Nuclear Control & Monitoring Systems

With 1E Components

Curtiss-Wright's Nuclear Division has partnered with RTP Corporation to bring nuclear control and monitoring systems with 1E components to the global nuclear market. Through this partnership, Curtiss-Wright and RTP have combined their respective capabilities and expertise in 1E System Integration:

- RTP provides 1E-capable hardware designed for reliability and efficiency.
- Curtiss-Wright provides nuclear system integration and commercial grade dedication of commercial off the shelf (COTS) components for 1E applications.

RTP Class 1E Components

RTP Class 1E components are qualified in accordance with IEEE Std. 323 Standard for Qualifying Class 1E Equipment for Nuclear Power Generating Stations. Qualification testing is documented to ensure reliable functionality and user safety. All equipment undergoes extreme service testing conditions, including peak temperatures, humidity, and voltage. These Class 1E components allow RTP non-safety systems to interface with safety-related plant equipment without the need for isolators or other plant equipment changes.

RTP's quality program ensures that all hardware will maintain its quality and functionality, even in extreme circumstances. The program includes review procedures for non-conforming items as well as development of corrective actions to prevent reoccurrence of any identified non-conformance. Internal reviews take place on a regular basis, and customers are welcome to review the quality program. Additionally, an accredited, third-party laboratory performs type testing of RTP hardware for seismic immunity. These labs typically expose the tested components to greater than 16 G of acceleration over a wide range of frequencies.

Nuclear System Integration

Curtiss-Wright has extensive experience performing digital systems integraton for nuclear power plants throughout the industry. D.C. Cook Nuclear Plant's Unit 2 and Unit 1 completed digital upgrades to their reactor controls and instrumentation (RCI) system in May 2018 and May 2019 respectively. Curtiss-Wright played an instrumental role in the implementation of these systems, which are some of the largest, non-safety systems in the US commercial nuclear market using RTP hardware.

D.C. Cook has experienced improved system reliability and availability with its new digital controls on many levels, influenced in part by the extensive redundancy engineered into the wiring, instrumentation, computers, switches, sensors, power supplies, I/O cards, and other electronics. Additionally, the digital upgrade enables D.C. Cook to replace components without taking the power plant off-line. This modern infrastructure delivers real-time data for controlling every element of the operation and offers precise methods for adjusting configuration parameters with granularity.

Commercial Grade Dedication

With over 50,000 items dedicated, Curtiss-Wright has the historical data, technical acuity, and required experience to dedicate commercial grade items for use in safety-related applications. These items can be purchased and dedicated on a turn-key basis, or dedication services can be conducted on customer-provided specimens. Curtiss-Wright also offers over 25,000 qualified, commercial-grade equivalents – with the same form, fit, and function as the original items – for replacement parts. While this robust collection of qualified products covers virtually every plant need, if a desired item does not have an existing match, Curtiss-Wright can reverse engineer or custom design an equivalent. All material and component analysis, testing, and qualification takes place under Curtiss-Wright's Quality Assurance Program.

In partnership with RTP, Curtiss-Wright has successfully performed qualification of RTP components for Seismic, EMI/RFI and Isolation at the following sites since 2000*.

- Donald C. Cook Nuclear Plant
- Clinton Power Station
- Susquehanna Steam Electric Station
- Limerick Generating Station
- Nine Mile Point Nuclear Station
- Prairie Island Nuclear Generating Plant
- San Onofre Nuclear Generating Station

Curtiss-Wright and RTP's partnership allows for joint delivery of a best of breed system solution with industry-leading equipment, system integration, and commercial grade dedication services.

**Not all functions performed at every site.*