

# The MOPUstor

## A mobile production unit with storage

### The market

For many years, but especially in the last years mobile production units have shown to be able to provide flexible and cost effective solutions for the development of oil and gas fields around the world.

Emphasis has been placed on deeper water applications using ship shape or semi-submersible units first converted from tankers or drilling units, more recently however in the form of new build units specifically designed for the production function, FPSO's. For the more shallow waters converted older jack-ups have been used to provide fast track and cost effective mobile production units (MOPU's). The cost effectiveness of these solutions is partly created by the low cost for an existing aging jack-up drilling unit, but the main economic advantage is created through its possibilities for fast track development, financial and operational leasing and the fact that it can be installed without a requirement for expensive installation equipment.

The success of the floating or seabed supported but essentially mobile solutions for field development, have lead to new build MOPU's specifically designed for the production function using jack-up technology proven in jack-ups for the drilling industry.

### The concept

The MOPUstor, developed by GustoMSC, provides a solution for short life oil fields without direct access to pipeline infrastructure in water depths and environment not suitable for an FPSO. This MOPUstor concept consists of a steel storage tank supported directly on the sea bed, three (or four) tubular legs, firmly connected to the storage tank, a barge type platform deck that can be jacked along the legs and a jacking system.

The storage tank is a steel plated structure constructed much like a section of an oil tanker. The oil is stored in the tank using a water displacement system such that the tank is effectively pressureless. The storage tank doubles as the foundation for the entire platform and provides structural support for the jack-up production platform. The integrated well caisson contains slots for twelve wells and all risers and J-tubes. All piping is protected by the caisson.

The tank and the well caisson are installed by ballasting the tank down and penetrating the skirts into the sea bottom by weight and suction. The well caisson then functions as a well head platform for pre-drilling surface completed well.

The deck is installed on the steel tank after the pre-drilling period by inserting the legs in sleeves in the tank and grouting the annulus after elevating the deck.



*The Siri MOPUstor*

The production deck is essentially a barge type structure similar to many jack-up hulls, it provides buoyancy to enable transport to and installation on the site, a large flat deck is available to install the production equipment and below deck space is available for utility tanks and non-hazardous equipment.

The legs are straight tubular legs, fabricated in the same manner as large jacket legs. The legs, however, are free of any nodes or additional welding. Sea water lift pumps and drain caissons are located in the legs.

The jacking system is the MSC hydraulic cylinder type using a pin/hole system for contact with the leg. This is a field proven system, currently used on 10 jack-ups, it provides the capability to raise the platform out of the water to the operational air gap and lock the platform to the hull during the lifetime of the field.

Furthermore it provides the capability to remobilize, lower the platform to the water and raise the storage tank, ready to move to the next location.

### The Netherlands

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**GustoMSC**

## The MOPUstor for Siri - Denmark

**Owner** Dong Energy  
**Builder** Kvaerner Oil & Gas  
**Delivered** 1998

The MOPUstor is operating on the Danish shelf in the North Sea. Formerly it was owned by Statoil.

### Particulars Siri

|                                   |                       |
|-----------------------------------|-----------------------|
| Water depth                       | 65 m                  |
| Wave height                       | 25.7 m                |
| Deck size                         | 57 x 50 x 6.7 m       |
| Deck weight at installation       | 9,300 t               |
| Deck weight limit                 | 11,000 t              |
| Leg diameter                      | 3.5 m                 |
| Twelve-slot well caisson diameter | 5.25 m                |
| Net storage capacity              | 50,000 m <sup>3</sup> |



### Project data

| contract                      | March 20, 1997     | month 0  |
|-------------------------------|--------------------|----------|
| tank + well caisson installed | May 15, 1998       | month 14 |
| jack-up deck tow-out          | September 30, 1998 | month 18 |
| installation                  | November 18, 1998  | month 20 |

*Data presented in this product sheet is for information only and subject to change without notice.*

