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Seatrium and TCOMS to develop new cyber-physical capabilities to enhance the performance and safety of floating energy production assets

Singapore, 28 November 2024 – Seatrium Limited (Seatrium) and the Technology Centre for Offshore & Marine, Singapore (TCOMS) have expanded on the Master Research Collaboration Agreement (MRCA) signed in April 2023 to explore cyber-physical modelling capabilities in predicting environmental loads and platform responses, including those encountered in operations in high sea states and other extreme events for floating production storage and offloading (FPSO) platforms.

As a leader in the development and construction of offshore vessels, Seatrium was the first to conduct a commercial test for an FPSO vessel in January last year at TCOMS' ocean basin facility. This development has contributed to TCOMS gaining recognition as a global leader in cutting-edge research and development, with its ocean basin facility being featured in the approved basin test facility list by Seatrium's industry partners.

Following the scaled model testing of the latest series of FPSOs that Seatrium is building for Brazil's National Oil Company, Petróleo Brasileiro S.A. (Petrobras) in TCOMS' ocean basin facility to validate their global and station-keeping performance, both organisations will embark on developing digital twins¹ to be deployed in real-field scenarios through leveraging the extensive data gathered during the model tests.

The P-84 and P-85 FPSOs will be deployed in the Santos Basin, approximately 200 kilometres offshore of Rio de Janeiro in Brazil in coming years. The FPSOs will incorporate advanced technologies and represent a new generation of offshore production assets with lower Greenhouse Gas (GHG) emissions, contributing towards sustainability and a lower carbon economy.

Driving Innovation and Sustainability in the Offshore & Marine Industry

Seatrium and TCOMS have carried out various projects spanning a broad spectrum of technology capabilities to drive innovation and sustainability in the offshore, marine and energy industries. The Seatrium-TCOMS Ocean Lab, which was established in March 2023, comprises five research thrusts: (i) offshore renewable energy such as floating wind systems, (ii) cleaner oil and gas solutions including smart floating production platforms, (iii) smart marine systems such as autonomous vessels and green ships, (iv) new energy solutions including ammonia, hydrogen and Carbon Capture, Utilisation and Storage (CCUS), and (v) digitalisation & data analytics for enhanced predictability and reliability of ocean systems and its infrastructure.

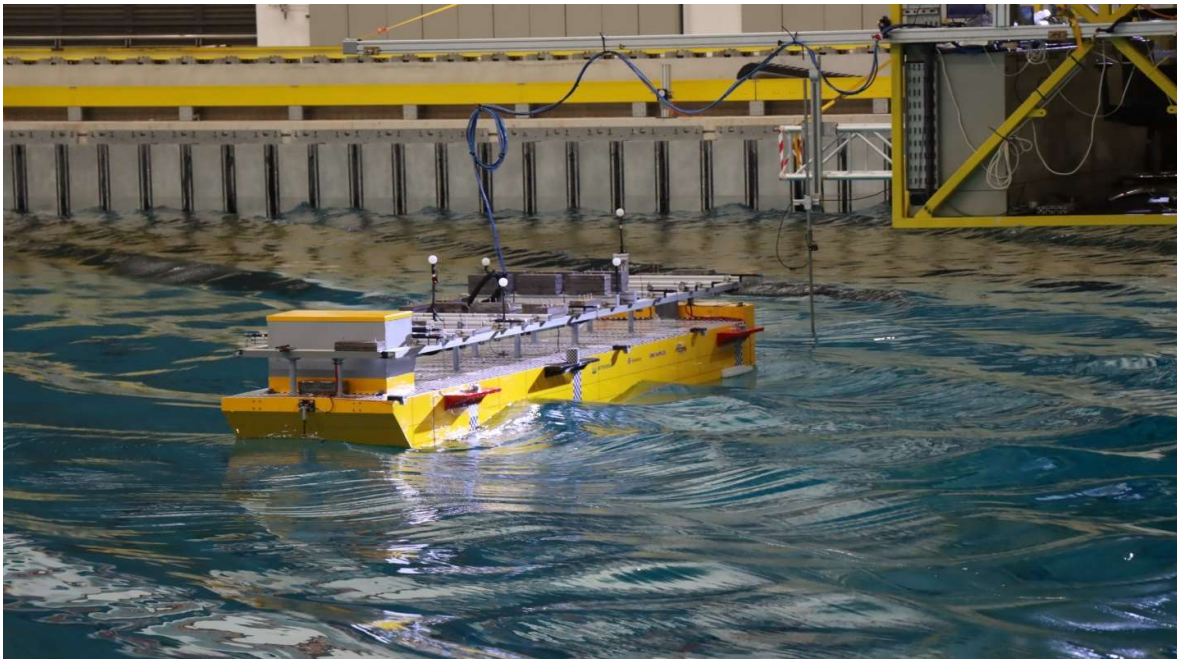
Engineers and scientists from both companies partner to co-create, stress test and validate solutions and concepts of future ocean systems and infrastructure. The numerical simulations and physical tests conducted in TCOMS' ocean basin facility simulate and assess the performance of ocean systems, including those at conceptual stage, in simulated operating and extreme ocean conditions and enhance field performance through technologies such as smart sensing, Artificial

¹ Digital Twin Technology is an [innovation that allows the digital copy or counterpart of anything in the real world](https://www.ncs.co/en-sg/knowledge-centre/articles/digital-twins/). The persistence of virtual realities means a digital version exists for every physical object, service or system. Digital Twins serve as a way to measure, analyse, and predict real-world data. [Source: <https://www.ncs.co/en-sg/knowledge-centre/articles/digital-twins/>]

Intelligence (AI) and data analytics. Such modelling and simulation capabilities facilitate the creation of digital twins of ocean infrastructure assets to improve life cycle management.

Mr Chris Ong, CEO of Seatrium, said: "As a leading global player in the offshore, marine and energy industries, Seatrium is committed to driving innovations in improving efficiency and maritime decarbonisation. Our partnership with TCOMS nurtures aspiring engineering talents and encourages them to push the boundaries beyond what is possible in their field of work. Together, we are unlocking new efficiencies and enhancing field performance through technology that contributes towards a greener future."

Professor Chan Eng Soon, CEO of TCOMS, said: "As a national R&D platform dedicated to the offshore & marine, maritime and other ocean related sectors, our relentless pursuit of innovation and sustainability has made us the ideal partner to the industry looking to stay ahead and future-proof their solutions and operations. By combining our expertise in cutting-edge digital modelling, simulation and physical model testing capabilities with keen business insights, we support the industry in developing future ocean systems and infrastructure that not only enhance safety, optimise efficiency and performance, but also drive long-term sustainable economic growth."





Caption: Scaled model tests undertaken at TCOMS' ocean basin facility to validate the performance of the FPSOs.

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About Seatrium Limited

Seatrium Limited provides innovative engineering solutions to the global offshore, marine and energy industries. Headquartered in Singapore, the Group has over 60 years of track record in the design and construction of rigs, floaters, offshore platforms and specialised vessels, as well as in the repair, upgrading and conversion of different ship types.

The Group's key business segments include Oil & Gas Newbuilds and Conversions, Offshore Renewables, Repairs & Upgrades, and New Energies, with a growing focus on sustainable solutions to advance the global energy transition and maritime decarbonisation.

As a premier global player offering offshore renewables, new energies and cleaner offshore & marine solutions, Seatrium is committed to delivering high standards of safety, quality and performance to its customers which include major energy companies, vessel owners and operators, shipping companies, and cruise and ferry operators.

Seatrium operates shipyards, engineering & technology centres and facilities in Singapore, Brazil, China, India, Indonesia, Japan, Malaysia, the Philippines, Norway, the United Arab Emirates, the United Kingdom and the United States.

Discover more at [seatrium.com](https://www.seatrium.com).

About TCOMS

The Technology Centre for Offshore and Marine, Singapore (TCOMS) is a national R&D centre dedicated to the Marine & Offshore Engineering, Maritime and other Ocean sectors. It integrates research and industry expertise to co-create, validate and stress test innovative concepts and solutions to address real world challenges. A core feature of TCOMS is the next-generation ocean basin facility which is equipped with advanced wave and current generation systems to simulate physical ocean environment and complex scenarios that offshore platforms, ships and underwater systems operate in. As part of a network of national platforms coordinated by the Agency for Science, Technology and Research (A*STAR), TCOMS brings together researchers from the public sector, academia and industry, and fosters R&D capabilities to position Singapore as a global hub that creates, builds and manages future ocean systems and solutions. TCOMS is a joint venture between A*STAR and the National University of Singapore (NUS).

Learn more at www.tcoms.sg.

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