



Conquering the deep





You want **reliable anchor p**

Are you in charge of designing deepwater anchor points for floating platforms, risers or buoys? We are your partner for such tasks. We have the technology that has proven to be the most reliable in any water depth. We have provided services and equipment wherever it was needed for the last 135 years and have focused on offshore deepwater projects for more than 15 years. Today we can offer driven pile anchors – the most widely used anchor point – in more than 2,200 metres (7,000 ft); and we have taken up the challenge of being ready for 3,000 metres (10,000 ft) soon.

The best anchor solution

Driven piles provide the best available anchor points and foundations. Their success is based on three major elements:

- **Application Range:** Driven pile anchors work in all soil conditions, from very hard condensed sand to very soft clay; are used for all surface systems including SPARs, TLPs, semisub platforms, FPSOs and CALM buoys; and for subsea components such as riser buoys, arcs and templates. They withstand cyclic loading and provide a surplus in holding capacity giving additional safety margins. Driven pile anchors are the only anchor point that can work with catenary, semi-taut, taut and vertical mooring systems.
- **Commercial Advantage:** Pile anchors are easy to manufacture, even in basic fabrication facilities and therefore can be fabricated close to the installation site. This saves on manufacturing and transportation time and cost. Driven anchor piles do not require load

oints at 2,000 metres

testing as MENCK's monitoring of the driving process provides all the data necessary for certification. All certifying agencies worldwide accept our installation protocol for approval of a mooring system.

■ Operational Experience: Driven piles have been used in the offshore industry for decades and no other anchor or foundation method has so many comparative values and results. All oil companies and offshore contractors worldwide trust in driven piles installed by MENCK and rely on MENCK's experience and application know-how. We have held the world record for deepwater driven piles for many years and continue to confirm it.

The installation system

MENCK's unique deepwater pile driving system consists of a MENCK MHU hydraulic impact hammer with driving energy ranging from 200 kJ (150,000 ft-lb.) to 1,000 kJ (740,000 ft-lb.) and a submersible electric-hydraulic power pack, MENCK's UWGPP. By integrating the power pack into the hammer we eliminated the need for the numerous hydraulic and air hoses, power and communication cables running from the installation vessel to the hammer. All these functions are now combined into one single operating line, an umbilical available in lengths of up to 2,400 metres (7,800 ft). The MENCK MHU-UWGPP system offers distinct advantages, especially when working in deeper waters:

- One single compact unit – easy handling
- Computerized control and monitoring functions – full operational control
- Low energy losses – high efficiency

- Excellent reliability – predictable installation time
- Modularized equipment spread – mobilisation onto a wide range of vessels, even small ones

Track record

MENCK's deepwater pile driving system has been used in over 25 projects in the Gulf of Mexico, West Africa and Asia during the last 10 years. Some of the milestones are

- Neptune SPAR for Oryx, the first SPAR production platform worldwide
- Ursa TLP for Shell, the largest TLP ever built
- Boomvang and Nansen SPAR for Kerr McGee, a truss SPAR platform at 1,200 metres (4,000 ft) water depth in the Gulf of Mexico
- Kizomba "A" TLP for ExxonMobil, the first TLP in West Africa
- West Seno "A" TLP for Unocal, the first TLP in the Asia Pacific region
- Magnolia TLP for Conoco, another depth record at 1,400 metres (4,700 ft)



MHU 500T with UWGPP

We make it happen



We meet your requirements at any depth

MENCK's comprehensive expertise and engineering capabilities enable us to offer the right solution. There is more to MENCK than supplying hammers and equipment. We offer every form of service ranging from equipment rental, through our worldwide service network, to taking on complete responsibility for your anchoring project.

Ask us – the sooner, the safer

Make us part of your team and make use of our project management and engineering department's expertise as early as possible in your planning process to benefit most from our unique know-how. We find the best, the safest and the most economical solution for your anchoring task. We provide the best system for your requirements. We design and build special solutions for you and plan installations to meet your specific requirements. Base the success of your deepwater anchoring project on MENCK.

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