

Subsea Controls Down Under 2016

Post Event Report

Ice Breaker – (Tuesday 18th October 2016)

by Harry Mackay, Woodside Energy Ltd

Subsea Controls Down Under 2016, commenced as is the customary practise with an Ice Breaker on Tuesday 18th Oct 2016 on board the MV River Bells for an evening Cruise along the Swan River. This gave the delegates and presenters an excellent opportunity to network and relax prior to the 3rd SCDU Conference kicking off in earnest the next morning.

Session A – Keynote, Big Data 1 & Upgrade/Obsolescence 1 (Wednesday 19th October 2016)

by Harry Mackay, Woodside Energy Ltd

Starting first thing on Wednesday in the Parmelia Hilton Conference breakout area. There was a definite buzz with SCDU 2016 delegates & presenters mingling amongst the Sponsor displays and the well needed coffee cart.

The session commenced with an introduction and welcome by Dr Julie Morgan (SUT Perth Branch Chairwomen) who thanked the delegates & presenters for attending the third SCDU Conference and provide an overview of the SUT and the conference.

Harry Mackay (Woodside Energy Ltd.) The Session Chairman for the Wednesday morning introduced the Keynote Speaker - Mr Sean Salter - Vice President Technology – Woodside Energy Ltd.

Sean provided an interesting and thought provoking introduction to the current state of Technology Disruption, Data Science & its application to Subsea Systems and provided some insight into the Current Offshore 'Cost of Supply' Challenge which needs to be significantly reduced to compete with the Onshore Shale Gas, which in turn is driven by the global energy market and provided further insights into data science & advance analytics which is primed for subsea solutions but requires a significant step change in the industry.

Up next was Leong Pei Chze from Forsys Subsea (Technip FMC Company), Leong was presenting 'The Effects of Subsea Condition Monitoring on Availability of Subsea Equipment' looking at what is meant by 'Availability' in relation to Subsea systems and why we need condition monitoring and providing relevant case studies showing the real effects of better data science and advanced analytics in providing better decision making and reducing costly downtime and increasing availability.

Next on the agenda was Luca Letizia from One Subsea, who was presenting 'Integrated Solution for Operational Metering, Surveillance and Condition Based Maintenance', Luca introduced the operational challenges faced from Pore to Process monitoring, and the integrated production management solutions available to the Operator, by integrating actual metering with virtual metering to allow the operator and supplier to quantify, optimize and provide inherent redundancy when matched together.

After a well-earned morning coffee from the coffee cart in the conference break out area.

Ronan Michel & Stephen Keenlyside from Alcatel Lucent provided a presentation on 'DC/FO, A lean and Powerful Subsea Control Infrastructure', they provided an overview of the Optical fibre Telecommunication systems currently in service and their applications to achieve cost reduction in oil & gas and how they have applied the FO technology to 'The Fitzroy Project' providing reliable Telecommunications technology on new O&G facilities on the NWS. They provided a historical overview of the technology since August 2009 then provided an overview of the standard DC/FO building blocks and provided Case studies on Greenfield and Brownfield applications of the technology, The captured the estimated reduced Capex Change of the DC/FO technology by simplifying the Subsea Control system.

Ned Chapman from GE Oil and Gas presented 'System Sustainability & Obsolescence Management the Foundation for Optimised Life of Field Partnerships'. He presented an overview of the current production challenges in Aging infrastructure based on the control of various obsolescence metrics. He then went on to discuss the sustainability cycle to sustain or enhance operations thru the equipment's design life. And where strategic insertion of technology could assist the Product life cycle. He discussed system sustainability through effective obsolescence reporting providing inputs into sustaining systems via upgrades and spares and enhancing systems by adding brownfield developments. He presented case Studies on Systems solutions that GE had effectively upgraded with their client base. And went on to discuss the GE Proprietary Condition Monitoring System 'PREDIX' and the enablers, benefits & Outcomes that this system provided and how big data will transform the way that the clients and operators share data.

Benjamin Ahani from Aker Solutions provided an interesting presentation on 'Alternative development Scenario with Minimal Umbilicals'. He posed the question 'Are umbilicals really inevitable for subsea developments?' as the manufacturing and installation cost can be challenging in a marginal field development! He proposed an alternative solution to the this long subsea tie back conundrum, which was to apply a power buoy to facilitate stranded or marginal subsea developments, he went onto discuss how Power buoys design and capabilities and the different types of power Generation available for the buoy and how micro turbines provide a viable solution to the traditional Diesel Gen-set's in regards to maintenance and cost for the power buoy. He then went on to discuss the telecommunication alternatives when utilising power buoys and the advantages for subsea controls infrastructure and in his last slide he showed the relative costs savings for large subsea Step outs when comparing power buoys to umbilicals.

The conference then adjourned for lunch!

Session B – All Electric 1 & Measurement 1

by Paul Upjohn, ATV S.P.A.

Session B was kindly chaired by Dave Keilty of Chevron who kicked off the first panel session that SCDU has undertaken in the few years of its running. The panel session consisted of Jesper Marstrand (Shell), David Barker (Woodside) and Julien Levadoux (OneSubsea) and certainly engaged the audience with very good discussions, in particular with regards to the topic of the first presentation of the session which was by Andrea Rubio of OneSubsea.

Andrea's presentation was on the topic of "Understanding Electric Actuation Technology and its impact on Subsea Projects" and following on from the panel session it showed potential capex and cost savings that electrical technology can provide within subsea projects. The big question was related to the uptake of such technology and many discussions continued long after Andrea had presented, which emphasised the high level of interest for this topic.

Following Andrea was a presentation titled "Subsea Electric Systems Enter a New Era" whereby joint presenters/authors Ajith Kumra and John Lovas of FMC shared the experiences and history of mostly FMC's electric actuators. Examples of where such equipment had been proven to succeed and how again costs could be saved using such technology were provided. The presentation also looked into areas of other subsea hardware where the benefit of electric technology was going which again proved this was a timely topic.

Liam Widdrington of Siemens Subsea in the UK was next to present just before the coffee break with a presentation titled "DigiTRON3 –Providing a Compact Cost Effective Electrical Connector Solution Where You Need it Most". Recalling this was Liam's first visit to Australia he commented on the large turnout which was great to see and one of the many successes of SCDU in 2016. The focus of Liam's presentation was on the long step out requirements that Siemens had been working on with this 3Kv wet mate connector, highlighting the engineering, qualification and reliability factor throughout his talk.

After the mid-afternoon coffee break it was straight back into a presentation by Svein Eirik Monge of Emerson Process Management with a change of tact away from the all-electric theme and towards one of Measurement and Instrumentation for the remainder of the session. Titled “Integrating & Operating A New Salinity Measurement System As Part of A Wet Gas Meter –Experiences from an Australian Pilot” Svein Eirik, whom had travelled from Norway especially for this event. With wet gas metering not now being a new technology, Svein Eirik spoke about how in conjunction with a West Australian project Emerson had enhanced their meter to accommodate salinity measurement, sharing results from their tests.

Next up was Olav Brakstad from Clampon AS, another participant who had taken the long journey from Norway to be here at SCDU 2016. Olav presented his slides on “Increased Performance and Safety by Means of Subsea Instrumentation” sharing how Clampon have taken their existing technologies and diversified the use of such technology into different areas successfully, focussing on reliability and also safety. Focussing on corrosion and erosion monitoring and how using data from their acoustic instrumentation provided the audience with a good overview of how corrosion/erosion matters can be halted well in advance of drastic incidents that could lead to significant loss of production costs. Vibration monitoring was the other topic of Olav’s talk and with many large gas projects in Australia where vibration could be an issue, this was an interesting topic again how existing technology can be used in different ways.

“Managing Flowline Buckling and Walking with Real time Position Monitoring” was the title of the next presentation given by Stephen Fasham of Sonardyne International Ltd, another international traveller to SCDU 2016. Giving an insight into some of the issues that arise with regards to this particular topic Stephen presented the audience with ways of mitigating strategies and then showing how acoustic technologies have been used to successfully monitor flowlines. Different near-realtime examples were shared showing different approaches on how the data whilst monitoring can be used to good effect.

Last presentation of the day fell to Si Huai Yeaw of Aker Solutions, Si being based in Perth and being one of our SUT committee members. Si’s presentation titled “Oil / Water / Sand Quality Measurement –The Key Enabler for Subsea Separation Development” focussed on subsea processing separation and the three different measurements that are taken and used for operational purposes. Si went over each area identifying and sharing what and why to measure giving a good overall overview for the audience to appreciate. Concluding that quality measurement, the type and reliability plus also the benefit of engaging with vendors early are all key factors for success in this area, wrapping up what had been a great overview of differing technologies in the subsea measurement and instrumentation space that had been discussed throughout the afternoon session.

Session C – All Electric 2 & Measurement 2 (Thursday 20th October 2016)

by Derek Thomson – report pending

Presenters included:

- Subsea All-electric Technology: Now Available for the Future Field Developments - Salvatore Micali, Aker Solutions
- Increasing Shareholder Value with Subsea Electric Actuation Systems - Mark Perry, Wittenstein Motion Control GmbH
- The Subsea Internet of Things - Brendan Hyland, WFS technologies Ltd
- On Umbilicals’ and Power Umbilicals’ Sensitivity to the Ambient Temperature - Magnus Komperød, Nexans Norway AS
- An economical subsea wet gas meter - reliable well production solutions for a low cost environment - Alan Downing, Solartron ISA
- Monitoring Multiphase flows via Earth’s Field Nuclear Magnetic Resonance - Keelan O’Neill, UWA
- Online Real-time Corrosion and Erosion Monitoring of Subsea Pipework and Pipelines with Permanently or Retrofitted Installed Ultrasonic Sensor Arrays - Edd Tveit, Sensorlink

Session D - Big Data 2 & Upgrade / Obsolescence 2

by Helena Forsyth, INPEX

The session commenced with another panel discussion. Two Operators were represented; two panellists were from Woodside Energy Sylvain Lyonnet and Lauchlan Wallace, Marc Campbell represented INPEX, the final panellist was John Lovas from FMC Technologies.

The questions from the floor were included “what do the operators want?”, whether closed loop automotive control is something that Operators are looking for. The panel discussion provided a good way of sharing information between the different organisations.

We moved onto the presentations after a good 30 minutes of panel discussion commencing with Subsea and Topsides Controls Integration: The New MDIS Integration Standard from David Walker, Yokogawa Australia. This MDIS standard defines minimum standard for MCS DCS interface which adds value to the development of the controls set up across multiple suppliers and operators.

Ahmed Ibrahim from GE Oil & Gas presented on Data Analytics –Operational Technology & ‘Big Data’ analytics starts with Machine Knowledge. The presentation covered such information as the Big Data value drivers which include optimisation and prediction. This allows the Operator to have access to the data which will identify of the health of the subsea system, for example monitoring of vibrations and leak detection.

The third presentation just before the afternoon tea break was from Neil Douglas, Viper Subsea, V-LIFE: A Technology for the Rejuvenation of Subsea Insulation Resistance Failures. Neil presented a technology which can “repair” electrical failures in umbilicals. He presented the technology backed up with examples of repairs used by Woodside Energy which identified an increase in the insulation resistance when the V-Life technology is used. Harry MacKay stood up at the end of the presentation to state that the technology has been used by Woodside Energy with positive results.

After another great afternoon tea Oddbjorn Gjerde SEAR Consultant, presented Closing the Subsea Equipment Feedback Loop. This presentation detailed the current SEAR JIP and presented what had been done and where the SEAR JIP hoped to proceed. AS part of the SEAR JIP the subsea test structures identified opportunities where suppliers and Operators may be able to collaborate.

Life of Field is More Than Just ‘Existence’ presented by Kevin Glanville, ProservControls (UK) was the second last of the day. This discussed the requirement for brownfields developments and the impact that obsolescence may have. He presented an example from the Toni field, developed in 1993, and the process of identifying the options for the brownfields development which included the very real obsolescence issue. This is an area all Operators and suppliers face and with pressure for brownfields developments this aspect of subsea integration and upgrades shall continue to be critical.

The last speaker of the day was Gunasekaran Settiyannan from FMC Technologies; Generations of Subsea Control System –Challenges and Solutions. His presentation continued the theme of big data. The technologies and ability to get information from subsea continues to increase the amount of data sent to topsides. Industry standards have had to change in order to manage this data as the data is no longer just process data. Maintenance and system health is now required to be monitored which requires upgrade of the systems which again leads to obsolescence issues which requires the Obsolescence planning to be at the forefront of a joint effort between operators and suppliers.