

Coatings Enhance Pipe Performance

By Kari Johnson
Special Correspondent

From corrosion resistance to flow dynamics, specialty pipe and coating manufacturers are introducing and/or expanding products and facilities to meet the demands of today's unconventional resource and deepwater development.

Offerings include such things as new, more abrasion resistant coatings, and nanotechnology coatings that improve flow dynamics while protecting against corrosion. Meanwhile, a machined sleeve protects coatings from weld heat.

Specialty products include a high-pressure steel alloy for deepwater applications, and an enhanced polymer for reinforced thermoplastic pipe that creates lighter weight composite pipe systems.

Polyethylene liners for spoolable line pipe improve flow rates, and PVC (polyvinyl chloride) liners protect pipes from corrosion in saltwater and carbon-dioxide environments.

Coating Sleeves

"We have been coating oil country tubular goods for nearly 70 years," says Mike Adams, product line manager for line pipe coatings at NOV Tuboscope.

The company continues to innovate products and services for piping systems. A key development related to coatings is the Thru-Kote™ sleeve, which Adams says is a machined insert that maintains coating protection throughout the pipeline by isolating the weld area from the corrosive environment. Thru-Kote sleeves can be used both onshore and offshore with any size and grade of piping, he says, adding the product is compatible

with Tube-Kote™ liquid and powder coatings.

Heat generated during welding can burn internal coatings to within a few inches of the seam, Adams says. Thru-Kote sleeves isolate the damaged coating area under the coated sleeve, providing an undamaged coated pipe surface from end to end. He says the sleeve is X-ray



NOV Tuboscope's specialty KC connection keeps the J-area flush, which reduces friction and turbulence in production following hydraulic fracturing, which can erode the pin nose in standard connections.

compatible for the American Petroleum Institute's and American Society of Mechanical Engineers' weld inspection standards.

Also new is NOV's latest TK-70XT coating, designed to resist abrasion. Adams says this tubular coating increases toughness without losing chemical resistance or flexibility. "In places such as Northwest Arkansas, where pipe life expectancy is 7-24 months because of wear from solids, there should be significant improvement in tubing life," he offers.

TK-70XT is a thick-film coating suitable for carbon dioxide injection, oil pumping and water service, Adams continues. The coating is hydrocarbon resistant, and can be used during systematic acidizing. "Tests show this formulation is 11 times more abrasion resistant than TK-70," Adams emphasizes.

NOV made a major change related to connections last year when it acquired Zap-Lok™ Pipeline Systems and its mechanical interference connection that requires no welding. Adams says the connection enables NOV Tuboscope to offer an alternative for rapid, low-cost pipeline construction. "Zap-Lok is great for pipes that transport produced fluids to a trunk line," explains Adams, adding that customers also use the connection in lines moving produced- or freshwater to hydraulic fracturing sites.

In shale plays, NOV Tuboscope has seen increasing interest in its specialty KC connections, says Product Manager Brian Nelson. Production following hydraulic fracturing can cause serious erosion of the pin nose in standard connections, he points out. "At velocities of 60 feet a second, the sand can erode the connection



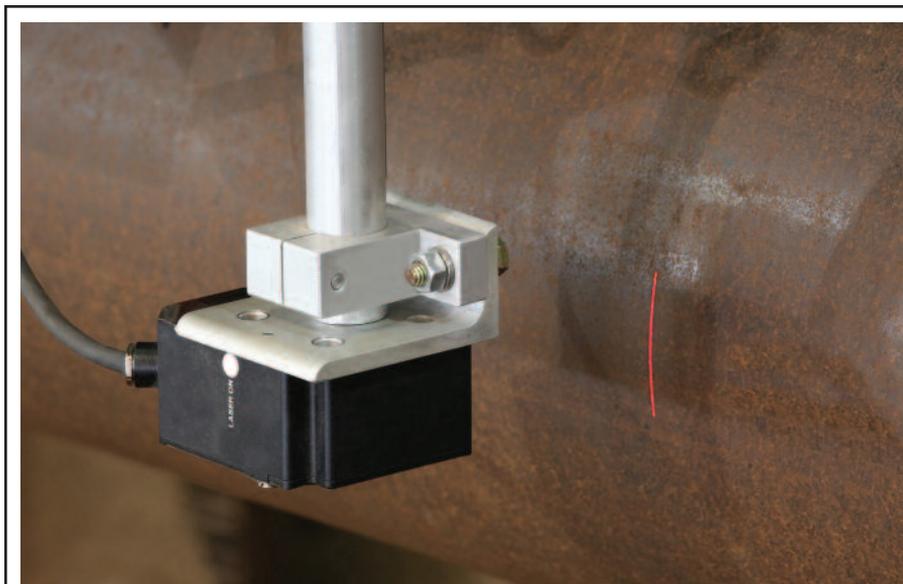
in a matter of a few months,” he explains.

By keeping the J-area flush in KC connections, Nelson says NOV Tuboscope is able to reduce friction and turbulence in the flow. The KC connection is available for fiberglass and bare tubing in pipe sizes 2½ to 7 inches, he says.

Wall Mapping

A new inspection service for wall mapping with outside-diameter data is coming in late 2013 from the NOV Tuboscope critical inspection team. “This service will give operators a much better understanding of each pipe section and the drill string as a whole,” announces Hilton Prejean, NOV Tuboscope’s technical director of inspection.

He says the new inspection service will provide wall minimum, maximum and average thicknesses. The outer and inner diameters are mapped fully. With this information, Prejean says operators will be able to better predict burst and collapse. As part of the service, he says customers receive a master log that can be used to track where each section of pipe is placed in the drill string. The service has been demonstrated to several majors, including Shell, Chevron and BP, says Prejean.



NOV Tuboscope’s inspection service provides minimum, maximum and average wall thickness, which enables operators to better predict burst and collapse. Customers also receive a master log that can be used to track where each section of pipe is placed in the drill string.

As an example of when mapping can be extremely useful, Prejean says, “A full understanding of inside diameter will allow better control of cementing, and an understanding of whether the cement is going where it is needed. Also, in tighter fitting tubes, wall mapping will

provide the information needed to maximize pipe thickness.”

Wall mapping also helps with downhole logging tools. “When a service company sends its tools down hole, they can be better calibrated to the pipe wall thickness,” Prejean explains. □