CASE STUDY: GRENLAND GROUP, NORWAY

FACTS AT A GLANCE

Company: Grenland Group

Website: www.grenlandgroup.com

Description: Grenland Group undertakes projects within design and engineering of new drill ships and semisubmersibles, as well as modification and conversions of older semisubmersibles, FSOs and FPSOs, shuttle tankers, and other offshore and marine floaters. The company works on modification, and maintenance projects for offshore installations, and land-based industry. Grenland covers the full range of engineering, procurement, fabrication, and installation services (EPCI).

Employees: 1,100

Industry: Offshore

Country: Norway

PRODUCTS USED

- SmartPlant® Instrumentation
- SmartPlant P&ID
- SmartPlant 3D
- SmartPlant Foundation

KEY BENEFITS

- Routinely and rapidly produce piping isometrics, P&IDs, and instrument loop drawings
- Integrate various engineering disciplines
- Handle multidiscipline cost-efficiently and on time
- Anticipate and react to changes

GRENLAND GROUP MAXIMIZES OFFSHORE PRODUCTION

SmartPlant® Enterprise integrates tremendous amount of data in tight timeframe

IDENTIFYING GOALS

Grenland Group needed to be able to deliver all engineering and manufacturing information for the Low Pressure Modification Project at the Oseberg field in the Norwegian part of the North Sea. The project involved two offshore platforms connected by a bridge. Owned and operated by StatoilHydro, the Norwegian oil and gas company, the enormous and complex Oseberg field modification effort required 170,000 engineering labor hours. The project deadline was also extremely tight.

At Oseberg, the project goal is to be able to produce more oil from the wells as the field enters the final portion of its life cycle. Low pressure modification means that, with a lower pressure production method, StatoilHydro will maximize the amount of oil it can extract during the end-of-life of these wells.

The project was a huge challenge with great potential gain. In order to succeed, the project required a monumental effort in integrating disparate data, including manual drawing information, existing 3D models converted from PDMS, use of new 3D laser scanning technology, and new modeling data. The modification project also demands new process information and instrumentation tasks to be generated, in addition to the update of existing P&IDs and instrumentation.

Grenland faced extreme difficulty when it routinely used a wide variety of design engineering applications. The various applications did not work together, compounding workflow problems. As the company grew, design engineering system activities became increasingly harder to support and more expensive to manage.

OVERCOMING CHALLENGES

- Deliver information as clash-free 3D models and structural, piping, equipment, support, and raceway modeling elements, as well as structural assembly and manufacturing drawings.
- Routinely and rapidly produce piping isometrics, P&IDs, instrument loop drawings, and materials take-off data – all while maintaining a seamless connection with the purchasing system.

- Act as the central source for all engineering information, integrating data from several other systems.
- Support multidiscipline projects in the onshore, offshore, and marine markets cost-efficiently and on time.
- Leverage project information and knowledge during all phases of design, procurement, construction operation, and maintenance.
- Optimize data collection, data sharing, and data management.
- Integrate across the workflow using high-quality, reliable data.

REALIZING RESULTS

The timeframe for StatoilHydro's project completion was very critical. This puts a heavy burden on Grenland to be able to automate the information flow to avoid delays. The project's financial success, both for client and owner operator, depends on this.

"SmartPlant Enterprise is essential to achieving our goal," said Terje Ørbeck, CAD manager and 3D coordinator at Grenland Group. "To put it mildly," Ørbeck admits, "there was a lot of very different engineering software in use at Grenland." Information had to be integrated from general drafting systems, like AutoCAD and MicroStation 2D drawings, and from 3D modeling, such as PDS, PlantSpace and PDMS. There was a need for standardization in order to minimize costs and maximize resources. "SmartPlant Enterprise met and even exceeded our expectations," says Ørbeck.

Around 20 designers in the Oseberg project use the system for 3D modeling, structural design, piping, and equipment design, and raceway design. Layout and structural fabrication drawings, piping isometrics and spools are all extracted from the system. In addition, seven process engineers and five instrument engineers perform design work using SmartPlant Enterprise. SmartPlant Foundation is used as the information source for a wide range of people who need access to project data.

MOVING FORWARD

The use of SmartPlant Foundation as the main design engineering data source for the project will be further extended to also include publishing of drawings like layout, manufacturing drawings for structural design, piping isometrics, and P&IDs. Generally speaking, the internal design control workflows and acceptances will be performed inside SmartPlant Foundation. SmartPlant Enterprise and SmartPlant Foundation have great potential to be the key information source for the entire project's development and completion.

"Intelligent tools on a common platform are feeding the main information into a single data source," said Ørbeck. "That means you get control of your design and can achieve your project goal on time and within budget."

After Intergraph's initial implementation and educational services, Grenland took over the ongoing training and project implementation. Grenland now has the ability to manage huge, multidiscipline projects in a reliable and easy-to-use manner on a common platform.

ABOUT INTERGRAPH

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