

## **N302. Bringing Robotic Tensioning to the US**

The need to reduce occupational exposure and cut down on costs is likely to prompt US utilities to adopt robotic pressure vessel stud management systems in the future.

The US company Biach Industries, which designed and built tensioners to manufacturers' specification in the 1960s and 1970s, has been making efforts to increase automation. The company has for example introduced the air-actuated Quick Disconnect (QD) tensioning system, which reportedly reduces operator exposure by up to 80% and delivers an immediate financial payback.

Biach is now developing what is called a Reactor Stud Management Robot (RSMR). In this system, while handling is performed in the manner of a carousel machine, other considerations, such as, "off loading" of studs to racks, equipment storage and accurate positioning have dictated a more sophisticated and coordinated approach. A major building block in RSMR is Biach's Stud Insertion Removal Tool (SIRT). Among the features of SIRT are torque capability to 600 space ft-lb at two levels. This provides flexibility in addressing tight studs and indicates when a stud is "stuck" or reaches a preset level. It also features automatic stud engagement, touch screen controls, and numerical display of stud level travel using a magnetic liner displacement transducer.

The key feature of the RSMR concept is that it is not seen as an off-the-shelf tool, but more as a system tailored to individual plant and utility requirements as part of a strategic long-range plan.

*For more, "Bringing Robotic Tensioning to The US," Nuclear Engineering International, p. 18, January 1992.*