



**RETHINKING
MODULAR FPU
CONSTRUCTION
TO SAVE
COSTLY TIME.**

**JANGKRIK FLOATING
PLATFORM UNIT KARIMUN,
INDONESIA**

PHOTO 1 MAMMOET PROFESSIONALS INSTALL SKID SHOES



PHOTO 2 SKIDDING 14,273 TON ITM ONTO FPU HULL



PHOTO 3 BALLASTING DURING LOAD-OUT



PHOTO 4 TEAM PREPARES FOR FINAL JACK DOWN



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THE LARGEST AND MOST COMPLEX SKIDDING OPERATION FROM MODULE TO HULL.

Providing more – and more reliable – electricity to Indonesian households is an important step to Indonesia’s future prosperity. Which is why, in 2016, a consortium led by SAIPEM was commissioned to tap an important gas field off the Indonesian coastline.

Essential to this project was a Floating Production Unit: a facility capable of processing, storing and transporting gas to the mainland via underwater pipelines. To save time, the unit, called Jangkrik, was built in two parts – the hull in South Korea and the topside module on the Indonesian island of Karimun. It was the first time anyone had ever attempted to skid and load-out a 14,273-ton module onto a Floating Production Unit hull.

Mammoet had engineered and executed complex skidding projects before, but Jangkrik was different. To begin with, at over 192 meters long and 46 meters wide, the Jangkrik module was massive. Secondly, early on in the process the decision was made to construct the topside on land and skid the integrated module in its entirety onto the hull. Not only would constructing the topside on land save a significant amount of time in building and testing, but it would also significantly increase the project’s safety by avoiding the challenges and risks of connecting and integrating smaller modules onto the hull at sea.

However, to achieve this required collaborating closely with our partners, who needed to adjust the module’s design and engineering so that it could eventually be skidded into place. The hull design needed to be adjusted as well.

During preparations, construction and load-out, nothing was left to chance. The solutions engineered focused on maximum precision and safety to ensure uninterrupted operations. A team of Mammoet Professionals deployed a hydraulic skidding system controlled by specially designed software. Built-in vertical jacks lifted the module off its construction supports where it was then skidded along 9 tracks, each 133 meters long. Once on quayside, the module was slowly skidded across 9 bridges and onto the hull.

To offset Karimun’s wide tidal variations and keep the hull level with the quayside during load-out, Mammoet engineered two computer-controlled ballasting systems. The first capable of monitoring and offsetting the tidal variations; the second managing the balancing of the hull. To successfully

load-out within Karimun’s tight tidal time frames required employing a pumping system capable of displacing 56,000 cubic meters of water an hour. With no room for error, a crew of Mammoet professionals confidently inched the massive module onto the awaiting hull.

The Jangkrik project is a benchmark of precision engineering and proof that even 14,273-ton integrated topside modules can be assembled and installed in one go. By stretching the limits of modular construction and enabling faster, safer and more controlled construction at a larger scale, Mammoet helped save their partners a significant amount of time and helped Indonesia fuel its future growth.



RESOURCES

SPECIAL EQUIPMENT
43 skid shoes
56 x 1000 m³ ballast pumps
1.2 km skid tracks

CREW
35 Mammoet professionals