PlantWeb® Services Builds World-Class Maintenance Program at Sipchem Complex

RESULTS

- Established priority-based maintenance procedures for entire plant
- Installed industry standards for analyzing equipment readiness
- Replaced reactive maintenance with a mix of preventive and predictive

APPLICATION

A major Acetyls Complex consisting of units producing acetic acid, vinyl acetate monomer, and carbon monoxide along with supporting utilities began commercial operation in the Jubail Industrial City, Saudi Arabia, with no effective maintenance for some 5,000 assets.

CUSTOMER

The Saudi International Petrochemical Company (Sipchem) is a Saudi joint stock company established in 1999. This company actively develops petrochemical and chemical facilities to produce basic and intermediate chemicals for use around the world. Sipchem adheres strictly to the highest product quality standards without compromising its commitment to the environment and the safety of employees and the community.

CHALLENGE

Issues became apparent prior to and during the commissioning and startup phases of the three production units. Maintenance and reliability engineering personnel were so involved with "fighting the fires" that resources were not available to develop preventive maintenance (PM) and predictive maintenance (PdM) programs for the new facilities. With no real maintenance strategy to follow and without adequate supporting literature, plant personnel could only react to process disruptions. Trips were so frequent in the new units that maintenance personnel were fully occupied just trying to keep them operating with little time for routine maintenance.

Emerson's AMS Suite: Intelligent Device Manager predictive maintenance software was onsite and integrated with the DeltaV™ automation system, but it had not been configured and no one was trained in its use. There was little knowledge of how to apply field-generated diagnostics for predictive maintenance, which was badly needed to avoid frequent downtime.

> *"We now have the means to predict a problem before it happens, and I'm very sure we are going to benefit in a lot of ways."*
>
> **Abdullah Al-Ghamde,**
> Planning Section Manager, Sipchem

AMS Suite

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SOLUTION

Emerson's PlantWeb® Services experts were engaged to establish effective maintenance procedures and replace reactive maintenance with less costly predictive methods. A four-man team from the United States spent four months in Saudi, often working 12-hour or longer days to put Sipchem on the path to achieving its quality and productivity goals.

Senior management fully supported the PlantWeb Services initiative, assigning a top project manger to provide liaison between the Emerson team and the plant. "Management was clearly anxious for us to succeed," said team leader John Hill. "They were ready for us when we arrived, and they made sure we didn't run into any barriers. We got whatever we needed. Sipchem also displayed a willingness to accept our technologies. In fact, a Reliability Group was organized while we were there based on our recommendations."

The first task involved validating information that had already been entered into the plant's SAP computerized maintenance management system. Unfortunately, the assets were not listed by number, and general terminology was often used rather than describing the specific application of the asset. Many erroneous entries were found, and much effort was expended to identify all 5,000 assets and determine their locations.

The next two jobs – prioritizing equipment and task generation – were carried out simultaneously. Each asset had to be evaluated according to its importance to product throughput, quality, safety, and environmental compliance. Priority ratings are essential in determining the level of maintenance required to avoid upsets. Emerson's prioritization guidelines were followed, but tailored according to the needs of each production unit.

A set of preventive maintenance tasks was generated to give maintenance personnel clear instructions of what to do with each asset. The overall maintenance strategy was a mix of preventive and predictive practices supported by condition-based monitoring.

A separate group was brought in to help optimize alarms for hundreds of smart field instruments. A database of every smart device was developed for the AMS Device Manager software, and the Alert Monitor was configured so personnel would be notified of potential problems without being overwhelmed with alarms. All this was accomplished in about one week of intensive day and night work. The Sipchem Acetyls Complex now has the foundation to become a world-class facility.

> *"We did not even think about equipment criticality before. Now, criticality and availability of equipment will be key performance indicators (KPIs)."*
>
> **Abdullah Al-Ghamde,**
> Planning Section Manager, Sipchem

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AMS Suite: Intelligent Device Manager powers PlantWeb through predictive and proactive maintenance of intelligent field devices to improve availability and performance.

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