AUTOMATION:

The End Game of Process Improvement

By: PATRICK PISTOR

People sitting on the outside may not see it, but the U.S. oil and gas industry is one of the most technologically advanced in the world. As an industry, we are adept at solving complex operational problems. According to the U.S. Energy Information Administration the United States is now the largest producer of oil in the world.

For all of the developments, most of our technological innovations focus on mechanical solutions and how we can innovate with heavy steel. When it comes to smart-tech, software and automation, we retreat into a conservative downtime avoidance mindset, preferring "tried-and-true" methods over innovation.

While other industries dedicate time and resources to developing smart-tech, automation and artificial intelligence to solve problems, we continue to work in spreadsheets, file paper tickets and drive from site to site to operate equipment and strap tanks. That is starting to change, however.

The oil and gas industry is beginning to see the benefit of digital solutions for challenges we have faced for decades. The results are safer, more efficient operations, which really means cheaper, more cost-effective operations.

The progression toward new technology has followed the standard flow of any process improvement initiative, even though it wasn't led by any one organization or individual. The improvements we have seen were born out of necessity during one of the worst downturns we have seen in our industry.

LEAN SIX SIGMA PROCESS IMPROVEMENT AND THE ELIMINATE, SIMPLIFY, STANDARDIZE, AUTOMATE PROCESS:

The downturn helped us with the elimination phase of the process. Projects were halted, companies went through downsizing and non-essential operations were eliminated.

The jobs and activities that could not be eliminated were simplified where possible. If you take the complexity out of a job, you flatten the learning curve for new employees, minimize the number of mistakes that can be made and allow your workforce to do more with less.

And doing more with less is something the oil and gas industry has gotten used to in recent years. Working with fewer resources has forced oilfield businesses to not only eliminate and simplify operations, but also to standardize the work that gets done every day. Standardizing equipment requires fewer tools on site, while writing detailed procedures guarantees a minimum level of quality. At this stage in the improvement process, supervisors can manage more people across more operations, and the business starts to see real economies of scale.

The oil and gas industry is currently in the automation stage of operational process improvement. Once a job or task has been standardized, it most likely can (and should) be automated.

Tank levels can be gauged with remote monitoring devices. Fluid can be transferred with software-enabled actuators based on tank levels and available downstream capacity. All this can be done without the need for human intervention at any step in the process.

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Continuous process improvement is a practice that will always improve your business activities.

Automating operations in the oilfield is still in its early stages. Companies are starting to identify which activities can be automated and what needs some level of human oversight. They are also evaluating the best way to go about the transition to this new way of operating. Some of the majors are focused on developing in-house solutions, while others are outsourcing development and implementation to oilfield automation companies. These automation companies shorten the development time considerably, and they also have access to data beyond a single company's operational activities. As data is collected and analyzed across different fields, basins and companies, the industry is benefiting from greater insights that are helping the oilfield optimize operational activities.

Going beyond the automation of routine tasks, the data collected by automation equipment is being consolidated and analyzed in ways operators and facility managers never thought possible. By allowing software to make sense of the data, managers are free from wasting time poring over page after page of fluid volumes, transfer rates and riser pressures. Instead, they can lead their teams and make better operational decisions with greater confidence.

This improvement in operational decision making has allowed companies that embrace automation and smart technology to scale their business faster and at a lower cost than their competitors, giving them the advantage they need in an industry that has gotten used to a "lower-for-longer" oil price environment.

Process improvement is an ongoing business activity. As you automate more operations, either in the field or in the back office, you will inevitably discover more opportunities for improvement.

The decision to automate operational activities, of course, has to make economic sense to your business, but the oilfield's ability to move quickly toward automation will determine how well it is able to survive this "lower-for-longer" price environment and demonstrate how well prepared it is for the next inevitable downturn. ■

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