

Subsea All-Electric Technology

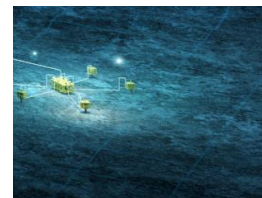
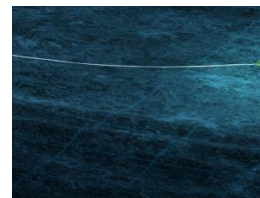
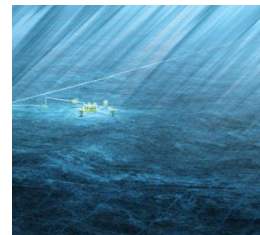
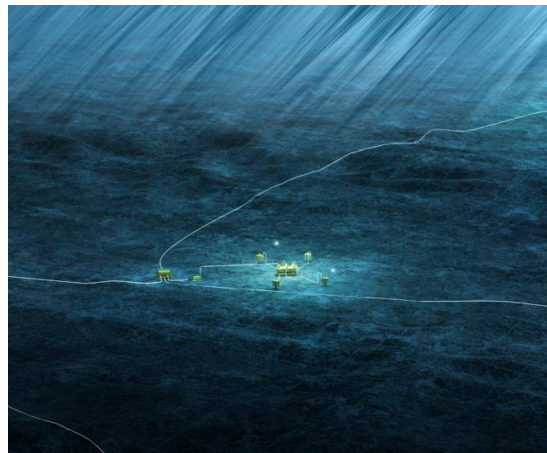
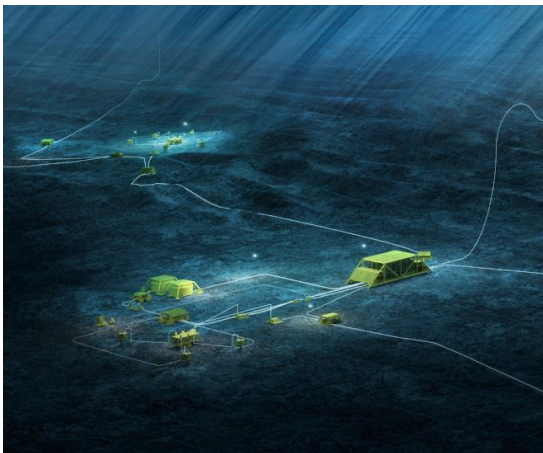
Now available for the future field developments

SUT Control Down Under – 20th October 2016

Salvatore Micali – Regional Concept Line Manger

Agenda

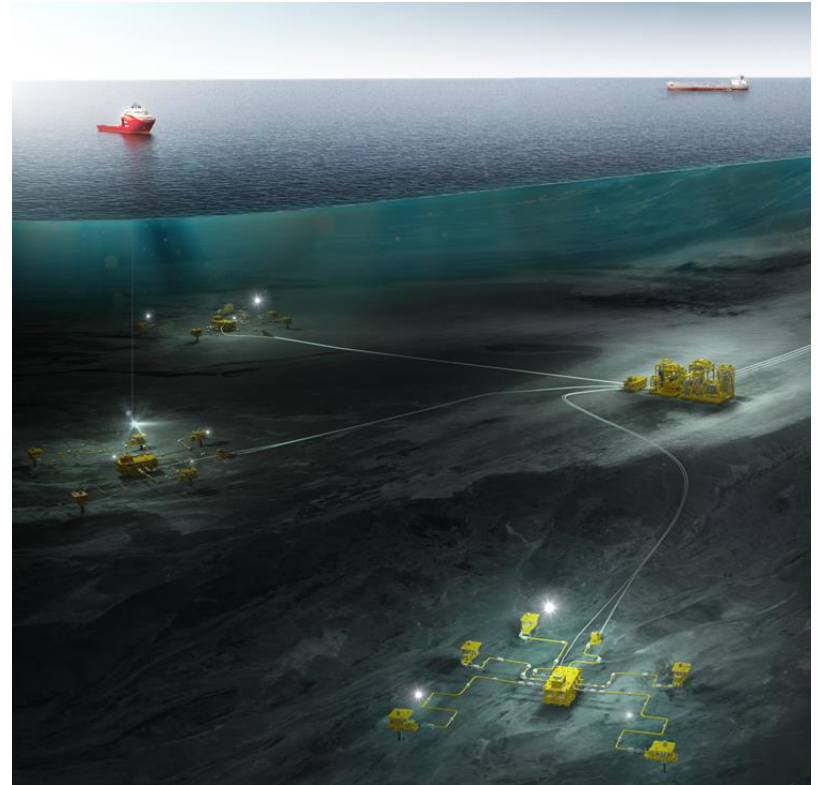
- Introduction
- Technology features
- Case study
- Summary



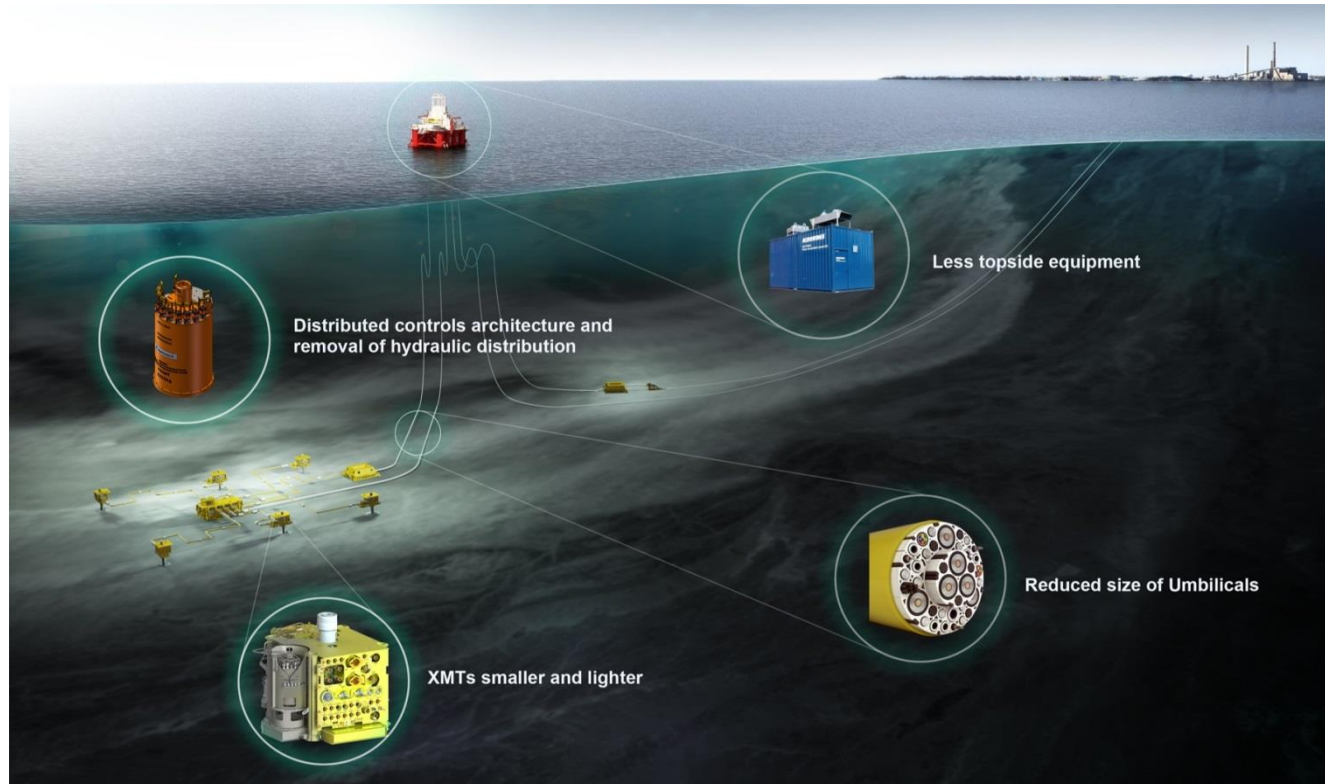
Introduction

All-Electric system business drivers

- Reduced overall system CAPEX and OPEX
- Higher flexibility in field and area development
- Easier field expansion
- Enabler for long step-out and deep water projects
- Higher reliability and availability
- HSE benefits



All-Electric system simplification potential





Technology features

Technology overview - video



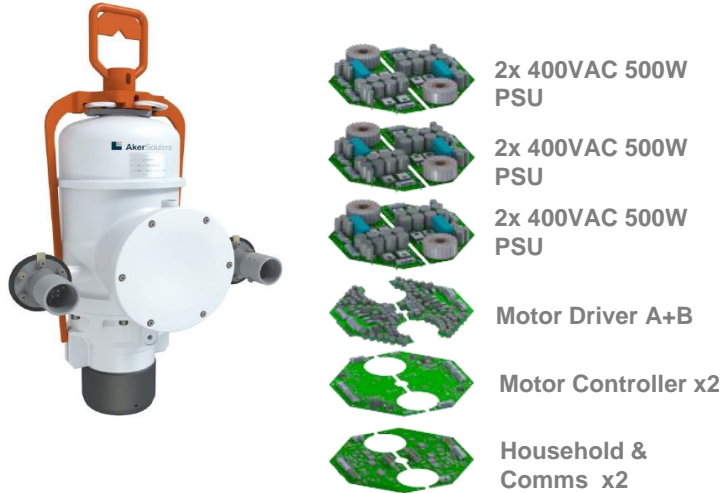
Technology features

- Electrical rotary actuator
- Designed for 25 years operational lifetime
- Industry standard class 4 interface
- Single ROV handle for installation and locking
- Qualified for 4,000 m water depth
- Advanced condition monitoring
- Modular electronic architecture
- Configurable speed and torque limits, configurable power consumption



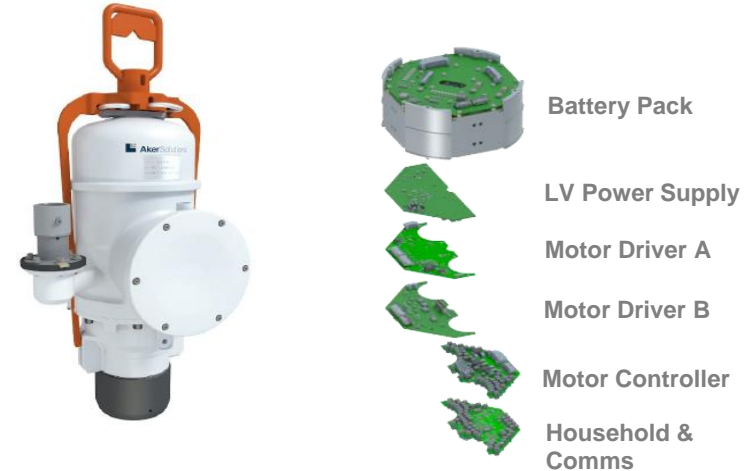
Qualified configurations

High duty redundant channel



- Power supply = 400 VAC 3 phases
- Nominal / max output torque = 1800 / 2700 Nm
- Size and weight = HxW 85x48 cm, 110 kg (in air)

Low duty single channel



- Power supply = 24 – 48 VDC (SIIS II)
- Nominal / max output torque = 1800 / 2700 Nm
- Size and weight = HxW 85x40 cm, 110 kg (in air)

Multiple uses



Linear valve actuation



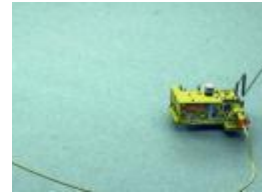
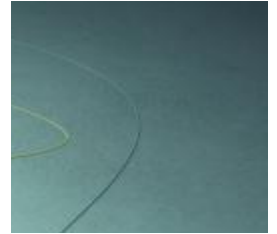
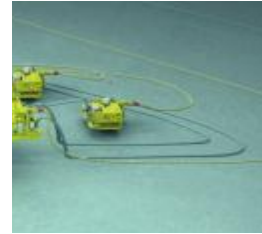
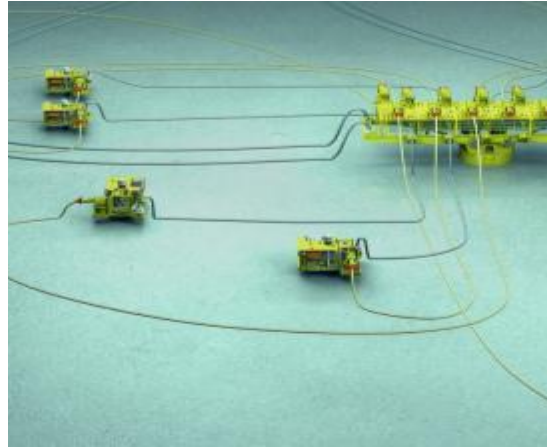
Linear valve actuation
with mechanical fail safe



Rotary valve actuation



Rotary valve actuation
larger ball valves



Case study

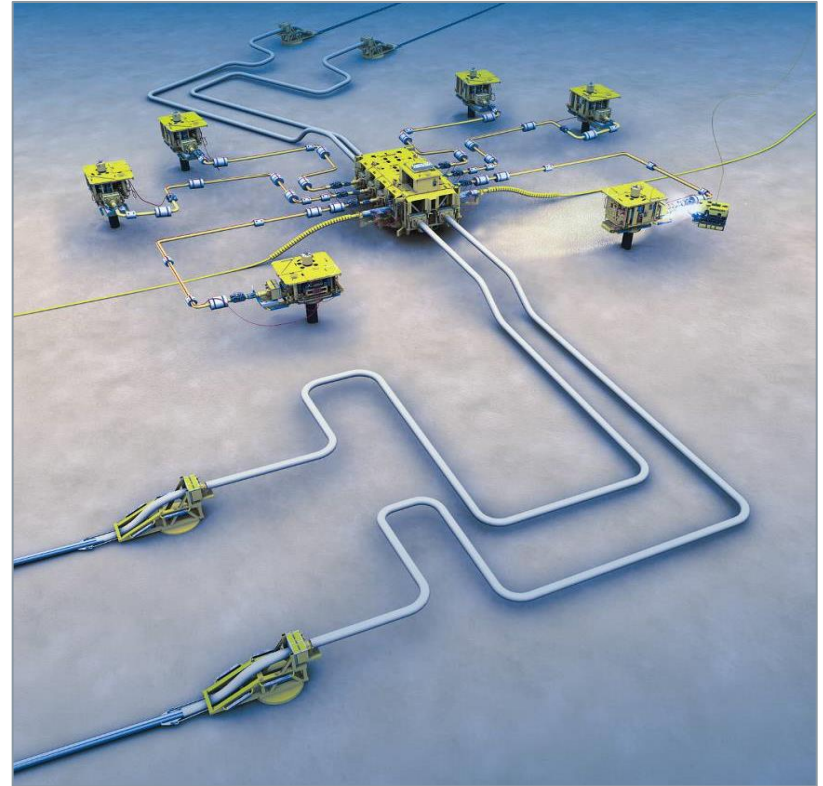
Case study

Assumption

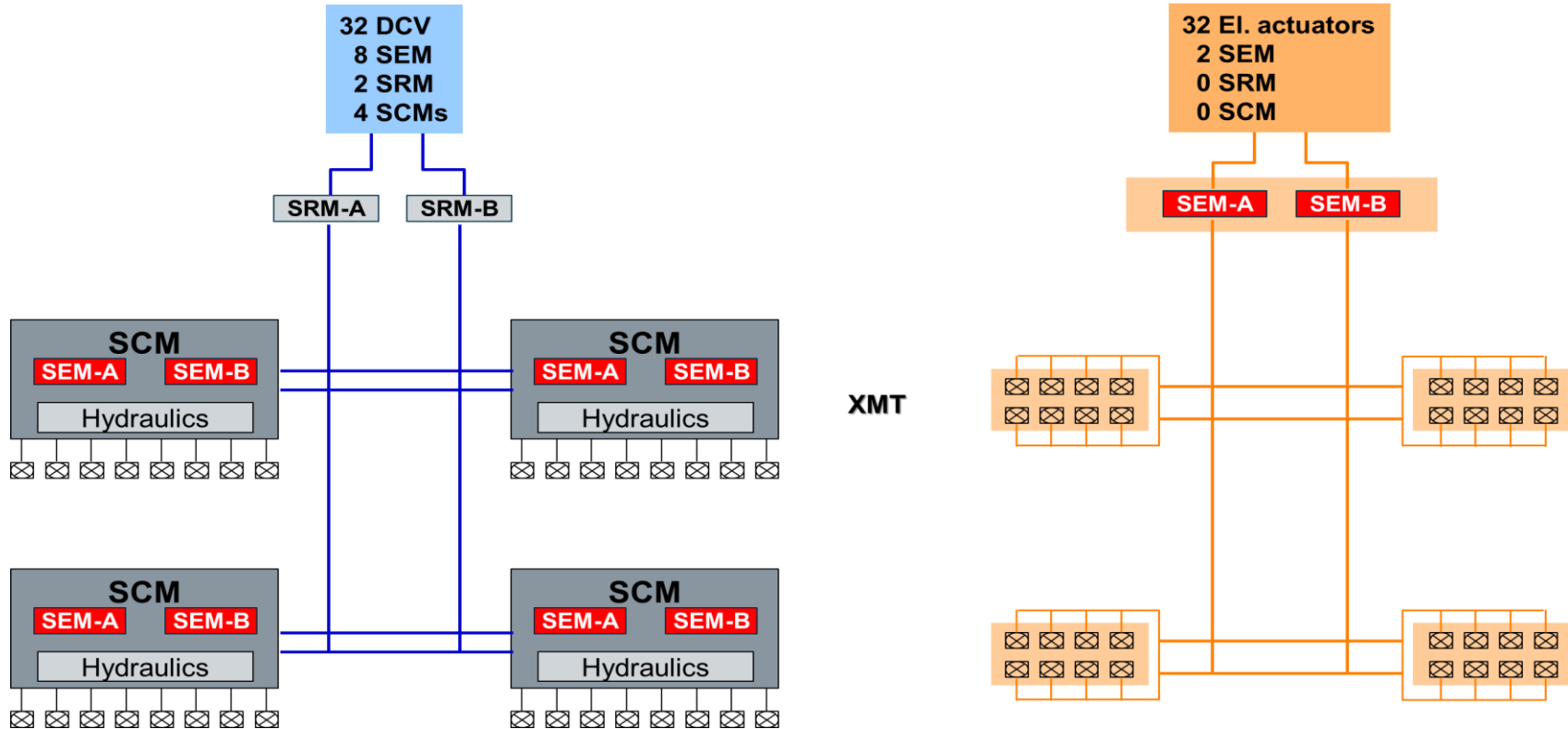
- Subsea field with different Xmas trees
- Same functionality as for electro hydraulic configuration
- All instruments are available in SIIS2 format

Goal of the study

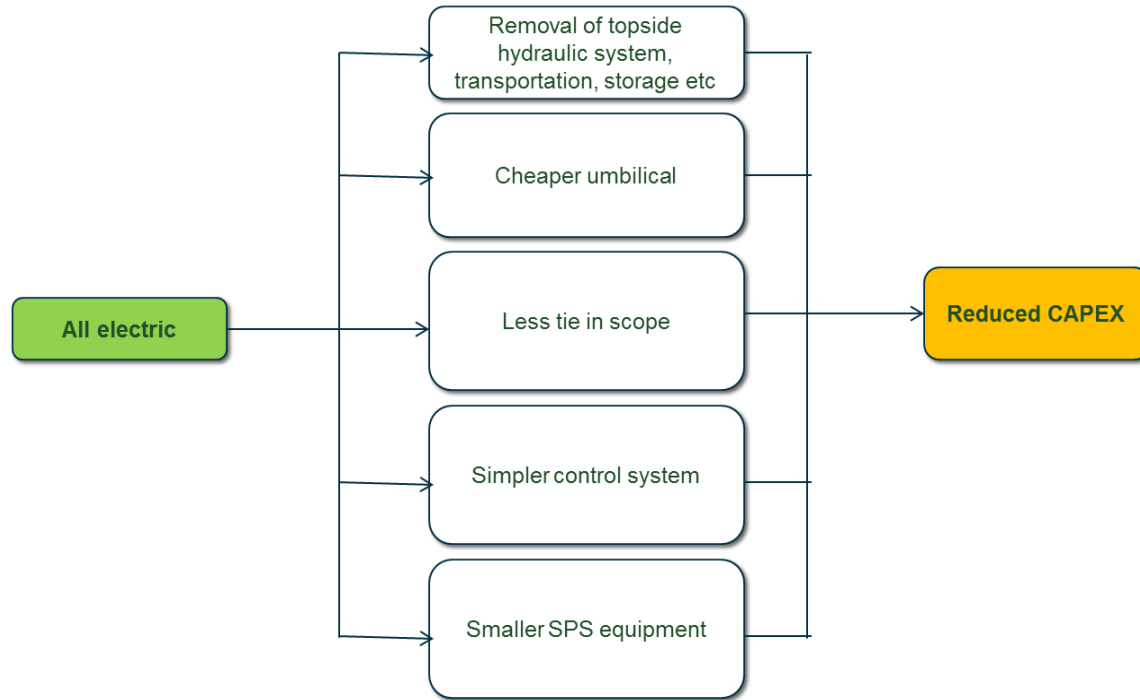
- See if CAPEX costs could be reduced on a large SPS utilizing All-Electric technology



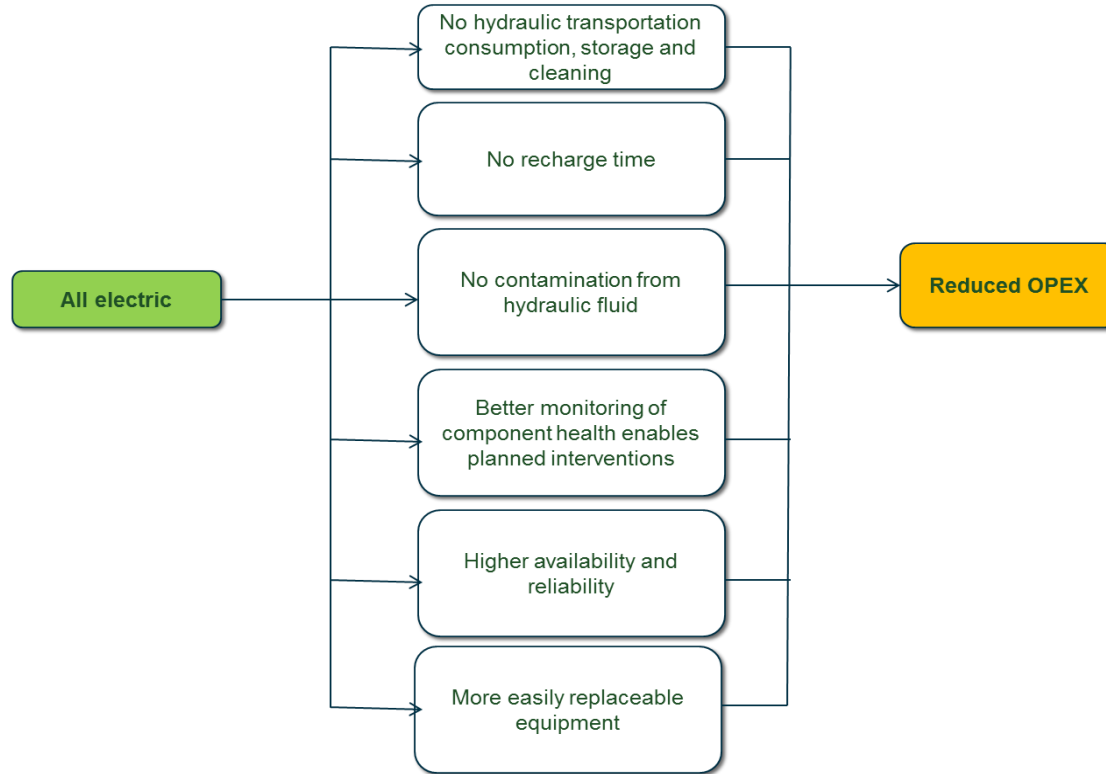
All-Electric system distributed control architecture



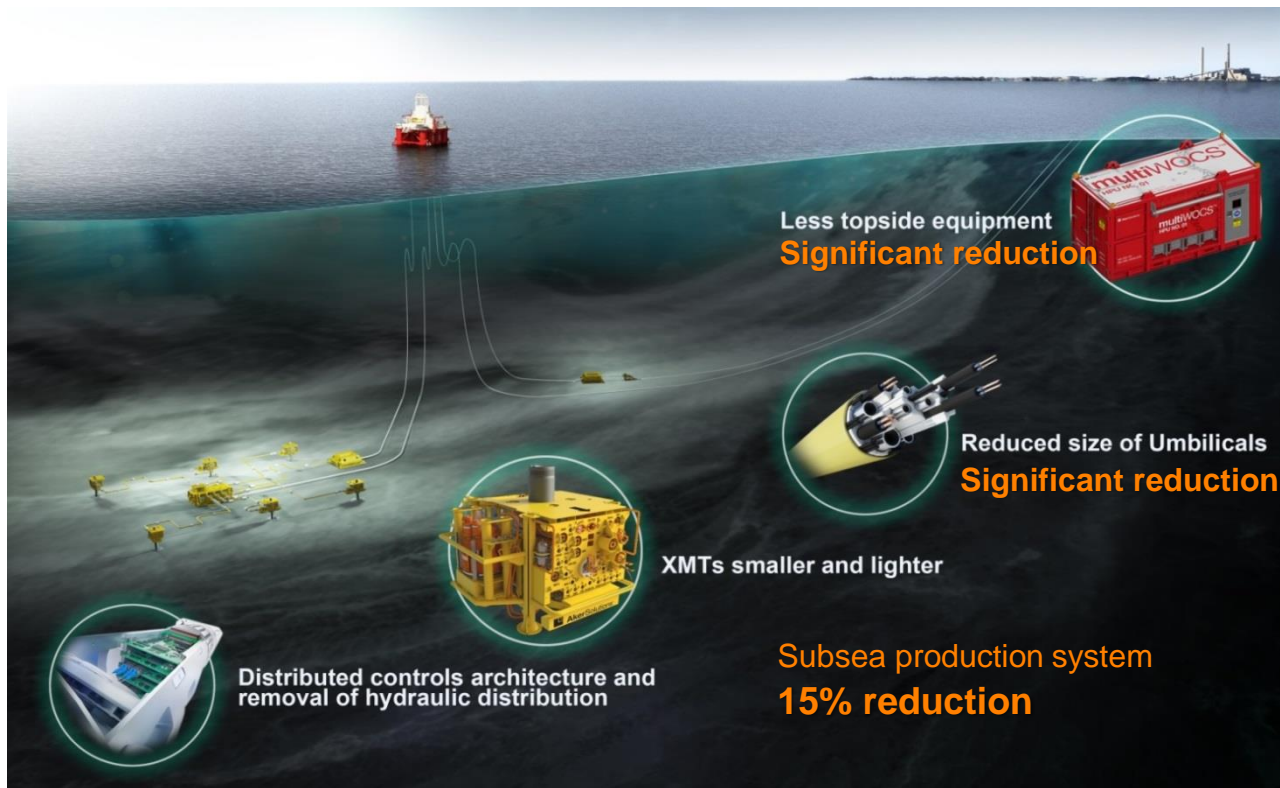
CAPEX effect of All-Electric system

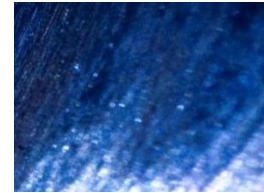
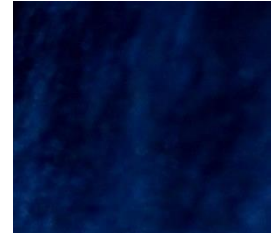


OPEX effect of All-Electric system



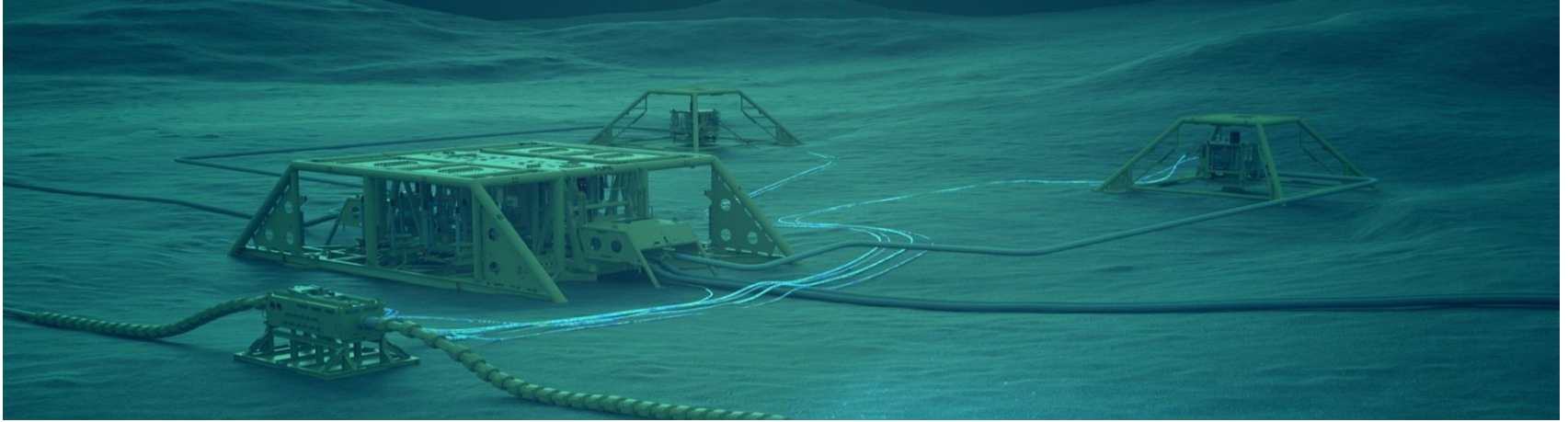
System cost reduction potential





Summary

Summary



- All-Electric is a technology available today
- Different projects using this technology are currently in operation or under execution
- The main benefits provided are the cost reduction and higher reliability
- To adopt this technology on a large scale we need also a different field development mind-set.

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