

## **[OPC Application Case Studies - 04]**

### **Integration of Gasoline Engine Test Stands with OPC**

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#### **[APPLICATION]**

Integration of Gasoline Engine Test Stands

#### **[DESCRIPTION OF THE APPLICATION]**

ComauPico designs and builds hot and cold test stands for gasoline engines. These are high volume production machines that run a test sequence and generate test data in an engine controller, a data acquisition system, and a PLC. Test results are formatted and routed to external operator displays, engineering analysis systems, production monitoring systems, and quality assurance systems.

#### **[EXPLANATION OF WHY OPC WAS CHOSEN]**

All prior implementations of the test stands forced all data to flow through a single system, typically a PLC. Custom interfaces and drivers were required to convert subsystem data format and/or interface hardware in order to route the data to the appropriate collection systems. Over the years, specific subsystems, such as the engine controller interface, had been rewritten multiple times for different target hardware and software environments. Each application required documentation and tables mapping variable naming and allocation from one system format to another.

#### **[SUMMARY OF HOW OPC WAS INSTALLED & THE BENEFITS RECEIVED AS A RESULT]**

The test system integrated several subsystems that had been stand alone into a single PC. OPC servers and clients were then used to connect the subsystems in software (as opposed to

hardware). This application used multiple OPC servers and clients. A Phoenix Contact OPC server was used for the PLC interface. A Phoenix Contact OPC client was used for servicing operator hardwired push buttons and indicators. ComauPico wrote an engine controller OPC server. A Ford Motor Company OPC client was used for the production monitoring systems. An Iconics GraphWorx client was used for the operator display. An Iconics Dataworx server was used as a bridge between the engine controller server and the PLC server.

The use of OPC eliminated the data bottleneck from the engine controller to the PLC and operator display. As variable assignment documentation is associated with the servers, no lookup tables or mapping was required. The connection to the production monitoring systems was simple, as the software had previously been used. Using software connections reduced system wiring and components. The startup and debug environment was consolidated to the PC, providing all the tools required at a single location and always available.

**Source: OPC Foundation**  
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