

Tech Service

Ensuring Safe & Continuous Operations

*Training
Start-Up
Operations' Support*



Tech Service

Ensuring Safe & Continuous Operations

To squeeze the most out of your assets – both human and hardware – refinery process units should be kept running at their optimum economic potential. This can only be accomplished by ensuring that the operations personnel are well trained and that regular servicing is undertaken to benchmark process performance and to adjust operations at regular intervals. Axens provides full tech service packages including: operation training, pre-commissioning through unit start-up assistance, process unit follow-up, optimization, and troubleshooting. These services act as a complementary support to your plant personnel. Operations' staff confidence and knowing whom to call, if there is a need, have positive impacts on operational safety and security. This affords maximum on-stream time, quality performance and, as a consequence, profitability.

Operating Staff Training

Operators' skill-sets have changed due to the challenges of added plant complexity, including higher degrees of energy integration and the addition of sophisticated process automation.

The starting point for enhanced operational effectiveness begins with theoretical and operational classroom training, process simulation and on-site visits.

Customer-tailored training courses are conceived, prepared and jointly executed by Axens and the IFP School, an international center for graduate level training for petroleum industry.

Training programs can be carried out either at an Axens site or at a specified refinery. We are committed to offer additional training sessions to your staff as required, during the operational lifetime of your units.



Axens' Performance Programs Business Unit conceives training simulators for the operational staff. For further information, please consult our Web site www.axens.net

Unit Start-Up



Our teams are present at critical stages during project advancement in accordance with our quality certification and our prime objective of maintaining a high degree of customer satisfaction. It is our objective to help customers keep projects on time and within budget.

Our technical specialists are at your service for pre-mechanical completion inspection, pre-commissioning, commissioning, reactor loading, start-up and test-run operations.



In addition, Axens provides a complete and detailed inspection of the units and associated equipment to ensure that the process conforms to Axens' original design data and client criteria. We are present and actively participate in unit oil-in operations with a full start-up team including system specialists when needed. The teams can maintain a 24-hour presence on site.



Upon agreement, for catalyst replacement, Axens provides experienced personnel for unit inspection, catalyst loading and activation as well as unit start-up.

Operations' Support



■ Axens' approach: customer-focused and flexible

Some of our customers ask for specific spot assistance concerning a particular unit's operation.

Typical tech service needs arise when the operating staff has been renewed or when customers require temporary assistance for special operations or expertise. In cases such as these, an agreement is signed by the customer and Axens for the services of a technologist or task force.

An Axens technologist is then dispatched to the site to evaluate the operation and propose a strategy to recover or improve performance. Other services such as laboratory analyses, hands-on training and studies to improve the operation are organized as needed.

■ Technical Service Agreement

Customer satisfaction is critical to Axens and operations' support is the key to attaining this objective. Good product performance and meeting sales guarantees are not sufficient alone.

Inevitably, operating personnel are uncomfortable with changes affecting operations such as: upsets, catalyst regeneration and replacement and changes in feedstock, product specifications, production goals, and operating staff. In coping with these changes, your resources –



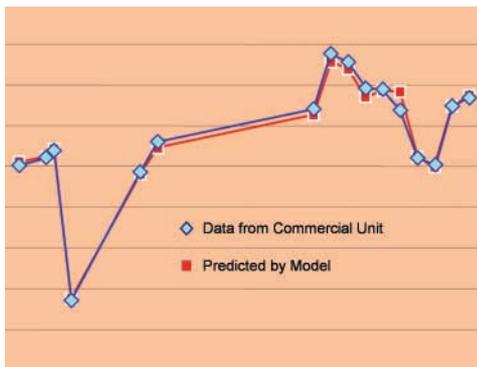
manpower, know-how, experience – are often strained. Axens' Tech Service Agreements (TSAs) are attractive in that they allow you to expand your qualified resources at regular intervals or during spot operations without the need to hire additional permanent staff. The TSA is the best available means to ensure that your plant operates at its peak running potential and maximum profitability.

TSAs keep Axens abreast of your evolving needs through regular feedback and contacts which enable us to adapt and provide tailored technical service accordingly. TSAs can provide the following:

- On-site assistance to unit operating staff;
- Process follow-up with recommendations for operational improvement;
- Analyses of catalyst, feed and effluent streams;



- Development and engineering support (e.g., corrosion, catalyst, chemicals);
- TSAs pay their way through optimized plant on-stream profitability, detection and solution of potential problems before they happened and planned catalyst and adsorbent change-outs and equipment maintenance;
- Modeling and comparison of the unit's performance with that of the best commercial units;
- Know-how updates and improvements from similar plants around the world.



Comparing data generated by Axens' model with that from a commercial unit

Privileged access to Axens' Technical Assistance web site with detailed information to make the best out of your unit. Regular update of the last news of units similar to yours.

Whether it is to save time, gain time, troubleshoot, ensure the continuity of operations or optimize operations, the Axens' TSA is one of the most worthwhile investments you can make for your plant.

Quality

Axens is ISO 9001: 2000 certified for tech service in the fields of refining, petrochemicals and gas processing for unit start-ups and operational support associated with our process licensing and catalyst manufacturing and supply businesses. That's quality services that

you can count on. Over the past several years, we have implemented quality assurance programs resulting in a regular improvement in customer services. Axens' activities in training, start-up and technical services were initially certified in 1998.

Please contact your local Axens representative or e-mail us directly at:

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