

Electronic control and stop valves are designed to regulate fuel flow and provide rapid fuel shutoff capability without the use of hydraulics. The valves are suitable for fuel modules in Class 1 Div 2 Hazardous Locations.

FRAME 5 DLN-1 GAS VALVE UPGRADE CASE STUDY

Operational reliability equals system stability.

SITUATION

One of the largest non-OEM turbine-generator repair & outage services organizations in the United States required some assistance with a project to upgrade a MS5001P DLN1 gas turbine to utilize fully electronic stop and control valves. The removal of the hydraulics used for control of the original valves eliminates a costly and maintenance intensive system that, overtime impacts the operational reliability of the machine. Valves like the TTS ElectroFlo™, Y&F 3010, and Woodward GS series are ideal for these applications due to their reliability and ease of installation.

PROJECT SCOPE

TTS recommended GSV and GCV Upgrades... The scope of the project was to replace the existing 3" combined hydraulic SRV/GCV and splitter valve with new electronic valves. A 3" Stop Valve was required along with Electronic Primary and Secondary Control valves – which, in this case, were provided by the client.

TTS was contracted to provide the following:

- Detailed design and system engineering for the demolition of the old system and installation of the valves.
- Onsite engineering support and project management.
- Site inspection to gather and compile all dimensions, wiring details and routing needed to generate the installation package.
- An installation kit consisting of:
 - SS pipe, fittings, gaskets, and flange hardware to complete the modifications inside the gas compartment.
 - SS tubing and fittings for re-connection of existing instrumentation inside the gas compartment, including 20VG, 63FG-3 and 96FG-2A/B/C.

- Wire and conduit for connections to the new control and stop valves as well as the two new pressure transmitters.

- Two new indicating pressure transmitters and manifolds were provided for pressure measurement downstream of the new control valves.
- Materials for site fabrication of new steel supports.

PROJECT EXECUTION

Installation... A TTS Mechanical Field Engineer oversaw the demolition and fabrication/installation of the new valve piping, tubing, and electrical connections. We understood the urgency of getting this project completed and minimizing downtime. The onsite fabrication and installation was completed in eight days working twelve hours per day.

Programming and Startup... The original MKV system was maintained so TTS engineered, tested, and implemented the new code needed to apply the electronic valves in a DLN1 application. A TTS Controls/Startup Engineer oversaw the checkout, commissioning, and startup of the unit after all the site work was completed. We completed the startup activities in just over four days, working twelve hours each day.

CLIENT REMARKS/RESOLVE

The Project was fast tracked for completion in 4 weeks from issuance of the order to TTS. A team of TTS engineers was assembled to ensure all aspects of the project were fully covered from design, procurement, and installation to simulation and testing of the new software. Because of their extensive experience with the Frame 5, DLN fuel systems, and gas turbine controls the project was executed on-time with very few issues.

"Only four days for the conversion was a great execution of a complicated project. The upgrade has made the machine way more reliable, management is very pleased." Maintenance Supervisor.