Modern surface assessment technologies address today's inspection challenges in nuclear power plants

While nuclear power plants are some of the most highly regulated and safe worksites in the world, inspection challenges remain. According to estimates by industry experts, the over 400 reactors located across the globe are, on average, 30 years old, and getting older. Extending the nuclear fleet's lifetime to 60 years or longer has become an imperative in many countries, with engineers and scientists looking for new methods and solutions to predict and maintain the structural integrity and reliability of on-site infrastructure. An unprecedented labor shortage, retiring inspection specialists, and legacy work methodologies are exacerbating the issues in conducting safety inspections efficiently, accurately, and cost-effectively.

An increasing number of nuclear power plants and the NDT companies that service them are turning to new technologies for better aging management and the development of new inspection programs that leverage the tremendous potential in 3D scanning.

One such technology is Creaform's new VXintegrity software platform, which, when combined with Creaform's 3D scanners, is a viable solution to the current shortage of experienced technicians and aging and/or damaged infrastructure. Operators of any skill levels can use 3D scanners to acquire 3D measurements of all types of nuclear components. For example, inspectors can accurately measure thickness loss on corroded, industrial, complex geometries, such as elbows, nozzles, pressure vessel heads, tank floors and valves. Creaform's metrology-grade 3D scanners for NDT applications have been proven to measure up to 80 times faster than manual measuring tools. Even better: they can be used by technicians of varying skill levels without any background in metrology or 3D scanning.

Once the data acquisition is complete, the data is then seamlessly uploaded into VXintegrity, a complete

NDT platform for surface damage assessment. It includes several different software modules, including three that are specifically optimized for nuclear reactor inspections:

- Pipecheck: Software for pipeline integrity management, which can measure both internal and external corrosion, mechanical damage, wrinkle analyses, and more
- Surface Damage module: The only accurate and traceable NDT method to assess surface damage on complex geometries, of all shapes, sizes and materials
- Monitoring module: This module, guaranteed to the micron, is an extremely accurate and noiseless NDT method used to compare damage progression through time, deformation analyses and other metrology applications. Its advanced reporting capabilities simplify monitoring aging infrastructure and accelerate reporting processes to engineers, management, and regulatory bodies.

Tapping into a wealth of current and accurate data gives industrial asset owners and NDT companies complete confidence in the information they use to make informed decisions about their reactors' state of health.

NDT services companies and 3D scanning. A game-changing approach for inspections

Nucleom, a Canadian based NDT service provide for nuclear facilities, has been using 3D measurement technologies from Creaform for quite some time. Along with VXinspect modules and Pipecheck, the inspection team opted for the HandySCAN 3D scanner.

"Obtaining the level of detail and repeatability that the HandySCAN 3D can enable is more challenging to achieve with conventional manual methods," explained Adam Pinard, NDE Engineer and 3D Scan Lead at Nucleom. "Our clients are very satisfied with the 3D scan analysis that we provide. We are confident with the quality of the reports we produce due to the accuracy and repeatability of the scanned data," added Adam. Pinard also mentioned that Nucleom uses the 3D scanning solutions to generate permanent data records for plant infrastructure to carry out advanced analyses without having to return on-site.

Innerspec Technologies builds integrated NDT systems and offers, through its FARFIELD NDT division, both asset monitoring and NDT services. Innerspec pioneered commercial applications of Electro Magnetic Acoustic Transducers (EMAT) in the mid-90s, becoming the world leader in this technology with hundreds of systems installed worldwide. More recently, Innerspec acquired Creaform's Pipecheck and Go!SCAN 3D scanners for a major project; the company was tasked to provide quality control (QC) after welding fabrication of offshore wind jackets. NDT inspections were performed to ensure that all welding processes were executed according to stringent standards. According to the Innerspec team, inspectors' productivity is five times higher. Inspection costs were also slashed by at least 40%. In addition, Innerspec can provide extra data to serve as a baseline for further inspections to compare degradation and other damage.

Whether part of an asset management team at a nuclear power plant or an NDT services company, keeping reactors safe and at optimal performance levels begins with the right technology.

Learn more about Creaform's NDT solutions at: **www.creaform3d.com**.

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