Enabling The Digital Plant

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Globalization is presenting industries with myriad challenges to growth, sustainability, and profitability. Vertical markets across the process industries are confronted daily with these challenges, and compete in an increasingly rigorous environment marked by tighter regulation, growing margin pressures, and an aging workforce, among other issues.

Industry-wide, three key challenges are affecting the value chain of companies in a big way:

1. **Actionable data –** Turning data into meaningful information and allowing for faster decision making is a key consideration in remaining operationally flexible. A common theme among end users is their struggle under the sheer volume of data generated by their operations. As companies strive to make better decisions, there is a need to integrate many more systems and applications together, but the complexities of trying to integrate data silos can be extremely overwhelming.
2. **Working in remote environments** – Many operations across various vertical markets are increasingly deploying operations in remote areas, which makes them difficult to access. Multiple production facilities can be spread across vast geographical distances and, in some cases, hazardous environments. This presents a challenge in ensuring the safety of plant personnel and production assets, and sharing valuable information and best practices. Additionally, remote facilities often operate independently from one another, making it even harder to share key learnings and to achieve optimal productivity levels across an entire network.
3. **Lack of skilled resources –** Operations in the process industries require specialized personnel, and as the workforce ages and new employees are brought in, there appears a shortage of skilled and specialized resources. Companies domestically and abroad are already seeing a shortage, making this a key challenge for CEOs as they move forward.

Solving these challenges requires novel technologies that focus on enterprise-wide information management, decision support, and collaboration tools to help companies achieve operational excellence. Companies that focus on obtaining an integrated view of their operations, effectively managing data, sharing intellectual property, and communicating and collaborating in real time realize a distinct decision-making differentiation over their peers, and can build a sustainable competitive advantage.

Anticipate, Collaborate, Act

The ability to see, understand, and act on the relationships within critical data is key to creating this competitive advantage. And enabling enterprise-wide sharing and visualization of information allows operators to pull data from multiple sources and sites and put it into context. This helps to identify problems early, prepare for them, and tackle them head on. Through these capabilities, companies can better make sense of their mountains of data, solve the problem of remote operations, and mitigate the impact of diminishing skilled resources.

Process organizations often use dozens of applications and hundreds of spreadsheets to manage complex production operations, monitor processes, and make operating decisions. These systems are usually isolated or are connected with complex, bespoke interfaces that are difficult to maintain and maintain data integrity. Understanding work processes, for instance, and harnessing data to improve collaboration across business units reduces the amount of operator oversight needed for any given process, increasing the amount of personnel resources available for other priorities. This is critical in oil and gas or mining operations that deploy projects in remote locations and harsh environments where addressing the staffing and competency requirements is a constant challenge.

With data visualization technologies, deployed operators can trend their data, analyze it, and turn it into key performance indicators to provide insight into which areas of operation need to be a focus or improved. With this information in hand, operators can better understand the tasks that drive workflows, and use the technology to pinpoint problem areas.

Remote Collaboration In Practice

The ability to communicate and collaborate has many advantages. For example, collaborating remotely helps users share their expertise across remote facilities, improving safety in hazardous environments, optimizing production and improving recovery. Remote collaboration allows companies to monitor and manage operational activities across multiple facilities from anywhere within a network of sites, leading to better collaboration between staff and process optimization across locations. Sites can be connected to each other – either through a central facility or via a network of interconnected collaboration centers – which supports real-time collaboration, resolves challenges quickly, and improves production and yield over the full lifecycle.

In the mining industry, for example, companies can use asset management tools to look at the state of their equipment. A particular workflow sheet might track truck statuses and allow users to view information like level and operating temperature for the engine on particular trucks with the click of a button. This information can be used to predict maintenance intervals and, by having the necessary parts ready, minimize down time.

This can be applied on a number of levels. For example, the operations in the pit and at the process plant can be linked. If a piece of equipment drops out of operation, the system can calculate how this will impact the other equipment and production levels at that mine site. Asset management can also link to the overall

planning and delivery and improve clarity into production targets. This allows operators to anticipate schedules and prepare accordingly.

Harnessing The Power Of Data

Data integration, visualization, and collaboration are integral to the current business environment. The ability to see, understand and act on the relationships within critical data is key to creating operational visibility and extending a competitive advantage. However, this can only be achieved when all applications and underlying data are amalgamated. The increasingly sophisticated and powerful capability to monitor and manage operational activities in real time, regardless of location and personnel, current process industry operators the opportunity to create multiple value streams to their organizations while achieving transformational results.

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