



reduces downtime and maintenance costs but also enhances safety by minimizing the risk of unplanned shutdowns.

As we look to the deployment of microreactors and even fleets of small modular reactors, the adoption of remote monitoring and diagnostics systems can further transform O&M practices. Advanced sensors and communication technologies enable continuous monitoring of plant equipment and systems, even from remote locations. This capability enables experts to analyze real-time data, diagnose issues, and provide remote assistance to on-site personnel. Remote monitoring and diagnostics systems improve troubleshooting efficiency, enable faster response times, and enhance overall plant reliability. While the introduction of communication channels to support this remote monitoring raises increased concerns about cybersecurity, it's important to note that cyber-resilience and cybersecurity are at the forefront

of the development of remote monitoring and control technologies.

The nuclear industry is witnessing a transformative shift towards intelligent and data-driven technologies. The integration of DCS, ML, AI, and O&M practices has the potential to enable the efficient, safe, and reliable deployment of new nuclear power plants and to improve the operation of our current fleet of reactors. As the industry continues to evolve, the synergy between these technologies will undoubtedly shape the future of nuclear power, making it more sustainable, resilient, and capable of meeting the world's growing energy demands. The 2023 Nuclear Plant Instrumentation, Control & Human-Machine Interface Technologies (NPIC&HMIT) Meeting, held in Knoxville, Tenn., July 15-20, is the preeminent forum for discussing the latest in research, regulation, case studies, and practical deployments to support these advances. ☒

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