

EGINA UFR PROJECT

Saipem's slogan in Nigeria is 'Here to stay' and its commitment is once again demonstrated through the execution of the Egina UFR project.



Field location: 100 km off the Nigerian coast, south of Port Harcourt in the River State.

Max water depth	1,750 m	Umbilicals	80 km
Oil production and water injection flow lines	52 km	Main worksites for onshore activities	4
Gas export pipelines	20 km	Main vessels for offshore activities	3

PROJECT DESCRIPTION

The Egina Field is located off the coast of Nigeria within OML 130 (Oil Mining Lease), some 200 km from Port Harcourt in a water depth ranging from 1,150 to 1,750 m. The development of the Egina field is based on subsea wells connected to a Floating Production, Storage & Offloading (FPSO) facility and stabilised crude oil for export via oil tankers using an offloading buoy. There is also a gas export pipeline from FPSO to the AKPO gas export pipeline tie-in point.

The scope of work of Saipem's project for the Flowlines, Risers, Offloading Systems and Offshore Works (UFR) for the Egina Main Field is listed below:

- EPCI of umbilicals, flowlines and risers:
 - 29 km of 14" production flowlines and top tensioned risers in 2 loops (4 off lines and 4 off risers) combining riser gas lifting in a Pipe-in-Pipe arrangement;
 - 23 km of 12" water injection flowlines and top tensioned risers (3 off lines and 3 off risers);
 - 20 km of 14" gas export lines and top tensioned risers with subsea tie-ins to the existing AKPO-AMENAM gas-export line;
 - 68 km of umbilicals (4 main dynamic and 23 static umbilicals) for subsea control and chemical injection;
 - 4.6 km of 18" oil offloading lines (2 lines of Unbounded flexible);
- T&I of subsea production system including 6 subsea production manifolds with 6 slots;
- T&I of offloading buoy moored 2 km from the FPSO;
- EPCI of 16 off FPSO mooring anchors.

Overall project management is centred at the project main office in Lagos and includes engineering, procurement, QA, HSE and project control functions. In consideration of the complexity of the technical elements involved in the Egina UFR contract execution, the engineering project team in Lagos has been supported by a pool of experts located at Saipem's offices in St. Quentin-en-Yvelines, France.

Upon completion of the main system engineering and installation engineering tasks, the project teams were relocated to the relevant work locations (fabrication yard, logistic base, vessels) to support the execution of the subsequent phases of the project in terms of follow up of the fabrication and offshore construction works:

- the main fabrication worksites for onshore fabrication works are:
 - Saipem Contracting Nigeria Ltd (SCNL), located in Port Harcourt, with a fabrication scope of around 15,000 tonnes of structural equipment and 26,000 tonnes of quad joint for flowlines and risers;
 - Energy Works Technology Ltd (EWT), located in Port Harcourt, with a fabrication scope of around 1,100 tonnes for a total of 9 OLT anchor piles and various structures;
 - Pipe Coaters Nigeria Ltd (PCNL), located in Port Harcourt, with a fabrication scope of 48 km WI/GE anti-corrosion coating lines (linepipes) and 36 km production lines of thermal insulation;
 - Intermare Sarda (IMS), located in Arbatax (Italy), with a fabrication scope of around 2,000 tonnes for a total of 4 production buoyancy tanks and 8 top & bottom assemblies;
- the main marine spread for offshore installation works are:
 - Saipem FDS 2 (deepwater pipelaying vessel);
 - Saipem 3000 (deepwater construction vessel);
 - Normand Maximus (offshore construction vessel).

PROJECT STATUS

It was decided to divide the offshore campaign into two phases during the first quarter of 2016: an 'Early campaign' (concluded) and a 'Main campaign' planned from March 2017 to early 2018. The EPC scope has been adjusted in line with this split.

With regard to engineering, the detailed design phase is almost complete with only the finalisation of some Installation procedures related to the second offshore campaign remaining.

As far as procurement is concerned, all the purchase orders for incorporated items have been issued and concluded.

Construction progress stands at around 70%. The focus has been on the completion of the subsea structures needed for the 'Early campaign'. Spools and jumpers as well as Buoyancy Tank completion will be the main scope and challenges for the 2017 SCNL yard.

The 'Early campaign' installation phase involving the FDS 2, S3000 and an MSV has ended. In addition, the riser piles, manifold piles and 14 FPSO foundation piles are now in place subsea. The 'Main campaign' includes completion of the Egina scope of work in terms of offshore installation. This phase is expected to be completed in January 2018. The project, commissioned by Total, will be completed through a post FPSO arrival campaign in 2018.

The Egina UFR Project is truly a flagship Nigerian project.

HSE INITIATIVES

Confined spaces and Work-at-height simulator

The project employed an innovative approach in the management of confined spaces and work-at-height operations with the development of simulators and corresponding comprehensive training sessions at the SCNL yard. The simulators provided the ability to replicate a variety of scenarios in a controlled environment, allowing employees to learn the proper

SAIPEM SA WORLD ENVIRONMENTAL DAY 2014 CHALLENGE

The project participated in the Saipem SA World Environmental Day 2014 Challenge and placed 3rd for the energy savings campaign carried out in the offices in Lagos.

techniques when responding to a wide range of situations.

Their use has not only increased the training effectiveness for the Egina UFR Project, but other Egina contractors now have access to these facilities and this training.

HSE management coaching for subcontractor personnel

In order to improve their HSE Management System, subcontractor HSE personnel were coached by project HSE personnel. Specifically, a gap was noticed in the competence level of the subcontractor's environmental team and environmental training was provided at the SCNL yard for 3 subcontractor resources.

The training included classroom sessions, walkabouts, mock scenarios and interactive classroom exercises.

COMMITTED TO LOCAL DEVELOPMENT

The Egina Project implementation plan confirms Saipem's strong commitment to Local Content in Nigeria. In compliance with all local regulations Saipem reached the targets prioritising the employment of Nigerian Nationals



Inauguration ceremony of the Confined Spaces and Work-at-Height simulator

in the execution of the works and giving first consideration to Nigerian vendors for procurement purposes in order to promote socio-economic development of the country.

For Saipem, Local Content means creating employment, developing local skills and capacity, transferring know-how, collaborating with local suppliers and subcontractors and enhancing local entrepreneurship in its operations.

Training programme for local engineers

Saipem has established a first class reputation in Nigeria for recruiting and training skilled young locals – spanning from professional roles to blue collar positions, enormously investing in the training and development of its local workforce/host communities on the Egina field development Project.

Saipem conducted an extensive training programme for local engineers to develop the multidisciplinary expertise required for the development of deep water projects. The programme, implemented both in Paris and in-country, covered key areas that included cathodic protection, modelling and analysing subsea structures, and

geotechnical, flowline, riser & installation engineering. Also, an in-house succession plan, which focuses on using hands-on experience to bridge in-country capability gaps, has been set in motion and is also helping to improve the skill sets of the local workforce on newer technologies, engineering software applications and managerial development.

Young Nigerian engineers recruited and trained to a higher proficiency level in engineering disciplines

-200

Training man-hours

100,000

Furthermore, training and certification programmes were conducted for the local workforce in the following categories: general HSE training sessions, project management, quality management, project interface management, subsea engineering design, fabrication, installation & commissioning and procurement services.

National Human Capacity Development (NHCD) Initiative

Alongside training for its employees and within the framework of the Nigerian Oil & Gas Industry Content Development Act, Saipem promotes training for young graduates with a view to equipping them with professional knowledge and increasing their

ACKNOWLEDGED LOCAL CONTENT CHAMPION

Saipem's commitment to creating local value was officially acknowledged on July 27 when Nigerian Content Development and Monitoring Board (NCDMB) representatives and the House of Representative Committee on Local Content were invited for a Saipem presentation on Local Content achievements and for a yard tour. Saipem presented the landmark Nigerian Content achievements on the Egina Project realised through the intense training of the local workforce, expansion of yard facilities and mentoring subcontractors. The presentation also detailed Saipem's support to the local business with a focus on activities performed for the first time in Nigeria in the areas of Engineering, Procurement of in-country manufactured items, Construction and Subcontracting of specialised services. Thanks to its huge investment in infrastructure and human capacity development, SCNL is able to deliver complex projects in Nigeria executed by Nigerians.

'The delivery of the Egina UFR package by Saipem Contracting Nigeria Ltd was a clear demonstration of how capacity has evolved over the years in Nigerian yards.'

The Executive Secretary NCDMB, Patrick Obah

'We are very humbled to say that Saipem is proud of these achievements in Nigeria. Again, this is an example of our Nigerian Project made and executed by Nigerians. We have a lot of technology here which has now become the property of the Nigerian group at Saipem. We have set up a first class yard, and even exporting from Nigeria some of our home grown technology.

It is not by chance that we have been here for 50 years and consistently trying to grow with Nigerians in Nigeria. We are for sure on the right path of growth with Nigerians in Nigeria.'

The Managing Director, Guido D'Aloisio

Messages thanking to the local authorities for allowing Saipem to express this capability.



HEALTH CARE IN THE SCNL CLINIC

In collaboration with a local non-profit organisation, 'Society of Oncology and Cancer Research of Nigeria' and the SCNL clinic, a health campaign focused on breast cancer (symptoms, early detection and how to do breast self-exams) for SCNL employees was implemented. This campaign is particularly relevant as there are still a lot of misconceptions and myths associated with breast cancer.

Breast cancer awareness sessions conducted

3

The Egina UFR Project procured 1 x-ray machine and 1 ECG machine to be used in the SCNL Clinic. Not only will these machines improve the Clinic's ability to more accurately diagnose and treat patients, they will also support the Medical Fitness Certification process for project personnel.

employability. This process is monitored by the Nigerian Content Monitoring and Development Board (NCDMB). The training programme within the Egina UFR Project started in 2015 and continued in 2016.

Total number of NHCD trainees assigned to the Egina Project

20

The 20 NHCD trainees were divided into two groups, the first one rounded off in June 2015 and the second one in November 2015 and May 2016. The training covers key aspects on Saipem operations, subsea design engineering, project planning, HSE, quality, fabrication and installation engineering & operations.

Cultural awareness induction

The project, addressed to every expatriate mobilised to Lagos, developed and implemented a cultural awareness induction to increase the level of understanding, interest

in local culture and sensitivity to cultural differences. The goal is to promote greater efficiency, improve communication within the project team and reduce the incidents of cultural missteps. The cultural awareness information has been integrated into the project HSE induction.

Investing in the local supply chain

The entire Egina Project is run from SCNL's premises in Lagos, and most of the engineering is performed in Nigeria.

One of the main goals of the entire project is to prioritise the use of local vendors: the vast majority of fabrication works is performed at the SCNL yard in Port Harcourt, which is also used as a logistics base. Saipem decided to invest in two main local subcontractors, the first for the fabrication of the offloading buoy mooring anchors and the second for the coating of the line pipes. Through significant coaching, auditing and management commitment, these vendors have been developed to meet the international standard of the oil industry.

F.C. Zingale, On the job at the yard, Nigeria

