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Accelerating the learning curve with visual learning tools

After years of slow to negative growth, the U.S. oil and gas market is red hot. Senior operators with 30-40 years of experience are finally reaping the benefits of the growing market and are leaving the industry for a well-deserved retirement. Unfortunately, these departing subject matter experts are creating large gaps in experience due to the hiring freezes and layoffs over the past 20 years.

These are the operators who have learned by "doing" and are walking out the door with all the tribal knowledge on how to optimize their facilities' equipment. Firms experiencing this perfect storm are challenged with accelerating the learning curve for lesser-experienced operators and new hires in order to fill these gaps.

Over the past 25 years, studies have shown classroom training only provides for a 20-percent retention rate. Performance support, however, increases retention to 50-60 percent, and a collaborative effort adds an additional 20-percent retention.

A performance support environment is one where operators are taught how to skillfully address challenges and know where to find answers. Operations personnel retain information learned through visual and tactile learning. By creating a visual environment, operators can see the overall process, learn how to connect the dots and quickly achieve operator competency goals. The following three tools help achieve this environment: large control diagrams (LCDs), process description manuals (PDMs) and operator training guides.

Large control diagrams

LCDs are poster-sized diagrams that include all major equipment, controls and instruments that are normally used by console operators to operate a processing unit. LCDs aid operators in the development of an overall understanding of how the unit functions. They also provide a conventional layout, allowing operators to quickly follow the flow processes. LCDs provide a "map," while using a consistent format. The process output is laid out from left to right; arrows represent direction of flow and basic flow lines are standardized. New operators can learn the process flows and become familiar with major equipment. They can also begin learning about auxiliary equipment such as exchangers, filters and rotating equipment, and identify key instrumentation to the successful operation of the process.

Process description manuals

Now that a new operator has a map, the second step is to provide them with an encyclopedia on the unit. PDMs are used for this task. Just like an encyclopedia, PDMs are not read cover to cover like a book. PDMs are structured with specific chapters such as HS&E, process overview, chemistry, process control and equipment troubleshooting. Operators are taught how to use PDMs as reference tools by understanding the information contained within them and when to utilize them. These manuals convey a significant portion of the fundamental knowledge needed to qualify operators in the operating areas. PDMs also serve a second purpose that enables information to be removed from the procedures, keeping them short and effective.

Operator training guides

To pull all of the visual and tactile tools together for each job role, the operator can use a step-by-step "how-to" manual to qualify for a new job role. Operator training guides provide this structured approach to direct a training plan for the specific job role. Training guides contain both knowledge-based and performance-based topics and reference the LCDs, PDMs and procedures, along with other existing documentation as resources for the personnel to use as they work toward qualifying for the job role. Assessments tied to the critical learning objectives are provided to qualify for each role.

Other tools provide operator performance support, but having a map, an encyclopedia and a how-to manual provides operators with the confidence to absorb new information quickly and at high retention rates by offering visual information at their fingertips instead of rote memorization in a classroom setting.

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