SBM Offshore’s experience in maintaining and upgrading the world’s largest privately owned fleet of Floating Production Systems (FPS) allow us to provide a wide range of innovative and cost effective Brownfield Services to the entire global FPS fleet.

Our first brownfield project was completed over 20 years ago, now our specialized teams are offering our Brownfield expertise outside of SBM’s own fleet, by launching a dedicated and focused Brownfield Services product line.

We have successfully and safely delivered 200+ Brownfield projects on producing FPS’s, covering all scopes from moorings to flare-tip.

We have helped enable 270+ years of cumulative production, with 99%+ uptime on our own fleet.

Let SBM help you achieve the same for your assets.

- 200+ Brownfield projects
- 270+ years cumulative operating experience
- 99% uptime
Condition Assessments

There are many reasons why Owners & Operators of Floating Production Systems (FPS) would like to evaluate the current condition of their assets.

Whether you are preparing for a Life Extension campaign, are considering making modifications and upgrades, or would just like a better understanding of the current health and performance of your asset and what you could do to improve upon this, SBM Offshore can help.

We regularly assess the condition of all of our assets through our asset integrity and asset management programs. SBM has developed robust in-house systems and processes, partnerships with key service providers and possess a significant database of lessons learned.

This ensures that a comprehensive and accurate overview of your mooring system, hull and topsides can be provided, with key risk areas highlighted and explained.

Small studies Pre-FEED & FEED

Brownfield projects are unique in nature. You are working with an existing asset located in-field, usually live producing hydrocarbons, each with differing age, characteristics, conditions, regulatory environments, POB, access restrictions and many more challenging factors.

Determining the right solution, execution methodology and budget is critical to each project’s success, especially as every challenge can have multiple options, schedule and cost.

SBM Offshore is highly experienced in evaluating such options, having delivered over 200 Brownfield projects for our own fleet. We do this every day and are pleased to offer this same service to all Owners & Operators of Floating Production Systems worldwide.

Whether it’s a small study for feasibility and a budget evaluation, or a full FEED with firm pricing and execution methodologies, SBM can help.
Debottlenecking & Capacity Increase

It is not uncommon for production systems to experience lower than expected capacity levels, either soon after delivery or during the life of the asset. This may occur for many reasons:

- Errors in the existing facilities design and/or installation
- Wrong installed material identified
- Varying in production rates
- Differing in fluid properties
- Change in arrival and export conditions

SBM can provide Clients with a range of solutions to help restore your facility to optimal production levels, safely and with minimal disruption to ongoing Operations:

- Identify & evaluate bottlenecks
- Provide a range of cost effective and efficient solutions
- Define scope, schedule and work packs
- Deliver full EPCI solution

Major Repair & Upgrades

Frequently, Floating Production Systems require work that falls outside of the scope or capabilities of the Operational team. This work is usually significant in nature and is either a planned Upgrade or an unplanned Major Repair.

SBM has over the past 20 years gained significant experience in both categories, and developed robust in-house systems, to efficiently and effectively deliver safe, cost effective solutions and ensure asset integrity.

Whether you require planned proactive interventions, with condition monitoring and a risk-based maintenance and upgrade approach, or are facing an unplanned reactive challenge, requiring a fast and effective short and long-term solution, SBM has the experience to assist.

Examples of recent Major Repairs and Upgrades include tank crack repairs, mooring system repairs, boiler replacements, piping replacement, alternator change out, extra modules for tie-backs and many more.
**CASE STUDY**

**Tie-backs: Thunder Hawk Semi-submersible**

SBM’s Thunder Hawk Deep Draft Semi Installed in July 2009 and located in just over 1,847 meters of water in the Gulf of Mexico was first producing for client Murphy and in 2014 a Production Handling Agreement was signed with Noble to tie-back the Big Bend and Dantzler field to this unit. The new wells started producing in November 2015.

SBM successfully tied back these new wells to its own platform and provided a cost effective solution for both clients. The upgrades and tie-backs were performed in record time and allowed the unit to reach her maximum production capacity of 60,000 bopd.
Brownfield Services

**CASE STUDY**

**Upgrade: BC-10**

Built by SBM, the FPSO Espirito Santo has been moored in around 1,780 meters on the Parque das Conchas (BC-10) field offshore Brazil since 2008. Since first coming on-stream, the unit has progressively added further wells and increased production over three phases. SBM Offshore, as operator of the unit, has fully managed this phased development for client Shell and the brownfield works throughout:

- **Phase 1** - development of three fields tied back to the FPSO, via subsea wells and manifolds. This involved nine producing wells and one gas injector well.
- **Phase 2** - tie-in of Argonauta O-North field, coming on-stream in October 2013.
- **Phase 3** - installation of subsea-infrastructures at Massa and Argonauta O-South fields, and tie-backs to the Espirito Santo, coming on-stream in 2016.

This has dually benefited the client and SBM by increasing production on the field, with minimal down time. SBM was able to perform all work while production was maintained on the unit. The Espirito Santo kept full focus on safe and quality work, and impressively turned in the highest safety performance of SBM’s Brazilian fleet.

**Tie-backs**

It is estimated that around 50% of the world’s FPS production capacity is not utilized. This underutilization offers the market a unique opportunity to quickly and cost effectively bring additional hydrocarbon on-stream, especially important in challenging economic times.

Having successfully delivered numerous tie-back projects on our own assets, SBM can offer existing Owner & Operators, or prospective facility tenants, a range of services including:

- Conceptual evaluation of new field and required facility upgrades
- Detailed FEED and Survey proving a robust technical and commercial evaluation
- Full EPCI solution for all required modifications, including offshore installation with our own Construction vessels or third party heavy lift vessels
CASE STUDY

Tie-backs: Kikeh FPSO

The FPSO Kikeh is located, off the coast of Malaysia. The field water depth is approximately 1,320m (4,400ft). The FPSO is owned and operated by JV companies between MISC and SBM Offshore. She has been producing on the Kikeh field since August 2007 with an uptime record of over 99%.

The client Murphy and partners were seeking solutions to quickly produce a nearby field. The upgrading of the Kikeh FPSO provided the fastest and most economical solution for this field development.

The modifications made to the FPSO Kikeh allowed it to handle the extra production, water injection and power requirements while minimizing conversion time and CAPEX as well as limiting any disruptions to the existing operation in the Kikeh field.

The FPSO’s fully operational status added to the constraints of the lifting procedure for the integration of the two additional modules (first oil and processing SBM’s previous experience in similar situations and know-how across engineering, construction, offshore installation and offshore operation was aligned to proceed in the safest and most efficient way for this part of the upgrade.

By keeping the unit on station during the upgrade, the FPSO maintained production and all risers remained in place.
Life Extension

As an asset nears the end of its certified design life, Owners & Operators need to carefully evaluate whether they want to extend the life and what this will entail.

A detailed Condition Assessment will be required to gain a better understanding of the current status of the FPS and to identify any critical issues. Equally, a review of the latest regulatory requirements is necessary to see if there have been any significant changes since the FPS was built and installed.

Following these necessary evaluations, a detailed plan can be put in place that meets the technical and commercial requirements of the Client, whilst satisfying all required regulatory criteria to successfully achieve additional design life.

If planned in advance, most Life Extension projects can be a seamless process, with no disruption to ongoing operations and production.
**End-of-Life Solutions**

As fields near the end of their economic life, asset owners face a challenging decision as to what is the next best option for their FPS. Frequently, assets will still have many years of production life left in them, so decommissioning would be a waste.

SBM has extensive experience evaluating End-of-Life solutions, providing Clients with a range of economic alternatives such as relocation, tie-backs, in-situ upgrades, sale & lease back and eventual green recycle and salvage of key components.

Our industry-wide connections and experience on our own fleet, offers our Clients a unique perspective and set of options, that may not be obvious from the offset.

**CASE STUDY**

**End-of-Life Solution: FPSO Kuito**

FPSO Kuito was demobilized in late 2013, leaving Angolan waters in December 2014 and was delivered to the green recycling yard in Turkey to be dismantled. It completed 14 years of operations for CabGoc offshore Angola (block 14). The unit was decommissioned and recycled in a safe, cost-effective, and environmentally-friendly manner.

Key factors that contributed to the successful delivery of this project was SBM Offshore’s high level of expertise in all the technical and execution disciplines involved; a robust understanding of the major project execution risks associated with FPSO decommissioning projects; and the ability of our multi-disciplinary teams to work in very close collaboration with the respective Operators and sub-contractors toward the same goals.
### The Benefits We Offer Our Clients

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<tr>
<th>Benefit</th>
<th>Advantage</th>
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<td>Share Same Goals as Our Clients</td>
<td>Own &amp; Operate our own large FPS fleet, understand the true critical success factors of Brownfield projects</td>
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<td>Cost Driven</td>
<td>As for our own fleet, we seek best value execution solutions and appropriate pricing structure</td>
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<td>Production Focused</td>
<td>Ensure downtime is minimized, manage SIMOPS</td>
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<td>Productivity Driven</td>
<td>Increase productive hours per shift, efficient work-packing</td>
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<td>Flexible Offering</td>
<td>Provide solutions from small studies to full EPCI</td>
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<td>Highly Experienced</td>
<td>Successfully delivered over 200 Brownfield projects specifically for Floating Production Systems</td>
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<tr>
<td>Safety</td>
<td>SBM is committed to protecting people, preventing pollution, safeguarding the environment in all aspects of our business</td>
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*Let SBM help you unlock the value of your asset.*
The sole intention of this factsheet is to share general information.

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