Preventive maintenance “Success Stories” through advanced process control: Statoil Mongstad; Petron Philippines

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**Topic:**

The move from historical based Hydraulic Actuation to high performance Electric Actuation can reduce Delayed Coker maintenance needs. Two success stories, i.e. Statoil Mongstad and Petron Philippines show how process control can be tracked to improve unheading performance. The “Feed-Back” data collected from both plant operation and our valves are integrated into smart PLC systems that using simple visualization methods can support preventive maintenance of the unheading equipment.
Actuator systems (existing options)
Electric dual Spindle vs. Hydraulic Actuator Tests

Electric Actuator

Hydraulic Actuator
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Statoil* / Petron Setup

* Statoil was the first and innovative project installing electric actuation on bottom unheading devices.
Electric Spindle Actuator

- trapezoidal threaded spindle
- self-locking
Electric Spindle Actuator

- closed position
Electric Spindle Actuator

• open position
Electric Spindle Actuator

Electric actuator moves valve-stem in open/close position by means of 2 spindles and a yoke assembly.
Electric Spindle Actuator

- drive-nut with optical wear indicator
Electric Spindle Actuator
- Emergency Actuation -

- pneumatic emergency actuation
- Standard Electric Actuator (AUMA, ROTORK, etc.)
Advantages for Electric Actuator

- Low number of components as no HPU / HCU and no hydraulic piping is necessary
- Reduced total weight of about 8 tons at each valve
- Smaller footprint / less space necessary
- NO leaking of hazardous liquids on hot surfaces
- Less moving components, No additional «Locking» necessary
- Less maintenance on components
- Easy operator training and easy operation
- «Logical» emergency operation possible via standard air gun by connecting directly to the gear box shaft
Basis of Cost Savings

- No hydraulic manifolds required
- No hydraulic power unit required
- No pressure or flow control instrumentation required
- PLC for electric operated valves is least cost intensive due to lower amount of instruments and can be integrated in the LCP
- Installation is cheaper, e.g. No field piping required
- Less Maintenance, e.g. No maintenance on hydraulics
- Less spare parts required
Details of Electric Spindle Actuator

Actuator
Every multiturn electric Actuator can be chosen, preferred Rotork or AUMA.

Column
The column is completely covered and protected against dirt, dust humidity etc. It does have four inspection windows that can easily be opened to check the condition of the bushing. For cold area standard electrical heater can be included in the coverage.

Junction Box
The Junction Boxes are standard to compile all actuator signals to one single point.

Automatic Lubrication
Which provides a continuous lubrication and assures that the drive nuts work under optimised conditions (actuated only when the valve is travelling).

Limit Switches and Position Indicators
Two limit switches for open and closed valve position
Linear position indicator for continuous position feedback as standard technical solution. Additional Limit switch(es) for the pneumatic gun emergency use indication is available.
For more details please refer to IMI Z&J website at http://www.imi-critical.com/Brands/Pages/IMI-Z+J.aspx or reach our representatives in IMI Critical Engineering booth no. 2.

Thank you very much for your attention.