



# Subsea systems

Concepts and designs for subsea systems powering offshore installations



## At a glance

In the last years, many of the existing oil and gas fields have reached or even passed their production peak. More and more new resources are identified below sea beds far away from shore and in significant water depths. New concepts and new technologies for off-shore subsea production units are being developed to exploit such locations using subsea systems fed from deep water platforms or fed from on-shore grids far away from the oil or gas fields.

Siemens Power Technologies International (Siemens PTI), your provider of network consulting, network planning software and trainings on the Siemens T&D portfolio, is your partner to develop solutions for new system concepts for such subsea power supply installations.

## The challenges

Moving power supply equipment onto the sea bed in deep water raises new challenges that have to be taken into account, e.g.

- Water depths up to 3,000 meters
- Large distances up to 300 km
- Long equipment life times up to 30 years required
- Ultra-high reliability requirements, as repair works are tremendously difficult and lengthy
- Standardization of equipment to ensure flexibility for fast modification and replacement
- Easy maintenance by remotely operated vehicles
- Underwater power connectors capable for on-load plugging

Subsea processing is a very new technology addressing all these challenges. Each piece of process equipment has individual application specific characteristics – e.g. boosting pumps, sea water injection units, gas compression units or seabed separation units. For the required

very high reliability in the production processes under these conditions, suitable subsea power distribution and transportation is a key aspect to fulfill the challenging demands.

In subsea power supply systems, AC solutions are the key focus today, while DC will be used more and more frequently in the next years depending on the distances to be covered and on new technology becoming available.

## Our solution

Siemens PTI is the base engineering source for feasibility studies, design studies, grid coupling studies and controller tuning and coordination studies. Several analyses for subsea equipment and system design concepts have been worked out for

- Point to point electrification
- Long distance power supply
- Small / large field electrification

Different studies have been investigated for subsea variable speed drives, drives for multi-phase boosting, pumps and compressors using well proven Siemens technology like the perfect harmony VSD and the Siemens HVDC plus technology.

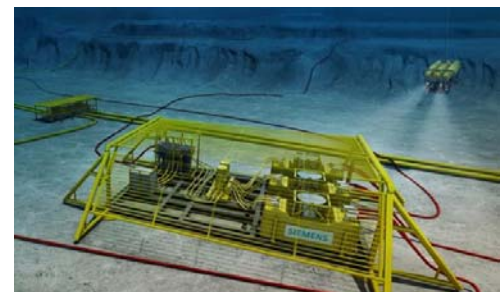


Figure 1: Illustration of Siemens subsea power equipment

Siemens PTI with its team of highly skilled and dedicated experts is your partner for any issue in subsea power system design.

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Siemens AG  
Infrastructure & Cities Sector  
Smart Grid Division  
Services  
IC SG SE PTI BD  
Freyeslebenstr. 1  
91058 Erlangen, Deutschland  
[www.siemens.com/energy/power-technologies](http://www.siemens.com/energy/power-technologies)

Siemens Energy, Inc.  
Power Distribution, T&D Service Solutions  
Siemens Power Technologies International  
400 State Street  
PO Box 1058  
Schenectady, NY 12301-1058

Siemens Transmission and Distribution Ltd  
PTI  
Sir William Siemens House, Princess Road  
Manchester, M20 2UR  
United Kingdom

For more information, please contact  
our Customer Support Center.  
Phone: +49 180 524 70 00  
Fax: +49 180 524 24 71  
(Charges depending on provider)  
E-mail: [support.energy@siemens.com](mailto:support.energy@siemens.com)

Smart Grid Division  
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