



# Electric drive locks vertical position of offshore platform

VHT engineers developed it into an energy efficient and dependable solution

For many years, Van Halteren Technologies has achieved important advances in the field of electric drives. And no less in the offshore industry. The electrically driven locking systems, used to lock the vertical position of the legs of drilling rigs or accommodation platforms, are a perfect example. VHT customer GustoMSC has already taken delivery of 46 systems, and they've never looked back.

It takes guts, know-how and experience to install a drilling rig in the open sea, because these heavy and cumbersome platforms can only be safely positioned on the seabed with the help of complex and highly advanced systems. They often make use of jack-up systems, in which prism-shaped legs integrated into

the platform are forced downwards by means of a rack and pinion system. Once the legs are in the correct position, the raised platform or rig has to be mechanically locked to the legs. It's a job that requires power and precision, and there's no room for error. Electric drives are also perfect for offshore work. With comprehensive protection from moisture, salt and weather, they never miss a beat, even in the harshest conditions.

## Frequency controlled electric motor

GustoMSC had devised a concept for anchoring the legs, in which toothed steel chocks are pressed into the rack of the lifting system. The basic concept was passed to VHT, whose engineers developed it into an energy efficient and dependable solution. Despite the high power density of hydraulics as a power medium,

the system employs no hydraulics, but instead an electric drive, comprising a total of 72 frequency-controlled IE2 class AC electric motors. The frequency controller enables full control of both the speed and power of the motor. Moreover, electric motors can be easily connected into the platform electric grid.

### Drive & control

Of course, in addition to the electric drive, VHT also took responsibility for development of the control system and associated software. A control system that, in combination with the structural solution, contributes to maximum continuity, reliability and safety.

Using a portable operator console, the control system can be made to run through different movement patterns, so that the locking system will always engage the teeth of the rack at the desired position. A special coating was applied to all sensitive components, including the electric drive units, enabling them to withstand the harsh conditions offshore. The system can be customized for compliance with non-standard, higher protection classes. In such cases, on request, VHT will develop and also perform an appropriate test in order to demonstrate compliance.

### Configurable concept

To achieve maximum flexibility, VHT has developed a configurable concept that can be adapted in a number of areas, according to the design specifications. For example, the required speed, transmission ratios, control system and protection class are all configurable. This configurability has an influence on both hardware and software. Moreover, whenever a new system is ordered (GustoMSC has already taken delivery of 46), VHT checks each time whether it still represents the best proven technology available. If necessary, the design is modified.

### Certification

The electrically driven vertical locking system is certified according to the requirements of relevant inspection bodies for offshore applications. This would typically be Lloyds, DNV, or possibly NORSOK.

### Facts & figures

- ▶ 72 motors with matching gearbox and integrated brake
- ▶ Motors with gearbox and brake suitable for immersion in seawater
- ▶ 3 motor control centers with frequency controllers
- ▶ 3 portable consoles for local operation
- ▶ Solution contributes to increased safety
- ▶ Electric drive can be precision-controlled
- ▶ 44 systems already delivered
- ▶ Configurable concept

