Drilling Related Measurements and Process Automation

Speaker: Fred Florence, National Oilwell Varco

Throughout the history of oilwell drilling, surface and downhole sensors were deployed to infer the conditions inside the well. Many of the measurements, while rather crude technically, were adequate for monitoring process trends. Today, there is an emerging desire for closed loop, real-time control. Automation of the drilling process requires sufficient instrumentation of the drilling rig and equipment and in the well to continuously provide measurements describing the complete state of the surface and downhole system at all times. New sensors and advanced data processing, as well as downhole power generation and storage are needed. Hopefully the oil, gas and geothermal businesses can draw equipment and techniques from other industries.

The tutorial will present an overview of state of the art drilling sensor technology, covering the surface, and the downhole drilling process. Providers of such technologies should attend this tutorial to better understand the needs of the energy sector and how they could work with integrators and suppliers. Together, they could repackage existing designs for the harsh environment of drilling or find new ways to monitor and control downhole processes to enable more efficient and safer drilling operations.

About the speaker: Fred Florence is a member of the Corporate Technology Resource Team at National Oilwell Varco (NOV), a leading oilfield equipment and service provider. Mr. Florence joined NOV in 1996 and has held a number of engineering, project management and operational positions, including managing a group designing and building control stations to network oilfield drilling machines. A simplified control system was used in 2004 to demonstrate remote drilling when a service company's engineers in England drilled part of a well with a rig located in Central Texas. Florence led the commercialization efforts resulting in the worldwide deployment of those systems. Prior to joining NOV, he worked for Sedco-Forex, now Transocean, where he held various positions in engineering and operations.

Mr. Florence is a member of the SPE and is the Chairman of the Drilling Systems Automation Technical Section (DSATS). He is 2011-2012 SPE Distinguished Lecturer. He holds a BSc in electrical engineering from Southern Methodist University, as well as an MA in international management and an MBA in marketing from the University of Texas at Dallas.