



A Rockwell Automation Company

Air Canada Air Canada Emergency Power System

The Client:

The Air Canada building at 355 Portage Avenue in Winnipeg houses the computers that the airline relies on for worldwide freight and passenger bookings, schedules, boarding passes, etc.

Due to the critical nature of these computers, a complex system has been installed to ensure clean power is available to them every minute of every day.

This system includes a huge station battery for immediate back-up and four turbine driven generators for long term power supply needs in the event of a failure of commercial power.

The Requirement:

The load sharing and alarm management functions for the generators was controlled via an Allen- Bradley PLC 2. Air Canada identified a requirement to update this system to a PLC 5/11. The existing I/O would remain, but the processor, power supply and card rack would be upgraded.

In the past, the total load required 3 generators to run, with one unit running in reserve. If two units failed, loads would start to be dumped in the priority determined by the PLC. With the reduction in power requirements from the modern computers now in

operation, two generators are sufficient to carry the total load. This allows for a 'double redundant' mode of operation. An operator's switch was added and the program modified to provide either 'Single Redundant' or 'Double Redundant' modes of operation. In the latter case, loads don't start to dump until only one generator is left running.

The Design Solution:

To ensure the PLC 5 program would be identical to the PLC 2 program in all functions, the PLC 2 program was first re-written as a PLC 5 program using in-house conversion software. Then the added functionality was incorporated.

Due to the critical nature of the tasks performed by the PLC and the inability to schedule an outage for commissioning (the computers are connected to terminals around the world, so they are always busy), it was a requirement of the project that the system be tested using simulation software.

A complete turbine-generator was configured on a PC running PICS simulator software. Also, the load dumping and alarming functionality for the other three generators was simulated. Using only a mouse it was possible to start any or all 'generators' and create

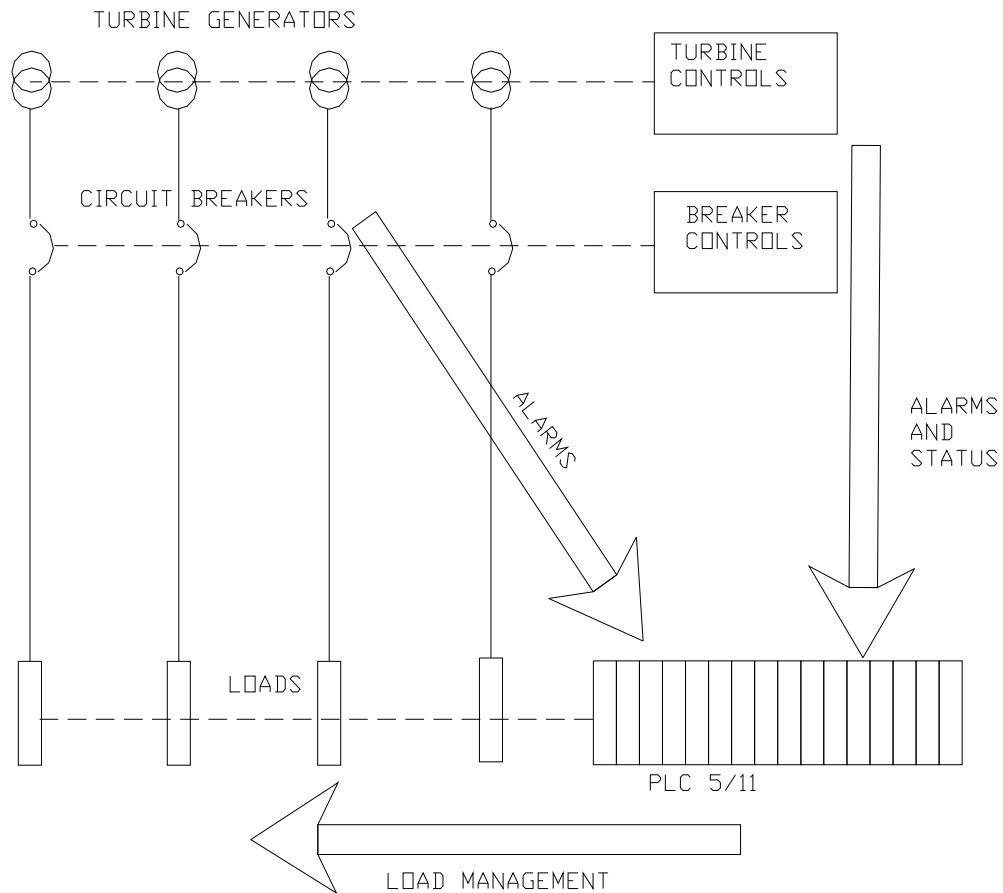
alarm and fault conditions, and shut the units down and observe the load dumping logic. The actual PLC and the PC were set up in the Air Canada shops at Portage Avenue and after a short training session, their people were proficient in running the simulator.

After using the simulator for one week, Air Canada was convinced the program would function correctly and a date was set for installation. One Sunday morning at 1 am it was decided to pull the main incoming power breaker and test the system with all parties present. As expected, the system performed flawlessly.



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System Specifications:

- Allen Bradley PLC 5/11
- Allen Bradley P5E EMI enhanced 24VDC power supply
- PICS Simulator software

For further information or to contact a Hinz office near you, please check our website at:

www.hinz.com