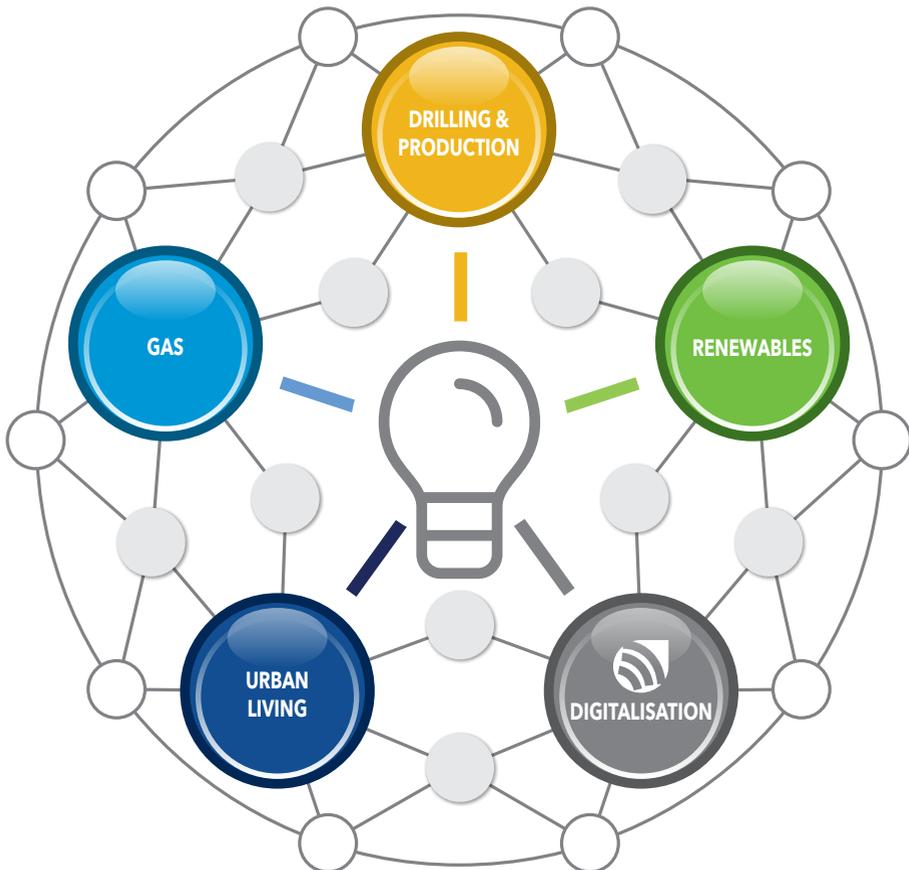


DELIVERING SUSTAINABLE AND INNOVATIVE SOLUTIONS

At Sembcorp Marine, we innovate continuously to develop sustainable and cost-competitive solutions that add value to our customers. In turn, we generate new income streams and create opportunities for future growth. Our pipeline of strategic technology research and solutions development programmes have led to a suite of safer, smarter and sustainable solutions.

A diversified product mix strengthens our versatility and resilience, and mitigates the cyclical risks typical of our industry. As a key business strategy, we continue to broaden our portfolio of products, services and technologies in Offshore Drilling and Production, Gas, Renewables and Urban Solutions.

OUR INNOVATION FOCUS



	Our Commitment	Our Efforts in 2019
Pursue new opportunities and emerging markets	<ul style="list-style-type: none"> Capitalise on acquired intellectual property and pursue new opportunities especially in green and sustainable products and solutions 	<ul style="list-style-type: none"> Secured Siccar Point FEED contract through Sevan SSP to develop cylindrical FPSO design solution for Cambo field Successfully installed first Semb-Eco LUV Ballast Water Management System (BWMS) on Transocean Norge, a semi-submersible rig
Develop greener and more sustainable products and solutions	<ul style="list-style-type: none"> Develop internal capabilities in offshore production and gas solutions Generate 30% of annual revenue from sustainable products and solutions by 2025 	<ul style="list-style-type: none"> Secured the design and construction of a liquefied natural gas (LNG) bunker vessel from MOL Awarded first design-and-build roll on/roll off passenger (ROPAX) ferry project Achieved 24% of annual company turnover from sustainable products
Create strategic build-and-deliver capabilities	<ul style="list-style-type: none"> Invest and develop new infrastructure and enhance production efficiency and cost-savings 	<ul style="list-style-type: none"> Installed a robotics steel fabrication workshop, 2 x 15,000 MT gantry cranes and an automated pipe workshop to improve production efficiency and operational safety
Build safer, smarter and sustainable shipyard	<ul style="list-style-type: none"> Utilise Tuas Boulevard Yard as a living lab to test-bed and implement new advanced manufacturing technologies towards safer and more efficient products and processes Develop Industry 4.0 digitalisation capabilities to improve productivity and create smarter products 	<ul style="list-style-type: none"> Collaborated with Singapore's Agency for Science, Technology and Research Industrial Internet-of-Things Innovation (A*STAR I³) in applying Internet-of-Things (IoT) to improve production efficiency Received our first certification from DNV GL qualifying our 3D printing procedures and specifications for components used in construction and repair projects



DELIVERING SUSTAINABLE AND INNOVATIVE SOLUTIONS

OUR FOUR KEY THRUSTS:

New Opportunities & Emerging Markets

We actively acquire new capabilities, through technology joint ventures and acquisitions, to develop new products and enter new markets. These strategic developments have translated into new products and contracts in new and emerging markets.



Award of cylindrical FPSO design
Sembcorp Marine was awarded an exclusive Front-End Engineering and Design (FEED) contract for our proprietary Sevan SSP circular hull. This hull design eliminates the need for a costly mooring turret while accommodating a larger number of risers and flexibility for future tie-ins.



Commercialisation of our proprietary Gravifloat Technologies

We continue to make good progress in commercialising our proprietary Gravifloat technologies for a variety of nearshore LNG terminal and gas infrastructure applications. Gravifloat offers high flexibility for site-specific and expandable requirements with its modularised system. Strategic installation of several modules forms a breakwater to create calmer sea conditions.

Greener & Sustainable Products & Solutions

Supported by a global team of more than 1,000 design engineers, we have developed a suite of safe, sustainable and high-specification solutions.



LNG bunker vessel designed by our subsidiary LMG Marin

This LNG bunker vessel is the largest of its kind to be built in Singapore, in terms of size and LNG tank capacity. Its two GTT Mark III Flex membrane tanks are more durable, safer for fuel transfer operations and reduce cargo loss through evaporation. The vessel's dual-fuel engine will contribute to cleaner propulsion with less carbon emissions.



Successful installation of patented Semb-Eco LUV Ballast Water Management System (BWMS)

We successfully installed our highly energy-efficient Semb-Eco LUV BWMS on Transocean Norge, a semi-submersible rig. This BWMS helps vessels mitigate the risk of invasive aquatic species in turbid or highly challenging tropical waters and hence protect ocean bio-diversity.

Strategic Build-and-Deliver Capabilities

We invest and develop game-changing facilities and infrastructure to automate production, resulting in faster delivery times, safer operations and enhanced quality.



Investment in game-changing facilities
The 2 x 15,000 MT gantry cranes installed at Tuas Boulevard Yard are an important differentiator for Sembcorp Marine's project execution, enabling us to fabricate, assemble and install larger, heavier and more complex projects. Mega-structures such as FPSO topsides and hulls can leave the yard fully integrated, instead of being transported out in smaller parts which require further assembly.



Pushing the boundaries of production automation

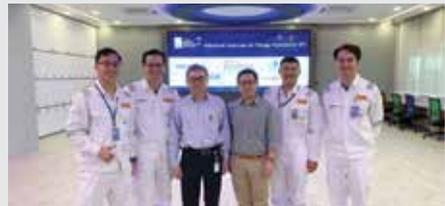
As part of our smart yard development, Sembcorp Marine works closely with robotics manufacturers to customise and develop advanced robots that carry out multi-directional welding of large built-up structural blocks. This new capability is safer and more efficient and improves our product quality.

Safer, Smarter & Sustainable Shipyard

We envision a more sustainable manufacturing process and smarter products through digitalisation and automation, which are important components of Industry 4.0 development.



Advancing Additive Manufacturing
Our two-year collaboration with DNV GL, NAMIC and SIMTech paved the way for Sembcorp Marine to receive DNV GL certification qualifying our 3D printing procedures and specifications for components used in construction and repair projects. This development will allow us to unlock significant efficiencies and reduce supply chain risks, ensuring the sustainability of our operations.



Embracing new IoT technologies
Sembcorp Marine partnered with A*STAR's I³ to complete a proof of concept for applying IoT technologies to track steel materials. This development helps improve the traceability of materials, thereby enhancing overall productivity and reducing wastage.