

TAPPING new RESOURCES

Offshore oil engineers use Bentley solutions to collaborate from offices on two continents



Organization

Wood Group Engineering (North Sea)
or WGENS

Vertical market

Plant

Location

Aberdeen, Scotland

Project objectives

Design and build an offshore platform to tap the rich Clair oil field, previously inaccessible because of its complex geography.

Enable cost-effective teamwork between engineering firms on both sides of the Atlantic Ocean, through a managed environment for engineering and construction data built on the Bentley ProjectWise collaboration server.

Fast facts

Collaboration on the project linked not only U.S. and U.K. engineers, but also scores of vendors, regulators, and contractors in six countries, as well as owner-operators.

WGENS' managed environment has made collaboration more efficient, helped hold down project costs, and helped win contracts.

Bentley products used

Bentley ProjectWise

Just 42 miles off Scotland's Atlantic coast, the rich Clair oil field seemed tantalizing but out of reach since its discovery in 1977. The reservoir's complex geography frustrated attempts at a cost-effective plan for tapping the largest untouched field on the U.K. continental shelf.

But in 2001, oil giant BP named a team of engineers split between Scotland and the United States to design and carry out a low-cost solution—made possible in part by a managed environment for engineering and construction data, built on the Bentley ProjectWise collaboration server.

Aberdeen-based Wood Group Engineering (North Sea), or WGENS, joined forces with Mustang Engineering of Houston, Texas—both part of global energy services company Wood Group.

Teaming up across the Atlantic

Considered a coup for Wood Group, the prestigious BP Clair project calls on the collaborative strengths of the transatlantic team.

Experienced with engineering and maintenance of existing oil platforms, WGENS has deep knowledge of U.K. health, safety, and environmental rules.

Mustang specializes in design and installation of new platforms. The Texas firm brought its Gulf of Mexico

style of platform design and construction, in which vendors build components onshore to be assembled into modules and lifted onto the platform deck. That's more cost-effective than the traditional U.K. method of building the entire platform on-site.

For its part, WGENS made sure the design would stand up to stringent U.K. regulations and harsh North Sea weather.

Collaboration on the project linked not only Houston and Aberdeen, but also scores of vendors, regulators, and contractors in six countries—as well as operator BP and partners ConocoPhillips, ChevronTexaco, Enterprise Oil, and Amerada Hess.

To share content almost instantly among project team members separated by hundreds of miles—and to keep costs to a minimum—WGENS and Mustang rely on a managed environment built on Bentley ProjectWise.

WGENS ramps up to a managed environment

For more than a decade, WGENS has used the MicroStation platform, adding discipline-specific applications such as Bentley PlantSpace Piping.

As the underlying, unifying platform, MicroStation can be configured to support dozens of discipline-specific applications. For instance, WGENS uses Bentley MicroStation TriForma, one of several MicroStation configurations, to let MicroStation support engineering design tools such as Bentley Structural.

Beginning an aggressive growth program in the late '90s, WGENS quadrupled its number of MicroStation seats, and deployed ProjectWise in 1998.

Oil platform operators "were asking for more information to be handed back to them at the end of a project," said Stewart Willox, WGENS corporate drawing office manager. The solution: ProjectWise lets WGENS assemble as-built documentation for easy handover.

Sharing and archiving a wide range of content

ProjectWise serves as central storage for much more than the 65,000 drawing files WGENS initially migrated from its legacy system.

In addition to MicroStation and AutoCAD files, WGENS' managed environment now handles more than 500,000 files in some 30 different formats—Microsoft Office and Project, PDF, TIFF and more. Willox counts nearly 280 different types of documents in the system, from drawings to bills of materials, inspection reports, manuals, and contractors' invoices.

Through ProjectWise, WGENS can securely share content with authorized project team members, via Web access to the managed environment. Revisions become available almost instantly, regardless of the user's location. Project managers decide users' level of access.

And sharing information electronically "helps a lot in keeping overhead down by reducing the cost of consumables" that would otherwise be needed to print and ship paper documents, Willox said.

Such speed and savings are critical in a project as cost-sensitive as the BP Clair platform. WGENS' successful bid benefited from rolling out the company's managed environment to include Mustang and others, Willox

said: "It made collaboration more efficient, helped hold down costs, and helped win contracts."

Extending the managed environment for BP Clair

In September 2000, BP chose WGENS to provide front-end engineering design for the Clair project—an overall picture of project engineering, costs, and construction issues.

Determined to make the collaboration as paper-free as possible, WGENS and Mustang quickly set up a second ProjectWise installation in Houston, where initial design work was done. High-speed Web links connected the Houston and Aberdeen offices.

Because its Gulf of Mexico style relied heavily on sharing content with outside vendors, "Mustang visited more than 100 vendors to make sure they had access to the ProjectWise server—from fabrication yards to the people supplying a valve," Willox said. "They basically had everyone on ProjectWise for everything from detailed drawings to invoices."



Stewart Willox, WGENS corporate drawing office manager

From design to construction to operation

In October 2001, WGENS launched the second stage in the BP Clair project. The execute phase included detailed design, procurement, and construction management for the platform deck and its jacket—the 545-foot steel support structure standing on the sea bottom. WGENS also coordinates undersea drilling and pipeline work with the production facilities atop the platform, adding several more contractors to the project team. "They're all on ProjectWise," Willox said.

With design complete and construction under way, WGENS moved the project database from Houston to Aberdeen. Ultimately, as-built documentation of the Clair platform will be exported to a BP data warehouse, to be used in platform operation and maintenance.

The Clair field is expected to come on stream in 2004. The project's success will likely inspire imitators, Willox said: "We certainly expect that other North Sea projects will follow our approach."

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