



Cable pulling at sea.

Angola

Rosa oil field Deep-sea technic

Build and install six production modules at sea, on the Girassol FPSO, without interrupting its operation: this is the complex mission entrusted to SPIE Oil & Gas Services which has been able to take up the challenge thanks to the expertise developed within the Group.

Flashback to December 2004:

Total entrusts Ponticelli and its subcontractors, Eiffel and SPIE Oil & Gas Services, with the engineering studies, supply, onshore construction and offshore installation of six production modules on the Girassol FPSO*, as part of its project to develop the Rosa offshore field located about 200 km off the Angolan coast, in block 17** operated by Total E&P Angola. This project will increase

the Girassol FPSO's processing capacity so it will be able to handle Total's new production from the Rosa field. The services to be provided by SPIE cover the electricity, instrumentation and telecommunications lots worth a grand total of more than €25 million.

Active synergies

Four modules were constructed in the Eiffel yard, in Fos-sur-Mer, between September



Loading the four modules constructed in Fos-sur-Mer.



Lifting one of the modules.

al challenge



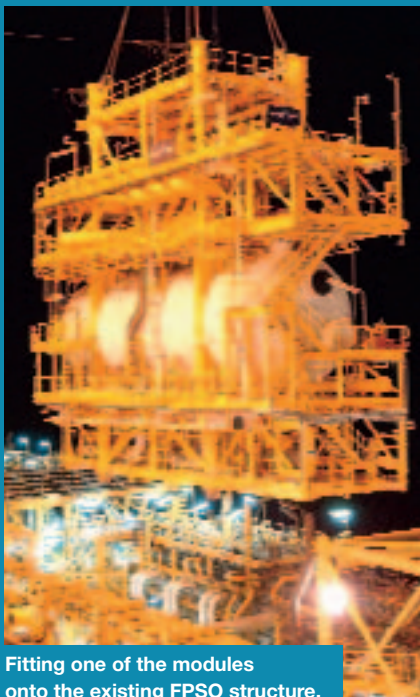
The Girassol FPSO, the living platform (left) and the lifting barge (background).

2005 and July 2006. In mid-October, they were installed on the FPSO, along with a fifth module built in Belgium. Two other

modules were constructed in Angola with the final target of starting production in the Rosa field in May 2007. In performing their work, the Systems Projects department of SPIE Oil & Gas Services brought synergies into play by calling on other entities in the Group. As project manager Didier Aubert explains: "In Fos-sur-Mer, we worked with SPIE Sud-Est. They are acquainted with the region's environment and were able to find the local labour and skills required. For the part of the work that was conducted in Angola, we relied on our personnel and installations based in Luanda."

* FPSO: Floating Production, Storage and Offloading vessel, for the processing of crude oil.

** Sonangol (Sociedade Nacional de Combustíveis de Angola) holds the concession for Block 17. Total E&P Angola is the operator in this block, in collaboration with Esso Exploration Angola (Block 17) Ltd., BP Exploration (Angola) Ltd., Statoil Angola Block 17 AS and Norsk Hydro Dezassete AS.



Fitting one of the modules onto the existing FPSO structure.

The challenges

Safety is everyone's main priority and greatest concern. So before each task was performed, a basic job sheet was drawn up describing that task and assessing the risks involved.

Thanks to this systematic procedure of risk analysis and anticipation, we reached a total of 1,000,000 hours' work at sea with no accidents, much to the satisfaction of all the parties involved and the end customer, Total. ■

Key figures:

140,000 hours
of onshore construction for SPIE.

More than **220,000 hours**
of offshore construction for SPIE.

4,500 cables pulled and installed, representing a total length of **240 km.**

5,300 offshore job sheets drawn up.