

**DEPLOY:** DIGITAL TWIN

# DIGITAL TWINS FOR A COMPLEX INDUSTRIAL OPERATIONAL NETWORK

## THE CHALLENGE

An industrial automation manufacturing company has designed an end-to-end solution for a chemical processing plant. It includes a programmable logic controller (PLC) that runs VxWorks®. The PLC connects to numerous procured machines, including an I/O coupler, sensors, motors, and robots.

The production process mixes and packages highly flammable and toxic materials. Any unexpected disruption of the production line could create a dangerous situation. Plant engineers and operators must follow strict government-mandated safety and security guidelines and provide compliance documentation.

Testing the PLC and the entire production line before deployment has been a challenge, because the development team does not have access to a physical system. Test engineers think they can resolve this challenge by using a digital twin simulating the PLC and all connected components.

## THE SOLUTION

Wind River® Studio offers a digital twin capability that allows creation of a full-system simulation to use for development and as a test bench. Cloud access to Studio gives permissioned stakeholders access to the digital twin from any location.

Test engineers can build simple models or replicate a full complex system. Twins can be easily configured with parameters for difficult fault scenarios, allowing quick identification and replication of failure conditions. At any point during testing, engineers can stop and analyze the system for potential failures and defects. Testers can also insert checkpoints for root-cause analysis.

System configurations can be created, modified, and maintained for the life of the project. Reports are generated from test plans and can help meet proof-of-safety compliance standards.

## THE RESULTS

Studio gives developers and testers the agility needed to build, test, and deploy without access to physical systems. **Using a digital twin as a scalable test bench allows the testing team to visualize and fix all possible failure scenarios before pushing to a live system.**



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