS-SP-58, Manufacturers Standardization Society, Standard Practice for Pipe Hangers & Supports
- We comply with ASME NQA-1, quality assurance for nuclear facility applications
- Five individuals maintain RPE Certification in Seven (7) states in the US and the Province of Ontario, Canada



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XtendaCam Tilt with Non-slip Stabilization Legs

XtendaCam®

View live and record images from areas up to 25 feet away with the XtendaCam Motorized Tilt and Zoom Pole Camera Inspection System. Inspect out of reach areas in a matter of minutes by extending the 16' lightweight carbon composite pole-scaffolding, cranes and aerial lifts are no longer needed, dramatically speeding up the inspection process! The color camera is equipped with white LED illumination, 320 degree motorized tilt and 40:1 zoom. View storage facilities, fire walls, snubbers, behind large objects, around corners and inaccessible areas with XtendaCam.



PTZ462 with LED Illumination

PTZ Systems

iShot Imaging's industrial Pan, Tilt and Zoom Camera Systems can navigate through openings as small as 3 inches! They are capable of withstanding

punishing conditions while delivering the high quality color video inspection footage you require. Different mounting and delivery options allow these systems to adapt to a variety of applications such as tank, pipe and vessel inspections. Accessories include CCU, optional LED, IR, flood or spot illumination, cable lengths up to 600 feet and a motorized PTZ Sony block camera capable of reaching up to 36x optical zoom. Submersible and HD models now available including display and recording accessories.



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Design and specifications subject to change without notice.

NuScale: Re-thinking Nuclear Power

By Paul Lorenzini, Chief Executive Officer
and Jose Reyes, Chief Technical Officer

Using small nuclear reactors to generate power commercially is not a new idea. But until just a few years ago, it was the common view that they were best deployed in developing countries and locations with limited infrastructure. We thought otherwise.

Wouldn't it make sense, we asked ourselves, to design a plant housing a cluster of small, modular reactors? Such a plant would be useful in both emerging and large markets. In a standard configuration of 12 modules producing 540 MWe, it would be suitable for large utility applications. Or, it could be scaled up over time with the addition of modules as loads grew. Other advantages seemed achievable:

- Lower up-front cost and less risk associated with financing;
- Ability to pre-fabricate modules and deliver them to site by truck, rail or barge;
- Reliability inherent in multiple, rather than single, turbine shafts;
- Higher load factors due to sustained operation during re-fueling;
- Safety features made possible by a smaller, naturally cooled reactor design.

The more we thought about it, the longer the list grew. So, taking a design that had been developed at Oregon State University (OSU) on a federal grant issued in 1999, our team set out to re-think the nuclear power equation in a way that would hit a sweet spot in the evolving world energy market. The result is the NuScale power plant.

We realized very early that getting the first plant built would be the big hurdle. The urgency of climate change mitigation on the international agenda refocused attention on nuclear energy. But getting a plant up and running would require a high level of confidence


in the technology. Having a fully integral system test facility would bridge the gap between computer models and the actual operation of hardware.

As part of the original research, a one-third scale, electrically heated, full pressure and full temperature test facility was developed at OSU. NuScale acquired use of the facility through a technology transfer agreement with the university. We have contracted with OSU to modify the facility to incorporate and evaluate design improvements. The facility is the only one of its kind, and it will greatly enhance our movement through the Nuclear Regulatory Commission's certification process. OSU brings to the licensing effort experience in design certification testing for the Westinghouse AP600 and AP1000 reactors.

Safety, of course, will be a major focus. Existing plants are already very safe, but the NuScale plant eliminates by design modes of failure that must be addressed in larger plants. Tests conducted at OSU confirm the effectiveness of the NuScale plant's natural convection cooling system. There is no scenario we tested in which the core becomes exposed (loss of cooling accident) or temperatures and pressures exceed design limits.

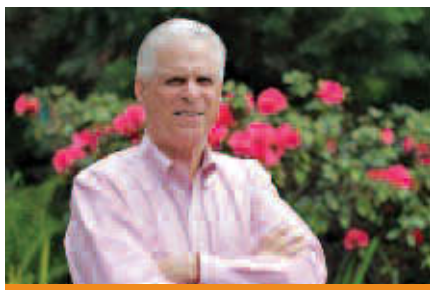
So what's the next step for NuScale? Getting the first plant built is the big hurdle, and we are preparing an application for design certification by the NRC. We plan to submit it in 2012 and hope to complete the process in 2015. But given the maturity of the design, the NRC's familiarity with light water reactors, and the testing we have done, we expect to have customers lined up long before a plant goes into operation.

To experienced hands in the nuclear industry, the renaissance of interest in nuclear power is gratifying. This spring, Greentech

Media named NuScale Power as one of its Top 50 Greentech Startups. The NuScale reactor was also featured in the March issue of National Geographic, which focused on what we call "the economies of small." All systems are "go" for putting a project on line within a decade and possibly as early as 2018. The NuScale plant uniquely combines safety, scalability and affordability in advancing the science of nuclear energy into the 21st century. 



SCALABLE LWR DESIGN – NuScale Power has designed an NSSS and nuclear power plant that offers the benefits of nuclear power but takes away the issues presented by installing large capacity. The NuScale design is for a modular, scalable Light Water Reactor nuclear power plant system. A NPP using NuScale's standardized design produces 540 MWe powered by 12 NuScale integral PWR modules. Each NuScale module produces 45 MWe and has its own combined containment vessel and reactor system, and its own designated turbine-generator set. NuScale power plants are scalable – additional modules are added as customer demand for electricity increases. These multi-module plants are highly reliable – one unit can be taken out of service for refueling or maintenance, or a new unit added, without affecting the operation of the others.



PAUL LORENZINI, CEO of NuScale Power, holds a Ph.D. in nuclear engineering from Oregon State University and a J.D. from Loyola University in Los Angeles.



JOSE REYES, CTO of NuScale Power, holds a Ph.D. and M.S. degrees in Nuclear Engineering from the University of Maryland, and a B.S. degree in Nuclear Engineering from the University of Florida.



“NuScale Power’s technology is elegantly simple. The benefits run from safety to economics.”

Dr. José Reyes, Jr.
NuScale Chief Technology Officer

Innovative thinking led to NuScale’s modular, scalable nuclear power technology. Designing for greater safety, performance and economics, NuScale builds upon the success of light water reactor technologies that have been working safely for decades in 400 nuclear plants around the world. Through testing in a state-of-the-art facility, NuScale has demonstrated the viability of this new design. In a sense, NuScale improves upon the proven.

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