

An SPE GCS Technology Workshop

Technology Showcase

October 12, 2010

The Norris Conference Center
803 Town & Country lane
Houston, Texas 77024

Learn more on the
SPE Gulf Coast Section web site:

www.spegcs.org



Gulf Coast Section

P.E.s who attend earn 7 of the 15 PDH required for 2010



Introduction

Topside oil and gas production facilities have developed for over half a century as production first moved offshore on fixed platforms with pipelines to today's floating structures with subsea tie-backs and marine offloading systems. Technology trends for offshore topsides systems will continue to mature to keep pace as the industry moves to more remote locations in harsher environments and discovers more challenging production fluids with high CO₂/H₂S levels, heavy oil, and high water cuts.

- How do we optimize energy efficiency by using waste heat recovery
- What are the latest advances in water injection
- What are the benefits of subsea tie backs
- How do we keep corrosion under control
- What are the major problems with offshore fabrication
- How are the exported fluids measured

This technology showcase will focus on current best practices, technology challenges, and emerging solutions.

This showcase aims to provide delegates with a unique blend of commercial and technical opportunities. Presentations will cover all aspects of the respective topics from fundamentals to current best practice.

The Topsides Technology Showcase, sponsored by the SPE Projects, Facilities & Construction Study Group, will present the following technical areas:

- Water Heat Recovery
- Water Injection/Filtration
- Sub-Sea Tie-Backs
- Material Selection/Corrosion Monitoring
- Fabrication
- Gas & Liquid Measurements

Benefits of Attending:

- *Keep up to date on current topsides trends*
- *Hear about the latest best practices and emerging technical trends*
- *Connect with industry experts and peers*
- *Gain insights you can act on within your organization*

Who should attend?

- Project Managers
- Facilities Engineers
- Business Development Managers
- Engineers new to offshore topsides
- Subsurface Engineers that want to learn something about Topsides Facilities
- Integrity Engineers



Technical Presentations

Waste Heat Recovery

Recovery of waste heat plays an ever increasing role in controlling operating costs as well as reduction of emissions. The development and use of higher efficiency compact heat exchangers has provided the opportunity to move to ever improving levels of recovery without compromising reliability.

The presentation will outline traditional Shell & Tube capabilities and limitations and how the various compact exchangers achieve the higher levels of waste heat recovery. Compact exchangers types discussed will include Plate & Frame, Welded Plate, Spiral, and Plate & Shell as well as guidelines on where and when to use each type.

Sea Water Injection

With increased technological and environmental demands being placed on the oil and gas industry to find cost effective methods to control scale formation and reservoir souring apparent as a result of Seawater re-injection, companies are utilizing membrane separation processes to adjust the dissolved solids component of the seawater. However, the seawater needs to be pre-conditioned upstream of the membranes without using certain conditioning chemicals. Resulting process equipment weights for systems using traditional technologies, such as media filtration, can be prohibitive for a project. However, in recent years there have been step changes in filtration technology for offshore application that has resulted in superior filtered water quality, weight savings and a reduced space requirement. Cameron Process Systems has been involved in a seawater injection project that included Sulfate Reduction Membranes where weight became a major issue. By reviewing the process scheme and employing ultra-filtration technology in lieu of conventional media filtration and cartridge filtration, and by evolving the ultra-filtration technology during the project time-span, a significant reduction in weight was realized. Here, we look at the step changes in technology and the resulting benefits

Subsea Tie-backs, why do them & what are the limits?

Subsea tiebacks are set to become a major factor in the development of new oil and gas reserves. With larger oil and gas discoveries becoming less common, attention has turned to previously untapped, less economically viable discoveries. Many companies are using subsea tiebacks to produce more oil and gas at lower cost, over longer distances and in deeper waters. The deployment of subsea tiebacks maximizes the life of existing production infrastructure.

Advances in flow assurance and multiphase transport now allow the use of tiebacks over much longer distances which has boosted the case for the development of marginal assets. The introduction of subsea processing will strengthen the business case for subsea tiebacks by overcoming the potentially lower recovery rates.

Subsea tiebacks provide a number of important benefits in the development of oil and gas fields. Because much of the infrastructure is already in place, projects can be fast tracked and brought into production much more quickly. Tie-backs are flexible and can be phased in, which is highly beneficial for small / marginal developments with high reservoir uncertainty (connectivity, transmissibility, aquifer mobility etc).

This presentation will discuss subsea tie-back issues, drivers and

options. Significant attention will be paid to define the maximum step-out limit with respect to flow assurance, controls, high voltage transmission, and subsea processing.

Material Selection, Corrosion Monitoring and Integrity Management

Every offshore reservoir is different and the different fluid compositions, pressure and temperature of operation and solid contaminants all have a significant influence on the choice of materials. Any anticipated corrosion needs to be mitigated and monitored to ensure that fluid containment is maintained. This presentation will describe the range of materials commonly used in the offshore process, the failure mechanisms that may be expected and how a thorough and effective integrity management program will ensure that operation continues safely. Risk Based Inspection will be discussed as an effective tool for cost effectively optimizing the integrity management program.

Fabrication

This presentation will address real issues encountered during the fabrication of several major topsides projects. These issues will be reclassified as forming the basis for the good, the bad, and the ugly projects.

1. **The Good Project:** will be represented by a project in which the operator and their engineering company provided sufficient information and plans to enable the construction teams to execute in a timely and economical manner and achieve scheduled progress with very few change orders. This is certainly the type of project which is preferred by all parties.
2. **The Bad Project:** will discuss examples encountered resulting from projects in which incomplete engineering and late customer deliverables led to a less efficient outcome. The project management teams on both sides must share the blame.
3. **The Ugly Project:** will focus on situations when communications totally break down between the owner, engineering firm, and the contractor. Very short timelines, rigid, even dogmatic policies and unrealistic expectations usually result in disappointments experienced by all parties. Change orders are often abundant and long hours result in a contractor's loss of efficiency claims on the project. All of the parties struggle to bring about a satisfactory and economical viable conclusion to the project. In the end, nobody wins!

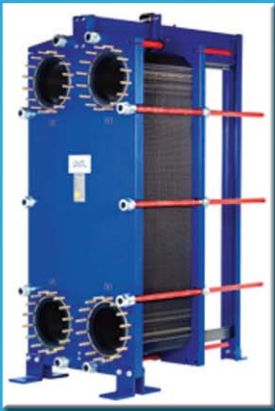
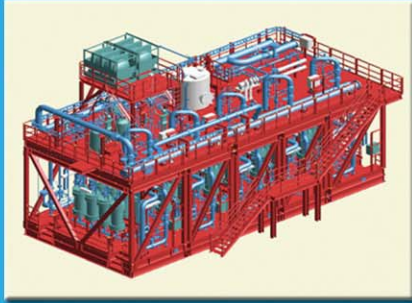
Major lessons learned from the above situations will be shared as well as best practices applicable for making all projects – good projects!

General Overview of Gas & Liquid Measurement

This presentation will focus on general gas and liquid metering philosophies including custody transfer and allocation processes. It will also describe some of the latest advancements in metering technologies and industry trends in addition to the importance of quality measurement and the potential financial impact of poor measurement.

Included in this presentation are different types and proper selection of meter technologies, advantages/disadvantages of meter types, liquid proving systems, gas meter calibrations, and effects of sampling and analytical components on metering results.

Agenda



MORNING SESSION

7:00 - 8:00

BREAKFAST AND REGISTRATION

8:00 - 9:00

Fabrication

McDermott

9:00 - 10:00

Material Selection &
Corrosion Control

Lloyd's Register
Energy Americas

10:00 - 10:30

MORNING COFFEE BREAK

10:30 - 11:30

Waste Heat Recovery

Alfa Laval

11:30 - 13:00

LUNCH AND VENDOR EXHIBITION

13:00 - 14:00

Measurement

Shamrock Services

14:00 - 15:00

Sea Water Injection

Cameron Process Systems

15:00 - 15:30

AFTERNOON COFFEE BREAK

15:30 - 16:30

Sub-Sea Processing

FMC



Gulf Coast Section

Date & Location:

October 12, 2010

The Norris Conference Center
803 Town & Country lane
Houston, Texas 77024

Fee:

\$100

Members (in advance)

\$125

Non-Members (in advance)

\$150

At the door (everyone)

Inclusive of breakfast, lunch
and coffee breaks

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For questions contact Stuart Jones: 1-713-775-4098

Sign up on the SPE Gulf Coast Section web site: www.spegcs.org
or fax this application to **713-779-4216**. **PLEASE PRINT CLEARLY.**

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For questions contact Stuart Jones - **1-713-775-4098**

