Collaborate to Innovate in Maintenance: Turning Around the Turnaround

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All references to dollars, cents or $ in this presentation are to US currency, unless otherwise stated.

References to “Woodside” may be references to Woodside Energy Ltd. or its applicable subsidiaries.
Why are we here?

- Turnarounds, like everything, can be improved;
- Woodside has many suppliers working independently in the turnaround area – why not work together?
- Collaborative innovation as a tool for driving process improvement.
Improvement journey - maintenance turnaround
Woodside FutureLab

- Woodside’s collaborative innovation program.

- FutureLab Exchange is about:
  - bringing people together;
  - solving real challenges in new ways;
  - rapid prototyping.
Turnaround maintenance innovation challenge

Q2 2016: Challenge Development Workshop
- Woodside
- Operators
- Contractors/Suppliers

Challenge statements prepared by Woodside
- Problems that have general industry applicability

Q3 2016: Innovation Challenge Kick-off
- Suppliers choose problem and form inter-company teams

Q4 2016: First Round Evaluation
- 8 teams
- Suggested data for Woodside to provide

Q1 2017: Final Evaluation
- 3 teams with members from multiple companies
Challenge development workshop

- Attended by over 30 different companies from both the resource and technology sectors.

- Collaborative workshop focused on the identification and definition of current industry challenges.

- Resulted in the development of common, well-defined industry challenges.

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**TURNAROUND MAINTENANCE INNOVATION CHALLENGE**

**ECOSYSTEM OF INNOVATION**

- OPERATORS
- UNIVERSITIES AND RESEARCH GROUPS
- WOODSIDE
- SUPPLIERS

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Ultimate aim: to achieve a greater volume of quality work in a streamlined manner, improving on current systems and processes

Available data: tracking sheet information gathered from the last shutdown resourced (LNG4 KGP May 2016). Typical work pack contents documentation for non-sensitive systems

Woodside is seeking innovative approaches to increase efficiency and effectiveness of the resource estimators (REs) in both shutdown and campaign maintenance areas.
Innovation Challenge: *Turnaround Material Management*

*Woodside is seeking innovative approaches to improve the efficiency of material management during turnaround maintenance.*

- **Ultimate aim**: to provide a material management/tracking system based on functional location, work order and criticality that optimises container utilisation and laydown area storage
- **Available data**: limited access to 3D models, maintenance activities, drawing and document databases
Innovation Challenge: *Data System / 3D Model Integration*

Woodside is seeking innovative approaches to increasing the efficiency and effectiveness of maintenance preparation through the integration of data systems and 3D models.

- **Ultimate aim:** to provide an automated software tool to identify frequently maintained equipment and create the required links between data systems and 3D models
- **Available data:** Limited access to 3D models, maintenance activities, drawing and document databases
Innovation Challenge: Visualisation of Turnaround Maintenance Preparation and Execution

Woodside is seeking innovative approaches to develop an integrated software solution that facilitates internal development and use of visualisations during preparation of turnaround maintenance activities.

- **Ultimate aim:** to provide an easy to use maintenance preparation and execution visualisation software package.
- **Available data:** Limited access to 3D models, maintenance activities, drawing and document databases
Case Study – MAIKK
Lessons Learned and Conclusions

Lessons learned:
- Realism about what we can share;
- Don’t underestimate the commitment required;
- Need to consider commercial and legal requirements – confidentiality, etc.

Conclusions:
- Working collaboratively with suppliers to achieve a step change in turnaround maintenance;
- Benefits for all – suppliers, other operators and Woodside;
- We hope more operators, suppliers, universities can come together to solve common industry problems.

Contact us at supplierconnect@woodside.com.au to get involved.