Early diagnosis of equipment problems and optimization of maintenance and operations activities are essential.

Early diagnosis of equipment problems and optimization of maintenance and operations are elements that are essential for efficient operation of plants in the power and water industries.

Plant managers are expected to maximize output while keeping costs at a minimum. Some may be tempted to sacrifice maintenance expenditures for an immediate improvement in profitability, but this strategy can adversely affect longer-term profitability: Spending less on maintenance degrades equipment, which leads to poorer performance and, ultimately, to reduced productivity and product quality. The inverse strategy yields the inverse result: increased production and improved quality. A purely reactive approach to service should be replaced by one that properly balances reactive and proactive behavior → 1.

Stepwise optimization process
Companies in the power and water industries increasingly expect remote services that supplement internal and contractor on-site support and improve the effectiveness of their operation and maintenance programs. Remote services provide expertise to the customer in a cost-effective and efficient way. Having these services available 24/7 is very beneficial to customers who are facing the dual challenge of a lack of expertise and rapidly advancing technology.

Remote service involves a three-step optimization process [1]. It usually begins with experts visiting the customer site to become familiar with the plant and...
In addition, more advanced remote services can be offered to complement the above. These include periodic life-cycle reports and health checks; 24/7 priority support with one-hour response times; support via customer-controlled remote connectivity; and consolidated reporting on support activities across a fleet. And, if customers so desire, they can request a designated support engineer – a “familiar face.”

Remote FAT and training simulators
The traditional factory acceptance test (FAT) involves a customer team traveling to the factory or to a site. FATs involve high travel costs, schedule slip (if issues are discovered late on) and, because usually only limited resources are sent to a factory-based FAT, a lack of “eyes.” Remote services, however, enable the customer to access and review ongoing projects that are in the FAT phase via a dedicated and secure website. This brings many benefits:

- Data collection and analysis begin immediately.
- Experts are brought closer to the problems (and the solutions).
- Technical collaboration shortens time-to-resolution.
- Solutions can be deployed via remote connections.

1 The balance between reactive and proactive services

Around the clock service availability is very beneficial to customers facing the dual challenge of a lack of expertise and rapidly advancing technology.
In addition, the customer has the option of using remote training simulators located at the factory instead of having to purchase and maintain these himself.

Remote secure access
The remote access platform (RAP) provides remote connection security between the service center and the customer site. RAP components, which have full redundancy and security controls, are monitored on the service center side around the clock for correct operation.

RAP enables secure, real-time remote monitoring and control of devices located at customer sites ➔ 2. It also provides audit and security features, including audit logs to track user and application access.

Secure data transmission
The RAP and the service center perform two-way authentication prior to initiating communication. The connection is outbound from the customer site to the service center, ie, the site connects to the specific IP address(es) of its service center and always initiates the connection. This allows the customer to control and limit outbound communication.

Security and control
The customer can set granular permissions on each remote activity. Such activities include data collection, desktop sharing and file transfer.

Secure data collection
Secure data transmission begins at the source, with control over the types of data being collected for transmission. The RAP is configurable, in that data access can be enabled or disabled based on the asset owner’s security policy.

Secure user access at the service center
In addition to features that ensure smooth interoperability with existing IT infrastructures at the site, the RAP solution provides a role-based access control scheme to assign permissions. Roles are assigned to users per site. Access control is granular to the level of privileges and the actual scope of privileges for any given site is restricted. User accounts are governed by strict account management procedures, so customers can be assured that the principles of least authority and separation of duties are applied. Connections from the service center to the customer sites are also regulated by the customers, who can deny or stop such connections at any time.

Audit and traceability
RAP maintains comprehensive operational and audit logs, allowing viewing of any past service event. Additionally, the desktop sharing sessions are stored in movie format on-site and at the service center and can be viewed at any time.

ServicePort as remote service coordinator
ServicePort is a remote-enabled service interface that provides process automation systems with an on-site connection to the service center ➔ 2. It serves as the entry point to the remote site and connects to the service center using the remote secure access mechanisms described above ➔ 2. With fully user-
Implement
Based on the fingerprints, improvement recommendations are determined and scheduled for implementation.

Sustain
So that the improvement process can be achieved and continued, customers are recommended to include regular fingerprint, implementation and sustaining services in their service contract.

Asset condition monitoring
Apart from remote troubleshooting and health checks, remote services are also utilized to monitor the process and plant equipment performance on a continuous basis.

Scan-type services provide a periodic performance analysis of previously fingerprinted systems. These scans can be performed at varying intervals depending on customer and system requirements and they allow for verification of post-fingerprint corrections. In addition, they search for and analyze new or recurring issues.

Track-type services provide continuous condition monitoring of a plant system and send proactive event notifications based on key performance indicators (KPIs) to designated plant personnel or to the service center. The KPIs are based on parameters reviewed and established during the scan service. Notification triggers may be based on a single KPI or a combination of several KPIs.

ServicePort is a remote-enabled service interface that provides process automation systems with an on-site connection to the service center.
In addition, the park operator may use the data to compare one park with another.

By combining historic weather data and next-day meteorological forecasts with the plant’s configuration, the solution’s self-learning algorithms can forecast energy production over the next 24 hours.

A full, and regularly tested, data backup service is also provided.

Increasingly remote
As the number of power and water plants around the world increases, remote monitoring is becoming a very attractive way of bringing the very best expert resources to bear on the challenge of keeping a plant running with maximum efficiency. Although site visits and face-to-face meetings with customers will remain an essential part of doing business, the role of the remote service center is set to take on an ever-increasing importance.

References