

## Modeling of a Power Generation plant



### Product

Automation of communication, monitoring and alarm system

### Business

The company develops and manufactures energy and digital automation solutions for efficiency and sustainability. It combines energy technologies, real-time automation, software, and services.

### Overview

The Drive System automates the management, monitoring, and control of the systems at the power plant. This R&D project aimed at building a fault-tolerant and reliable mechanism for the networking and computing system. The model would test redundancy and conformance to IEC61508.

### Customer Team background

Systems engineers with experience in network capacity and industrial automation systems.

### Challenges

- Upgrade to integrated system with power management at factories with minimal downtime.
- Migrate and provide 10X higher reliability.
- The quality-of-service was to ensure 99.999% uptime.
- Create an architecture platform to demonstrate and design solutions for multiple customers.
- Decision metrics are the time taken to detect a failure and transition tasks to other resources.

### Results

- VisualSim Experimental Platform is the primary engineering architecture trade-off platform.
- Rapid prototyping of the solution for new proposal for automating power plants.
- Eliminate costly Lab setup and prototyping before deployment.

### VisualSim solution

- Developed a resource and network model of the entire power plant with parameterized configuration of devices, number of server resources and topology.
- Define traffic from sensors, trigger the diagnostics, and create the software application schedule.
- The model used the VisualSim library.
  - Nodes, Routing Tables, Gateways, Processor, Timed Resource, Quantity Resources
  - Generated statistics for latency, throughput and, power consumption
- The traffic rates, failure points and number of redundant devices were analyzed.