Siemens AG

CAD Control Systems, United States

Excellence in control

When it comes to oil and gas exploration, performance and safety take precedence over everything else – a rule that CAD Control Systems and Siemens know quite well. They have been working together for more than a decade to build blowout preventer control systems for drilling rigs. So when the opportunity arose for CAD to participate in a pilot program with its longtime business partner, the company welcomed the news.

The program consisted of reengineering an existing blowout preventer (BOP) control system to include the Simatic S7-1500 programmable logic controller (PLC) – a move that not only improved reliability, display capabilities, and wiring procedures but also cut product configuration and programming time through the use of the TIA Portal integrated engineering framework. Furthermore – and perhaps most important – it helped set the stage to meet anticipated future regulatory requirements by enabling the remote diagnostic and data collection capabilities needed for a safer and more efficient drilling environment.

Continuous improvement

Providing equipment to global drilling contractors in more than 30 countries, Broussard, Louisiana-based CAD Control Systems emphasizes performance over cost, taking pride in its use of the highest-quality components, proven engineering practices, and the latest technology to produce equipment that is safe, reliable, and durable – all of which are critical to BOP control systems.

BOP valves are vital to drilling safety because they allow operators to regulate and monitor wellbore pressure. “With BOP control, there is no margin for error, no room for failure,” says Brian Wright, CAD’s chief operations officer. “Control systems must be able to function in highly hazardous atmospheres and explosive gas environments.”

When Siemens approached CAD about participating in the pilot program for its Simatic S7-1500 PLC, it was an easy decision to make. “We were pleased when Siemens reached out for our help,” adds Wright. “We didn’t have any issues with our system as it was, but this was an opportunity to make a

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Jonathan LeBlanc, Senior Electrical Engineer, CAD Control Systems

better product for everyone. It's these kinds of efforts that resonate throughout the industry for many years to come."

As part of the program, a system equipped with the Simatic S7-1500 was rolled out onto a predetermined platform after in-house testing. The results were so positive that CAD hopes to expand use of the controller throughout its product line within the next 12 months. "These changes were revolutionary," says Jonathan LeBlanc, a senior electrical engineer at CAD Control Systems. "We'd been using Simatic S7-300 PLCs for quite a few years, and we have a good system with that controller. However, we felt the Simatic S7-1500 would save us time in engineering, building, wiring, designing, troubleshooting, and, most important, programming."

An impact on the entire industry

As a result of the pilot program, CAD has also been able to expand system capabilities for remote control from multiple points. Since the 2010 Gulf of Mexico Deepwater Horizon incident, the offshore oil exploration industry has sought to promote data gathering in an effort to prevent similar occurrences – comparable to the way an airliner's black box helps investigators analyze airplane crashes to build a safer airline industry.

Wright believes that eventually the US government will require remote diagnostics and control on all floating drilling operations. Once that happens, he says, operations around the world will likely follow suit. "We've looked at aeronautical, nuclear, and naval standards to see how they might help the oil exploration industry improve products, processes, and procedures in ways that would increase safety and protect the environment. A big part of that effort involves being able to acquire, store, and transmit data."

Remote diagnostics and data collection, however, are still in their infancy in this industry. "Not a lot of data exist for drilling that takes place in previously unexplored areas or in deep water," explains Wright. "CAD Control continues to be a leader in incorporating diagnostic and data collection capabilities into its own systems as well as adding them to other manufacturers' systems already in operation. Siemens is a valued partner in making these modifications because of the advanced capabilities of its products."

Partners for a safe and secure future

CAD Control Systems plans to incorporate the Simatic S7-1500 series PLC into its equipment as quickly as possible. As the industry scrutinizes BOP control systems more closely, equipment requirements are expected to become more stringent. Consequently, demand for a higher-end product will increase, and CAD Control will look to Siemens to help meet that demand. "The features of this controller will be required in the future. Yes, there is a price difference, but when you look at the cost of a problem, the value of a safe and high-quality control system becomes apparent. Siemens is a valued business partner that we've enjoyed working with on projects like this because it gives us the opportunity to make the industry safer as a whole." ■

Users can monitor data and logs through distributed Simatic HMI Comfort Panels, which CAD Control Systems uses as a standard for remote safe areas

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