Emerson Technologies and Services Deliver Significant Savings to Refinery Before and During Major Turnaround

RESULTS

- Over $1 million in documented annual savings through work of onsite asset manager
- Evaluation, diagnosis, and prioritization of valve condition prior to turnaround enabled on-time completion of required maintenance
- No valve issues encountered during or after startup

"Emerson brought in additional resources from all over the country to meet our needs in a restricted time frame. We greatly appreciated their work."

Manager of Process Control Engineering

APPLICATION

Numerous control valves were repaired and post repair diagnostics performed. Critical and problematic control valves in a refinery's Hydrocracker Unit (HCU) were upgraded in the largest maintenance turnaround effort in more than 12 years.

CUSTOMER

A fully integrated refinery and petrochemical plant in the US.

CHALLENGE

The control valves in the HCU at this refinery are critical to its overall performance. The failure of any one of these valves, many of which are subjected to high temperatures and high frequency vibration, could force a shutdown of the entire unit, with a subsequent loss of productivity across the entire refinery. Various control valve issues were evident and needed to be addressed during an upcoming major turnaround. In addition to previously identified repairs, refinery engineers requested a thorough evaluation, of all 270 control valves in the unit – all within a 30-day turnaround.

AMS Suite

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SOLUTION

Prior to the turnaround, the plant's control valve Asset Manager evaluated PlantWeb® alerts and indicators using AMS™ Suite: Intelligent Device Manager. During the turnaround, technicians from Emerson and the local business partner made extensive use of AMS Device Manager predictive maintenance software with AMS Valve-Link™ SNAP-ON™ application to monitor the condition and track the performance of the Fisher® FIELDVUE™ digital valve controllers (DVCs) mounted on critical and general service valves in the HCU.

AMS Device Manager and the ValveLink SNAP-ON were used to gather detailed information on the condition of all 270 valves during the turnaround. By stroking the valves and comparing the results with benchmark studies done during installation of the DVCs, planners were able to learn which valves were most in need of overhaul, allowing the refinery to prioritize the repair work. Some valves were found to be in good condition without needing repair, saving time and the expense of unnecessarily pulling the valves for evaluation.

In one instance, prior to the turnaround, the Emerson team alerted refinery operators of a valve travel sensor failure, enabling them to avoid an unplanned shutdown and saving the facility an estimated $625,000 in repairs and lost productivity. The technicians actually developed a repair strategy to return the device to like-new condition – while maintaining operations in the HCU. Control of the valve's position was maintained within 0.5 percent of the setpoint after repair without recalibration. This valve has continued to operate without causing further alerts or process upsets.

During the turnaround itself, teams from Emerson's Instrument & Valve Services worked with the local business partner to complete the successful valve overhaul and the re-instrumentation, calibration, and tuning of new and existing DVCs followed by an on-time startup.

The refinery's resident control valve Asset Manager has been a major force in monitoring the day-to-day diagnostics generated by the valve DVCs and working proactively to eliminate systemic failures. Savings of more than $1 million annually have been documented due to the efforts of this asset manager. Additional "soft" savings – also well documented – have exceeded $2 million

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