BUILDING BLOCKS OF Asset Performance Management

Predictive technologies hold the promise of helping oil and gas producers boost uptime and reduce maintenance costs.

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The challenges facing today's oil and gas producers are complex and extensive. Energy companies are dealing with myriad issues — rising global demand, harsher and riskier exploration and production environments, increased safety, environmental and economic constraints, a shrinking pool of knowledgeable personnel, and constant demands to reduce operating expenses while boosting uptime.

The good news is that improvements in predictive technologies hold the promise of helping oil and gas producers deal more effectively with many of these challenges. Thanks to the expanding class of asset performance management (APM) tools and solutions, improving asset availability is now a reality. Implementing a well-thought-out network strategy as part of an APM program can offer an effective way to automate the integration, gathering and analyzing of vital data from multiple production facilities.

As a result, companies can simplify network analysis for operators, improve asset reliability, minimize downtime and decrease operating costs.

The Value of Network Strategy

It's critical to the success of any APM program to first develop a comprehensive network strategy based on detailed electrical and architectural plans. When developing this approach, company leaders should consider all business and facility goals and objectives. The result should be that the correct information gets into the right hands in a timely manner.

For example, at one deepwater complex, performance times between the electrical control system, safety system and distributed controls system (DCS) were taking at least three times longer than specified — running in 15 seconds rather than the desired two to five.

When the service engineer arrived at the platform and asked for a network diagram, he was provided with one for the overall architecture. No one knew where the switches were installed or if they were properly configured.

The company's overall strategy was isolation, so remote troubleshooting was impossible. However, once the network was analyzed, configuration work was conducted on all switches. Some were replaced, and the system was brought within specification.

Getting a Head Start

The deepwater complex could have avoided the situation and operations initiated earlier if a proper network strategy had been developed in the first place. When developing a network strategy, energy companies must consider the following:

- Who needs access to the data?
- What instruments, devices, controls and servers will sit on the network?
- Why are specific data types required?
- In what time frame is the data required?

By identifying how the data will be used, companies can drive where it needs to be and when.

A network diagram should detail the physical network paths and architecture where switches will be inserted. It should resemble an electrical schematic rather than a simplified architecture drawing.

A common lesson drawn from four Rockwell Automation projects indicates that while energy companies may use an electrical contractor for cable installation for the cable scheduling, companies should rely on technical specialists to terminate network cabling in the facility.

An effective network strategy also will evolve from selecting intelligent protection devices, controlling methods, operation and maintenance methods, and the specified degree of interface with the control system. While this often is a cause of dissention in project ranks, the growing size of databases should lead oil and gas producers to consider a federated data model consolidated by a designated historian.

Developing a network strategy must be accomplished in concert with development of a data strategy. Once the data strategy is finalized, the network strategy should be revised to ensure that all data-moving requirements are met After it's determined where the data are generating from, consider where the information needs to go.

Companies also should define the locations of people who require access to the data. This will determine where the wider area network (WAN) must reach to drive maximum system effectiveness.

The full network schematic combined with a written specification describing the strategy will become the documentation for overall network strategy. It defines performance parameters, people affected, and how the network is implemented. It also should define network security methods.

APM: A Business Imperative

By starting first with a thorough examination of their network strategy, oil and gas producers can build a solid foundation for implementing a comprehensive APM program. Engaging all invested parties in the development process will make installation and start-up simpler, and begin the shift from reactive and costly repair-focused asset-maintenance plans to proactive and preventive reliability-focused maintenance plans.

This helps reduce overall maintenance costs and boost uptime to give energy companies a competitive advantage over those that aren't using predictive APM technologies. □

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