

Phoenix Power Control, Inc



Monroe (Seattle), Washington

Generator/Turbine Control using PLC's

A brief look at how quickly things have changed!

- ◆ The 70's – What is a PLC? Why do we need one?
- ◆ Early 80's – PLC functions limited, Equipment was slow and bulky, Implementation expensive
- ◆ Late 80's – Functionality and Speed improving, Size becoming smaller, Prices holding steady or dropping
- ◆ Early 90's – Major advancements in microprocessors help make the PLC much more powerful and affordable
- ◆ Late 90's – Further improvements and communications make the PLC the heart of almost every control system
- ◆ Today – What would we do without them?

A vertical waterfall cascading down a rocky cliff, with water splashing at the bottom. The background is a solid blue color.

Benefits of PLC's

- ◆ Replaces many traditional hard wired relay logic control circuits
- ◆ Wide selection of Communication and Specialty I/O modules
- ◆ Time proven dependability
- ◆ Instilled confidence for operators
- ◆ Reduces the amount of human participation in routine operations
- ◆ Efficiency optimization

PLC use has grown due to:

- ◆ Changes in Perception about Computers
- ◆ Enhanced Features
- ◆ Integration with Plant Systems
- ◆ Advanced Programming
- ◆ Economical Advantages
- ◆ Equipment Reliability



Change in Perception

- ◆ The 70's – That box is suppose to do what?
- ◆ The 80's – There is no way one of those things will ever run this plant better than me!
- ◆ Early 90's – We don't have to check the plant every hour anymore?
- ◆ Late 90's – The plant is totally automated and I don't have to do reports by hand anymore?
- ◆ Today – The plant will call my cell if there is a problem. Let's keep fishing!

Enhanced Features

- ◆ Fast CPU Processors
- ◆ Large memory capacities
- ◆ Advance math functions
- ◆ Communications modules
- ◆ High speed counters and motion
- ◆ High density I/O modules
- ◆ Several specialty modules



Integration with Plant Systems

- ◆ Supervisory control and data acquisition system
- ◆ Operator Interface Terminals (Touch screens, etc.)
- ◆ Power monitors, Temperature protection
- ◆ Microprocessor based protective relaying systems
- ◆ Generator support systems (HPU, Exciter, Governor, Motor Control Center, Battery system)
- ◆ Expandable for switchyards and substations
- ◆ Security cameras, Fire alarm, Intrusion sensors

Advanced Programming

- ◆ Large variety of programming languages
- ◆ Upper level math functions
- ◆ PID loops with multiple tuning parameters
- ◆ Libraries of reusable logic blocks
- ◆ Comprehensive documentation capability
- ◆ Modem/Internet access for programming

Economical Advantages

- ◆ Improved plant efficiency
- ◆ Automatic load scheduling
- ◆ Lower personnel costs
- ◆ Quick repairs or program adjustments
- ◆ Less cost in the initial installation phase
- ◆ Remote access for troubleshooting/programming

Equipment Reliability

- ◆ Solid state components, no moving parts
- ◆ Self diagnostics
- ◆ Large mean time between failures
- ◆ Built in surge protection on most I/O modules
- ◆ Hot-Swap modules for on-line replacement
- ◆ Standard, off the shelf replacement parts
- ◆ Works 24/7 and never calls in with a lame excuse!!

Systems with Today's Technology Offer More...

- ◆ Cost Savings
- ◆ Efficiency
- ◆ Reliability
- ◆ Accessibility
- ◆ Flexibility
- ◆ Safety
- ◆ Productivity



Thank You!

