



OTC 19890

Asset Performance Management Helps Oil and Gas Companies Increase Asset Availability, Improve Uptime and Empower More Intelligent Decision Making

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This paper was prepared for presentation at the 2009 Offshore Technology Conference held in Houston, Texas, USA, 4-7 May 2009.

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Abstract

Acquiring the right information to lengthen the life span and improve the availability of production assets, including rotating equipment, is fundamental for oil and gas companies seeking to improve production and boost their bottom line. The complex nature of energy production, coupled with the large investments in assets by operating and production companies, make the need to optimize asset performance greater than ever. Companies that have embarked on the journey toward production improvements are at a turning point. They've seen the early benefits from investing in asset management technologies and now are looking for ways to leverage operational metrics in conjunction with financial metrics to optimize performance across the enterprise. Asset performance management (APM), which empowers decision-making and aligns operations, maintenance and business strategies, is the focus of this paper – an information-enabled APM solution aligns data throughout the enterprise with automated analytics, enabling more accurate decision-making while helping to achieve optimum performance.

Introduction

Exploration and production systems operate in harsh environments with a persistent danger of catastrophe or loss. Process systems handle harsh fluids that stress bearings, seals and the metallurgy of moving parts. The wet, highly saline environment of sub-sea production magnifies these challenges and pressures to the system, which are far greater than the dryer atmospheric pressure that surface facilities experience.

The failures caused by these stresses in turn drive the need for repairs. Sub-sea repairs can be costly and typically involve the use of remote-operated vehicles and the related expertise to drive the vehicles and service the equipment from surface facilities. In addition, while sub-sea production reduces the cost of extracting the fluids, the individual pieces of equipment necessary for production represent a tremendous capital investment. Optimal utilization for the planned life of that equipment is essential to achieving the desired financial results from the facilities. The challenge becomes one of striving for more uptime through an asset management plan that monitors assets and process conditions, and provides automated analytics to drive desired business decisions – an APM solution.

Uptime becomes even more critical when you consider the world's energy consumption is projected to increase by 50 percent from 2005 to 2030, according to a new report from the U.S. Energy Information Administration (Energy Information Administration, 2008). To keep up with this growing demand for petroleum, natural gas and other energy resources, oil and gas producers worldwide are challenged to search for new ways to optimize their production by improving reliability and uptime. At the same time, publicly available data indicates that the oil and gas industry lags behind others in achieving top-tier overall equipment effectiveness (OEE) scores. For example, in a recent Aberdeen Group survey, (Nair, B., 2007) production companies indicated they operated with an OEE score in the range of 0.70 to 0.75. Industries that operated with greater effectiveness were shown to achieve OEE scores at or above 0.85.

Achieving leading-class OEE scores has been shown to help dramatically improve bottom-line results in capital-intensive industries like oil and gas production. Consider a hypothetical 20,000 barrel-per-day facility, and assume that the facility is currently running at a level below optimum availability. A one point, improvement in the facility's availability score would