



Zero Harm & Zero Defect
An Energy Management Ambition

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Ingenuity for life

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Underwater Energy The Subsea Power Grid

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Unrestricted

Subsea Power: Drivers

Key drivers for Subsea Power

- **Number of consumers**
 - Subsea power distribution can reduce total length of cable and number of risers

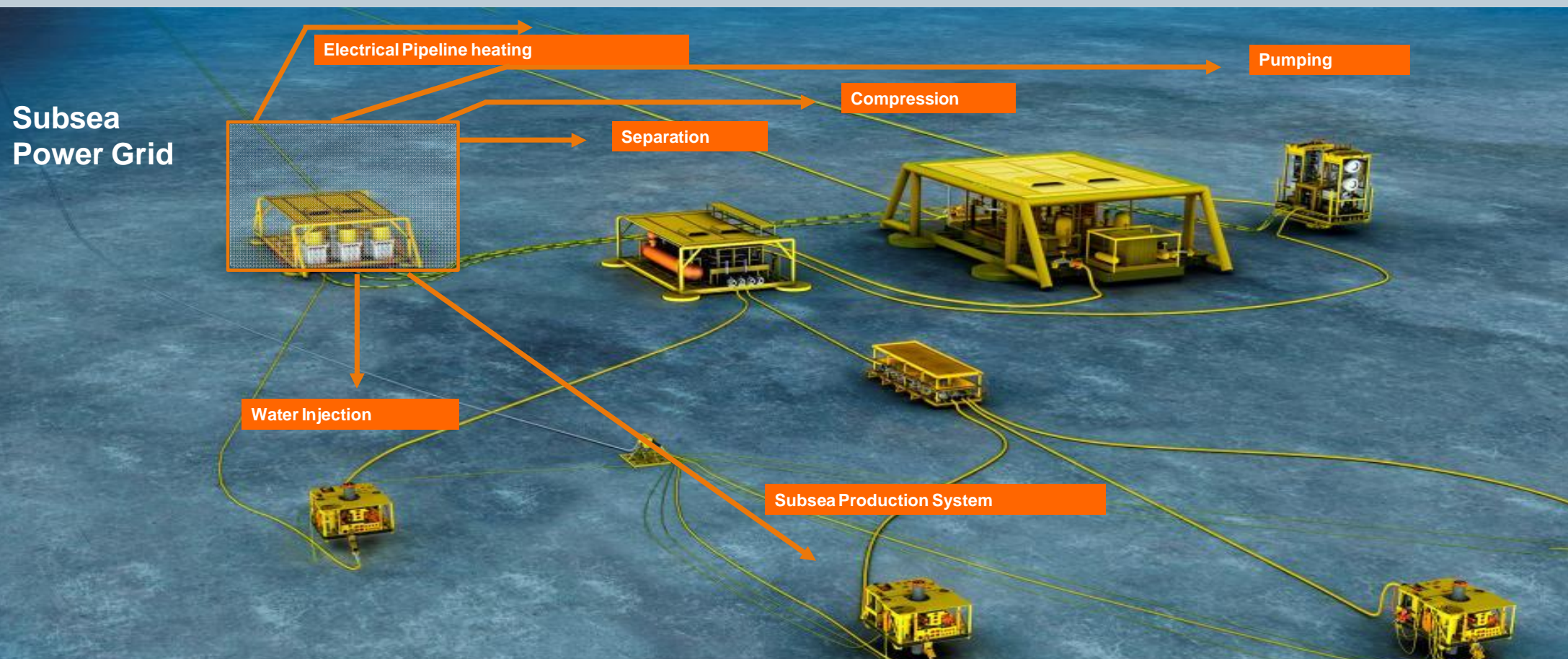
- **Water Depth**
 - Subsea power distribution can reduce complexity of riser arrangements

- **Available space on existing installations like platforms**
 - Marginal fields can be developed with existing infrastructure

- **Long step-outs**
 - Realization of Subsea-to-Beach
 - Access of remote areas, e.g. arctic

- **Increased need for large scale processing**
 - Subsea power distribution is the key enabling technology for realizing the Subsea Factory

Subsea Power: We distribute the energy for the subsea fields of the future



Providing the electrical power needed for complex subsea processing: The Siemens Subsea Power Grid aims to be the first at water depths down to 3,000 meters at long step-outs from the host.

Siemens Subsea Power Grid: The complete power solution from onshore to subsea factory

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Topside Power Distribution and Control Systems

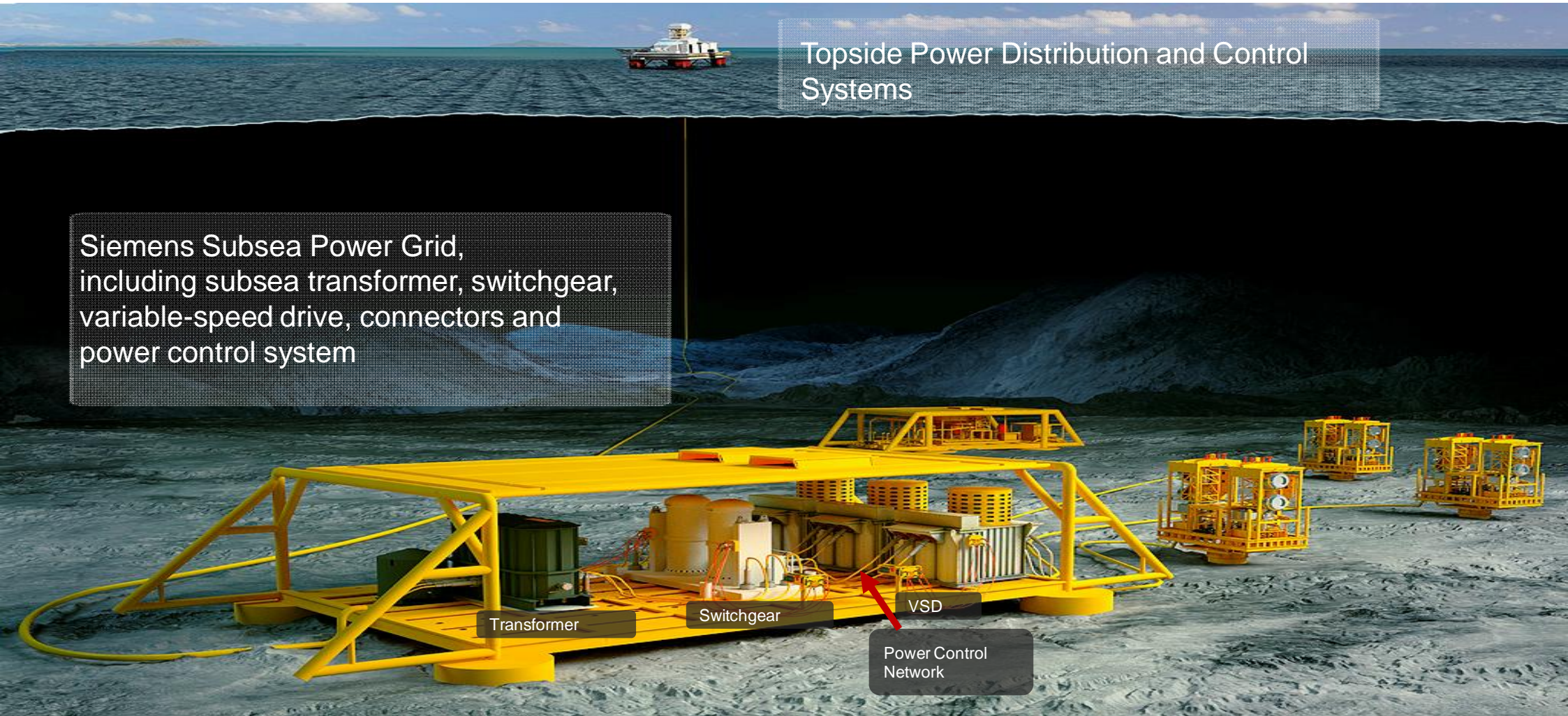
Siemens Subsea Power Grid, including subsea transformer, switchgear, variable-speed drive, connectors and power control system

Transformer

Switchgear

VSD

Power Control Network



Siemens Subsea Power Grid: Powering installations on the seabed

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Siemens Subsea Power Grid

- Reliable
- Scalable/flexible
- Rated to 3,000 meters depth
- Oil-filled
- Pressurized
- Natural cooling
- Condition monitoring
- Universal and redundant control system

Subsea transformers

- Pressure-compensated
- Natural cooling
- Broad power range
- High efficiency
- Environmentally friendly



Subsea switchgears

- Pressure-compensated base module
- Integrated auxiliary supply
- Main switch in 1 atmospheric canister



Subsea variable-speed drives

- Integrated transformer
- Natural cooling
- Pressurized power electronics
- Multi-cell topology
- Built-in redundancy
- Advanced cell bypass



Siemens Subsea Power Grid

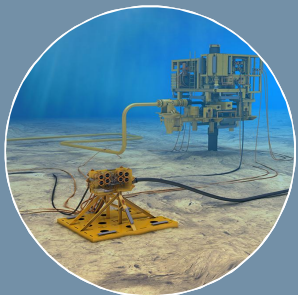
Summary: Main Benefits

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- Complete system approach important for success
- Use of modular building block reduces cost and complexity
- Built-in redundancy increases availability
- Condition monitoring and intelligent operation
- Trust in technology by qualification and standardization
- Development in cooperation with leading oil companies



Complete Project Support – from study phase to commissioning



Project development

- Concept
- FEED
- Product design



Hardware Supply

- Transformers
- Drives
- Controls
- Interconnections
- Subsea Distribution



Project Management

- Leadership
- Interfaces
- Detailed design
- Procurement
- Installation Coordination
- HSEQ



Installation Support

- Topsides
- Subsea
- Interconnections
- Subsea Distribution

Prospect Development – Appraise – Concept – FEED – Execute - Start Up

Contact



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