

Oil & Gas MIDDLE EAST

NEWS, DATA AND ANALYSIS FOR THE MIDDLE EAST'S ENERGY PROFESSIONALS

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FUTURE PROOF

Shell's R&D chief and top technology boss lays out supermajor's commitment to billion dollar innovation spend

CONSOLIDATING QATAR

Spending shift highlights move to operational capacity for gas giant

DEEPER UNDERGROUND

Drilling trends dominated by new wave of tougher well demands

SAFETY SPOTLIGHT

Cutting edge safety and security equipment under the microscope

INSIGHT:
MIDDLE EAST
POISED TO CASH IN
ON EAST AFRICAN
EXPLORATION &
PRODUCTION
BONANZA



Gerald Schotman, Chief Technology Officer & EVP, Innovation and R&D, Royal Dutch Shell.

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50 HSE AND SAFETY

Leaders from the rapidly growing HSE and Safety industry talk about how companies can take more proactive steps in minimising the many threats that challenge owners and operators in the oil and gas industry in this month's HSE and Safety double feature.

60 SILVERRED

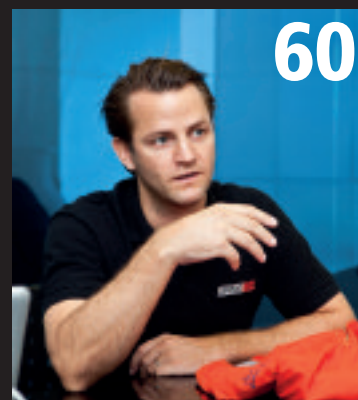
As companies look to project their image and dedication to health and safety at the work place, customized solutions to HSE are beginning to emerge. Emile de Beer discusses how SilverRed's personalized protective garments create better working conditions for companies operating with high risks.

65 EMERSON TECH FOCUS

Conducting production tests on oil and gas facilities can slow down production in this extremely demanding industry. Emerson Process Management reveals how the multi-port flow selector system can minimize production disruption while optimizing reservoir management.

69 GL NOBLE DENTON

GL Noble Denton's customer development manager Ali Choumar discusses why Asset Integrity Management is becoming increasingly important operations in the United Arab Emirates as companies become more accountable for their actions and careful about their reputations. Find out what advice GL Noble Denton has to offer.



WELL TESTED

Emerson reveals how the multiport flow selectors (MPFS) in oil and gas applications can improve production testing and reservoir management

The MPFS facilitates cost-effective and compact selection and diversion of fluids from individual wells for testing, without disrupting the production from all other wells and thus production as a whole.

Testing of constituent flows is also a crucial part of the production process. It

goes without saying that oil, water, brine, condensate, gas and other fluids, must all be monitored and measured regularly.

In the past, wells were connected to a complex piping network, where one manifold would connect all the wells to production and a second manifold would connect the well that was selected for testing to a

shared multi-phase flow meter or separator plus single phase flow meter set.

“While this conventional approach uses common valves, actuators and piping components, it was actually more expensive and electrically complex than a multiport system,” says Chaitanya Shah, MPFS business development manager.



THE CONVENTIONAL APPROACH

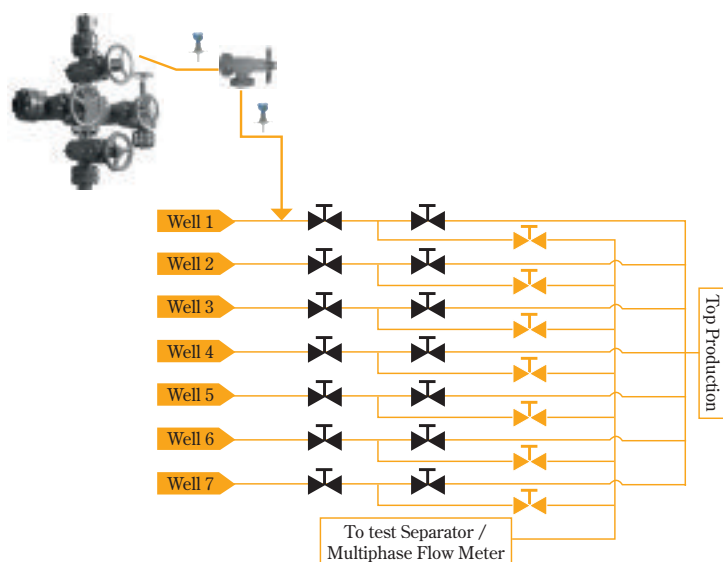


Figure 1 illustrates a typical well test manifold. During a normal operation period, all the wells are connected to the common production and test lines. For instance, if Well 1 needs to be tested, close valve B and open valve C. The flow of Well 1 is then directed to the test facility while all other wells would continue to the production.

Regardless of the test technology, individual well flow must be diverted for testing. Typical onshore Oil & Gas production has wells scattered over a large area and it is not practical for manually opening and closing the manifold on/off valves.

"The oil field may also be in hard to reach locations, remote deserts, deep jungles or in sub-

zero environments such that local 24-7 human interventions means additional infrastructure," says Shah.

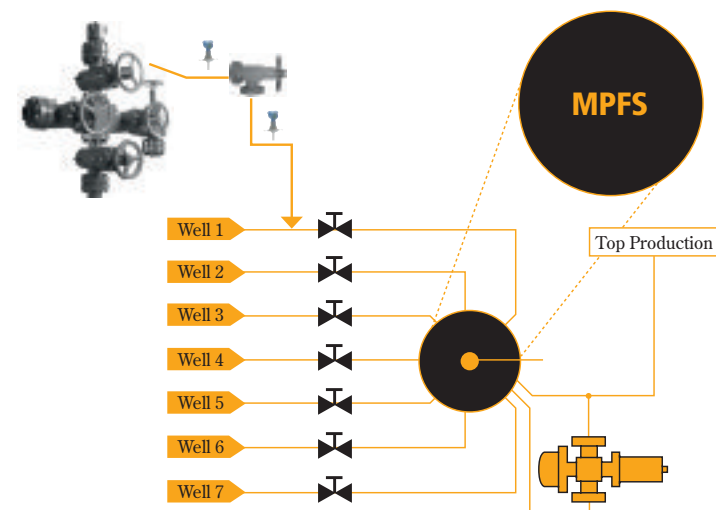
Such a large and scattered network of wells also requires high investment during the green field stage of the project (CAPEX), and more maintenance (OPEX) during the operation stage.

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"The oil field may also be in hard to reach locations, remote deserts, deep jungles or in sub-zero environments such that local 24-7 human interventions means additional infrastructure,"

Chaitanya Shah, MPFS business development manager

THE MULTIPOINT FLOW SELECTOR APPROACH



AN MPFS can help to minimize the complexity of a piping network. Figure 2 shows how in an MPFS system, many elements like valves, control points and wiring of the conventional system can be reduced or entirely eliminated. The MPFS directs multiple wells to a single production flow stream and one well into the test system at the same time.

"The initial CAPEX and future OPEX has a positive correlation with the spread and accessibility of the field."

Prathesh Selvaraj, MPFS Product Manager for Valve Automation in the Middle East and Africa Region.

future OPEX has a positive correlation with the spread and accessibility of the field," says Prathesh Selvaraj, MPFS Product Manager for Valve Automation in the Middle East and Africa Region. "Consequently, the flow diversion is usually automated."

In offshore fields, it is important for platform equipment to be as light and small as practical so that the platform is less costly to construct, operate

and maintain. Developers are continually looking for technologies that make offshore platforms more economical and more efficient to operate. Compared with onshore fields, manual operations on remote platforms are more expensive.

DESIGN

A multipoint flow selector typically has eight inlet and two outlet connections.

Inlets: Seven inlets are con-



Chaitanya Shah, MPFS Business Development Manager



Prathesh Selvaraj, MPFS Product Manager

nected to seven wells and typically the eighth inlet is used as a parking location for the selector plug. This allows for an observation port for temporary maintenance, flushing and also allows production of all seven wells if the test system is offline. The internal plug diverts one well's fluid stream to the test port at a time. The plug is rotated to align with the well inlet to be tested.

Outlets: MPFS test outlets connect to the test systems and the group outlet then carries the flow of all other wells together to the production header.

Normally the pressure drop across a MPFS is very small as the flow streams are only diverted, not restricted. In some applications, flow velocity will limit the maximum flow or maximum number of connected wells, but this condition is not different from using the

conventional dual manifold system.

OPERATION

An electronic actuator enables easier control and monitoring of a MPFS. Whenever well testing is to be performed, operators simply can issue a remote command to position the diverter plug to the desired inlet well. This reduces the likelihood of manual error in the field which can then lead to production downtime and untoward incidents, naturally helping opera-

tions to continue as a hole.

Operation can be done remotely and locally as an MPFS actuator supports numerous communication protocols. The actuator's display shows which well is under test at any given time. "Built-in diagnostics also make sure that issues like control error, motor overload and power loss are resolved immediately," says Selvaraj.

MPFS provides an additional advantage in sour oil and gas fields. For example, when high nickel-chromium internal clad-

ding is required, the simplified piping and fewer valves results in much lower cladding costs overall.

"In a nutshell, the MPFS system compares quite favourably with the conventional manifold system," says Selvaraj. The conventional system involves complex piping arrangements, valves, and actuators and controls whereas the MPFS manages to simplify piping arrangements with minimum valves. Secondly, the large number of leak points also increases the risk of production downtime; the MPFS on the other hand reduces the number of leak points.

Thirdly, the conventional MPFS systems are heavier and occupy more space leading to higher costs compared to the compact MPFS system which reduces space and weight. Fourthly, the MPFS reduces the chance of manual/human error because operators just need to issue a send a command to position the diverter plug to the desired inlet well. The numerous benefits of the MPFS therefore make it a more economically viable alternative to conventional well testing systems.

The MPFS' flexibility commonly allows it to replace 14 valves and actuators and significantly reduces piping and wiring and these benefits are even larger in offshore and sour field production operations.

With MPFS, well flow is inherently not interrupted when switching lines for testing. Commands and automation are simplified with a single MPFS actuator, operation and maintenance work hours are also reduced, along with the risks related to health, safety and environmental standards. **Oil&Gas**

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Prathesh Selvaraj, MPFS Product Manager for Valve Automation in the Middle East and Africa Region.