A yard ideally positioned to serve Brazil

Brasa’s unique location in the heart of Rio, is well placed to serve the industry’s major oil players for offshore in Brazil. In little more than a year, the shipyard has risen from a land in Niteroi that stood empty prior to 2012. Created to develop innovative solutions for the growing demand in the construction and oil exploration industry, the yard has gained a reputation for quality work to international standards, as well as offering flexibility for project execution and delivery.

The expansion in the FPSO market is creating technology challenges for the industry. The rapid development of the deepwater and pre-salt fields offshore Brazil has seen a major step-change in the scale of FPSO projects, in particular the complexity of the topsides. This is where Brasa’s expertise can play a major role.

An equal joint venture partnership between Synergy Group and SBM Offshore, Brasa specializes in FPSO integration and topsides construction. Boasting a heavy lift barge crane that has the highest capacity in all of Latin America and a quayside to welcome mega FPSOs, the yard is attracting international oil and gas companies who are bidding for Brazilian contracts.

In the long term, local content is irreversible as the government is determined to make this industry grow to benefit the country and its people. Brasa is a Brazilian company employing highly qualified and skilled local manpower and contributing to the development of the country’s technological know-how. Oil and gas clients, in particular the National Oil Company Petrobras, have recognised the yard’s importance in bringing their projects to fruition, to the highest industry standards while equally ensuring a sustainable approach.

The yard recently completed the FPSO Cidade de Ilhabela project for Petrobras. An ambitious project for a new yard with the construction of 10 modules at over 12,500 tons, it was a challenge which Brasa met with outstanding project results.

With the departure of Cidade de Ilhabela for offshore Brazil, the yard’s next major project is the integration of the 12 modules, currently being constructed for FPSO Cidade de Maricá and FPSO Cidade de Saquarema with expected completion in 2015 and 2016 respectively.

Brasa yard is an excellent example of the way to be followed by Brazil and it demonstrates how a young company founded on the partners’ solid experience and knowledge can contribute to the country’s growth.
Brasa with its state-of-the-art construction site, heavy lift crane barge and quayside

...within its strategic location in Guanabara Bay, helps to minimize bottlenecks in the Brazilian market and in particular fills a need for FPSO integrations.

Brasa - A Brazilian Yard

A joint venture between Synergy Group and SBM Offshore, Brasa contributes towards the continued expansion of Brazil’s indigious oil and gas services market while facilitating the local content requirements for international operators. In late 2011, the Estaleiro Brasa was born in Niterói, a well-known suburb of Rio in the heart of the offshore and shipping industry. It comprises 65,000 m² of construction and work space.

Fabrication load-out, integration and commissioning

Brasa has the capacity for process modules fabrication, load-out, integration and commissioning of an FPSO in competitive delivery times. It is able to handle in parallel the integration of one FPSO and the construction of modules for another.

Yard in full swing

The yard successfully completed the construction of 10 modules (12,500 t) and the lifting and the integration of 13 modules onto the FPSO Cidade de Ilhabela, Brasa’s first major FPSO project. Brasa is now in full swing for the construction of the modules for the FPSOs Cidade de Maricá and Cidade de Saquarema.

High quality and safety standards

At Brasa, world class quality and safety standards are always met during the construction phase and delivery dates are achieved.

Yard and Production Equipment

- 1 Heavy lift crane barge (highest capacity in all of Latin America)
- 7 Mobile cranes (35-130 tons)
- 3 Munck trucks (10 tons)
- 4 Tower cranes (5 tons)
- 8 Forklifts (2.5 / 7 / 15 tons)
- 1 Truck with flat trailer
- High standard welding equipment
- Scaffolding equipment

Tower cranes

| Quantity | 2 Units |
| Max. lifting capacity | 5 ton @ 5m | 2.3 ton @ 40m |
| Boom | 40 m |
| Tower | 40 m |

http://www.estaleiro-brasa.com.br/
Jobs for Brazil
In addition to increasing Brazil’s autonomy in the oil and gas industry, Brasa is the only yard fully dedicated to FPSOs. It has created new jobs, currently employing 3,200 people and provides training for employees, thereby preparing a new generation of technicians and engineers to serve future Brazilian developments.

Our Distinctiveness

The Team
The Brasa team is a blend of different company cultures, comprising direct employees, subcontractors and partners, of multiple nationalities, and diverse experiences. Our highly qualified and experienced people have joined us from the Maua yard, Synergy and SBM Offshore companies, and many Brazilian regions, including Sao Goncalo, Niteroi, Rio & the Volta Redonda area.

The Flexibility
Brasa’s Workforce and Supervisors are multi-trained and have a mind-set oriented towards flexibility and performance:

• Our welders are double-qualified (Piping & Structure)
• Our fitters are multi-disciplined (Piping, Structure, Outfitting, E&I)
• Our designers hold multiple qualifications
• Our PCP technicians have a broad range of skills

The Motivation
The motivation of our team is essential. Therefore we:

• Listen to our workforce (close communication lines with Supervision & Management teams)
• Provide excellent working conditions (facilities, tools, equipment...)
• Undertake regular “Climate Surveys” & maintain strong internal communications.
Brasa Yard: a shining example of sustainability married with productivity

Estaleiro Brasa is recognized as an excellent example of sustainability in terms of health, safety, security and environment (HSSE). Working in compliance with local regulations and respecting the local environment while also involving the local community, the yard has achieved its aspirations.

The pioneering yard has left its ethical and ecological imprint on every step of its development and went far beyond the legal requirements imposed by Brazilian law.

Globally, the project entailed the development of new fabrication yard facilities dedicated to complex FPSOs for the Brazilian market. Specifically, the plan for the 65,000m² yard was to have the capacity to assemble Topsides modules – goals that were realised. The added challenge was to build the yard while adhering to its ecological programme, which is dedicated to preserving the fragile ecological surroundings.

Situated on the Ilha do Conceição within the environmentally sensitive Guanabara Bay, Brasa felt strongly about carefully conserving this heritage whilst at the same time providing a thriving workplace that offers jobs to the local community. In particular, this latter point would help its customers meet the obligations imposed by the Brazilian government on international companies to source at least 65% local content for all projects in the country. Director, Philippe Levy, underscores the importance of the yard expansion “for local content projects the basis for the future is that all complex and heavy modules will have to be built in Brazil.”

The yard’s construction was achieved within a very tight schedule and its completion allowed the assembly of FPSO Cidade de Ilhabela modules to start on time in July 2012. Brasa successfully completed its scope for the vessel in 3Q 2014.

José Miranda Formigli Filho, Petrobras Exploration and Production Director says “Brasa will really contribute to the development of local capacity for delivering big projects like Ilhabela”. Further underscoring the global importance of the yard, José Miranda Formigli Filho, says “We look at this local content issue as an opportunity to develop the country.”

SOS bay emergency plan

A vital initiative for the prevention of environmental impact is the contract with Oceanpact, a company specialized in performing fast and efficient responses to environmental emergencies along the shorelines. Brasa Yard also has an Individual Emergency Plan, which provides appropriate responses for all possible scenarios that may occur that could put the bay at risk.
The bay is economically essential to the fishing and tourism industries of several cities situated on its shores, which further underscores the importance of Brasa’s ecological achievements.

With the help of volunteers 140 seedlings were planted in a nature reserve at the Municipality of Niteroi City Park, to environmentally compensate for the removal of vegetation at the yard. The exercise helped promote environmental awareness. The trees’ progress will be monitored annually by the eco-volunteers.

Originally home to an old abandoned yard, work included demolition of the redundant facilities with an estimated 40 tonnes of construction waste being donated to other companies for re-use. In addition, waste soil sampling and analysis were conducted to ensure that the soil was not contaminated. The yard’s environmental programme also includes:

- Assessment and monitoring of ground water pollution
- Installation of a rainwater drainage system, a compact station for sanitary effluent treatment, an oil and water separator box for a car wash, a waste central and containment gutters for buildings
- Milling of wood and plant material, which was incorporated into compost windrows for organic fertilizer production.
- A week-long event ‘Cleaning Guanabara Bay’
- An educational program with local communities and schools for the World Environmental Week (including a celebration for International Environment Day, with activities and games to raise awareness)
- A workshop on an energy saving solution for the yard
- Publication of an environmental booklet on waste reduction and segregation
Brazilian Lifting Capabilities - BSL
BSL provides a Brazilian solution for heavy load lifting. Our mission is to add value and provide flexible lifting options for projects within Brazil.

**Flexibility**
We offer services related to module lifting for integration on FPSOs and rigs, as well as support for shipbuilding activities and cargo offloading operation projects. We operate in sheltered waters all along the Brazilian coast, and our Niterói location allows for quick and easy access while maintaining competitive pricing.

Lifting windows and notification mechanisms often cause difficulty throughout a project, we provide “Just in Time Service” to be where the project needs us at the right moment. There is no need to carry over any work on board, reducing delays and/or additional time.

**General information**
- **Name:** “Pelicano 1”
- **Flag:** Panama
- **Owners:** Pelican Assets S.A.R.L.
- **Class notation:** A1, Barge, Harbor, Intra Coastal Waterway Service
- **Year of build:** 1981
- **Builder:** Mitsubishi Heavy Industries
- **Country:** Japan

**Power system**
- Diesel powered engines
- **Barge power:** 1 AC 625kW generator
- **Emerg. power:** 1 AC 300kW generator
- **Crane power:** 2 DC 220kW generators

**Hull**
- **Length overall:** 110.00 m
- **Length bpp:** 104.77 m
- **Breadth:** 39.00 m
- **Depth (molded):** 7.00 m
- **Draft (summer):** 4.26 m
- **Gross tonnage:** 8,696 t
- **Net tonnage:** 2,594 t
- **Deadweight:** 10,314 t
- **Light Ship:** 5,500.9 t
- **Operating draft (max.):** 3.50 m

**Thrusters system**
- 2 x 2680 HP Thrustmaster hydraulic powered thrusters
- 2 x diesel powered HPUs

**Crane system**
- 2 x main blocks
- 1 auxiliary block
- 4 gear handling chains
- **Cap. for 2 main blocks:** 2050 t
- **Cap. for 1 main block:** 900 t
- **Cap. for aux. block:** 300 t
- **Cap. for chains:** 10 t (each)
- **Max. main hook height:** 103.00 m (WL)
- **Outreach for max. cap.:** 32.00 m
- **Max. air draft:** 124.40 m (WL)
<table>
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Following eight active months at Brasa, the FPSO Cidade de Ilhabela departed from the yard’s quayside in September 2014. The successful completion of this major project represents a great achievement and source of pride for the yard.

The Brazilian shipyard completed its scope for the FPSO on schedule, which included the construction of 10 complex modules and the lifting onboard of 13 modules. The milestone is a testimony to the know-how, experience and pride that Brasa employees brought to the project.

The SBM Offshore vessel berthed safely at the Niteroi-Rio based Brasa yard on 12th January 2014. Integration of the hull and topsides then took place at the yard where 10 of the vessel’s 18 modules were built. Cidade de Ilhabela is Brasa’s first major project with the construction of modules weighing a total of about 12,500 tons.

The vessel was the first FPSO to be integrated at Brasa’s quay number two. Three additional modules were constructed and delivered by another Brazilian yard and integrated into the vessel using the yard’s heavy lift crane barge. July 2013 saw the successful delivery of Brasa’s Heavy Lift Barge crane, Pelicano 1, the highest capacity barge crane in Latin America allowing the yard to carry out the module lifts on this mega FPSO.

**Module lifting done in-house**

The lifting of the 13 modules onto FPSO Cidade de Ilhabela was completed at the end of March 2014. The vessel was turned twice in order to load onto both the starboard side and the port side. The sequence had to take into consideration the degree of mechanical completion of the modules and also to have a larger clearance on one side during the lifting process. The heaviest module was the CO₂ Gas Compression (TS-073) with 2,332t, which was lifted in three sections. The heaviest lift undertaken by the crane was the Main Compression B module (TS-072) weighing over 1500t.
The FPSO includes topside facilities able to process 150,000 bpd of production fluids for export, including the substantial volumes of associated gas from the pre-salt field.

Vessel details:
- Total Length: 344.9 m
- Beam: 58 m
- Height: 30.3 m
- Weight: 75,000 t

The vessel will be installed on the Sapinhoás field (Partners on Block BM-S-09: Petrobras, BG, Repsol) with a water depth of 2,140m. The FPSO has the capacity for production of 150,000 bbls of oil per day and a storage capacity of 1,600,000 bbls.

Gas treatment B 758 t
Water injection / utilities 786 t
Seawater treatment 958 t
Main gas compression A 1,193 t
Oil processing A 1,326 t

Oil processing B 1,379 t
Gas treatment A 1,404 t
Injection gas compression 1,430 t
Main gas compression B 1,565 t
CO₂ gas compression 2,332t
I am Brasa

“To be part of the biggest FPSOs’ construction of the world is more than a fascinating experience, I feel I’m part of Brazil Oil exploitation history.”

Pedro Oliveira
Field Engineer from EDP (Engineer Development Program)

“Working at Brasa allows me to be part of Brazil’s development. New challenges and achievement are what make me proud of being part of this team”

Mariana Fonseca
HR Analyst

“Brasa will be the best-in-class fabrication yard in Brazil within the next 5 years and I would very much like to participate in this achievement”

Rodrigo Gomes
Business Development Manager

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“What makes me motivated is the day by day challenges. I’m very proud to be Brasa!”

Flavia Barbosa
HR Analyst

“Safety, Discipline, Determination, Leadership, Engagement, Quality, Focus and Team are the keywords for Brasa success.”

Alexandre Schwenck - Welding Supervisor and Anderson Ferraz - Structural Supervisor

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