

P18-SW400 & P18-SD400

18/30(36)kV - 400A connectors

Wet Mate connectors and penetrators for HV distribution

August 2021

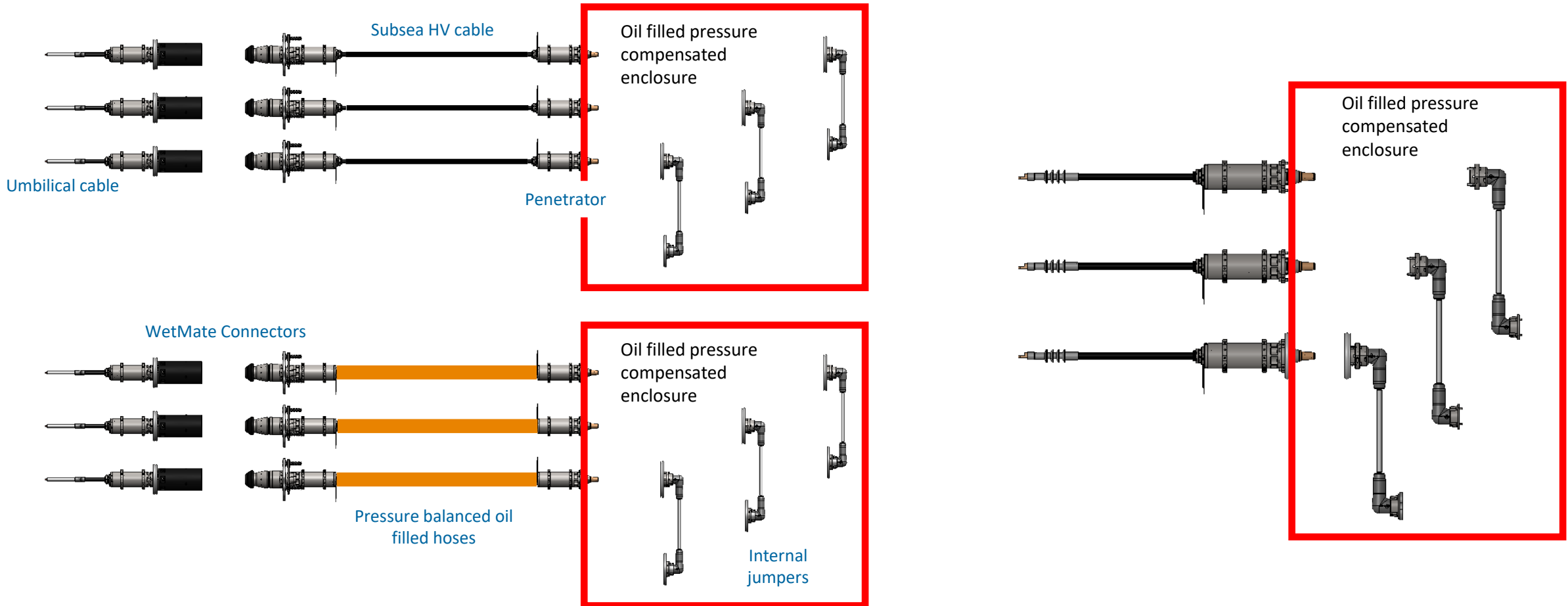


SCM

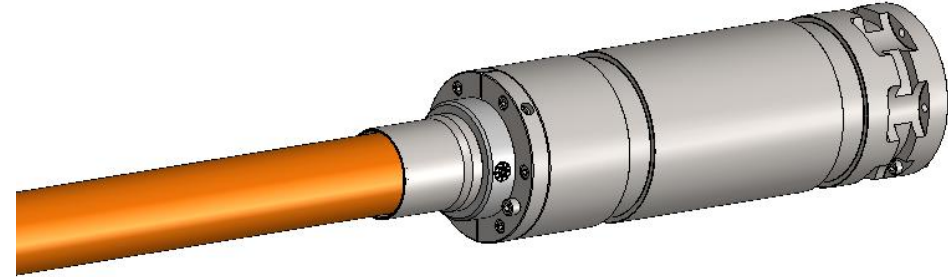
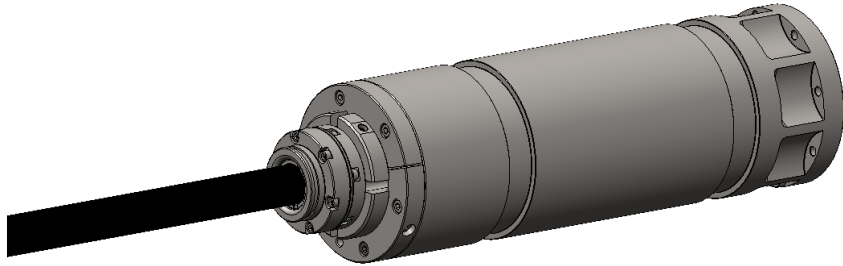
Systems et Connectique du Mans

Application

SCM has field proven HV connectors used for Subsea Power Grids.
Below some examples of different options and layouts we can provide:



Product characteristics



Electrical Characteristics

- Number of Contacts: **1**
- Rated Voltage $U_0/U(U_{max})$: **18/30(36)kV**
- Maximum Rated Current: **400A**
- Rated Power Frequency: **15 to 70hz**
- Insulation Resistance at 5kV DC: **>10GΩ**
- Contact Resistance: **<0,1mΩ per contact**

Other Informations

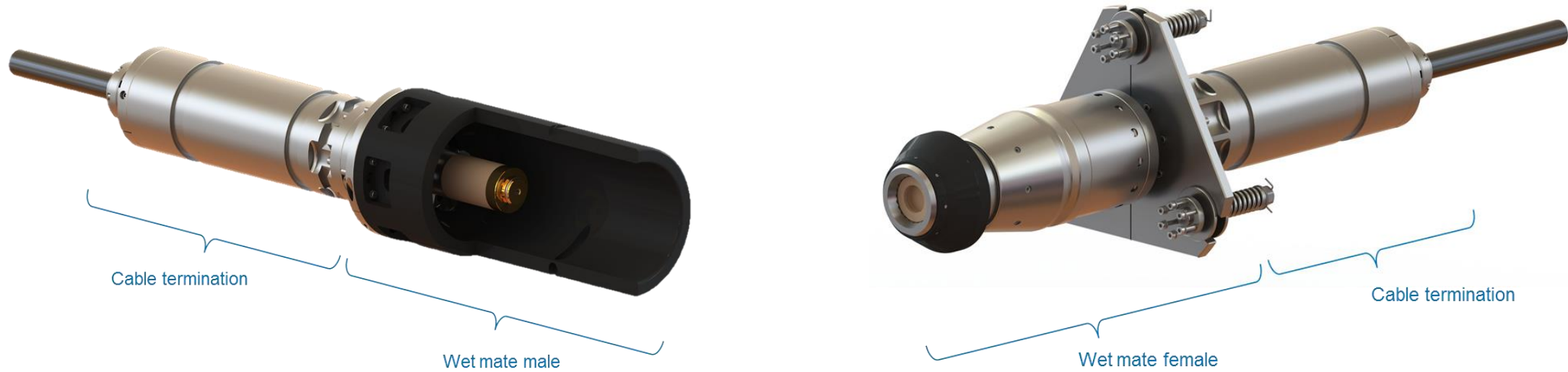
- Umbilical cable qualified: **95mm² 18/30(36)kV / 120mm² 18/30(36)kV**
- Hose size ID: **63mm**
- Hose media: **di-electrical oil**
- Cable supplied in hose: **150mm² 18/30(36)kV**

Mechanical Characteristics

- Rated Water Depth: **3000m (10000ft)**
- Rated Pressure: **300bar**
- Body Material: **Super Duplex**
- Insulation Material: **PEEK**

Environmental Characteristics

- Rated Temperature: **-5°C to +30°C**
- Storage Temperature: **-25°C to +60°C**
- Design Life: **25 years**



Electrical Characteristics

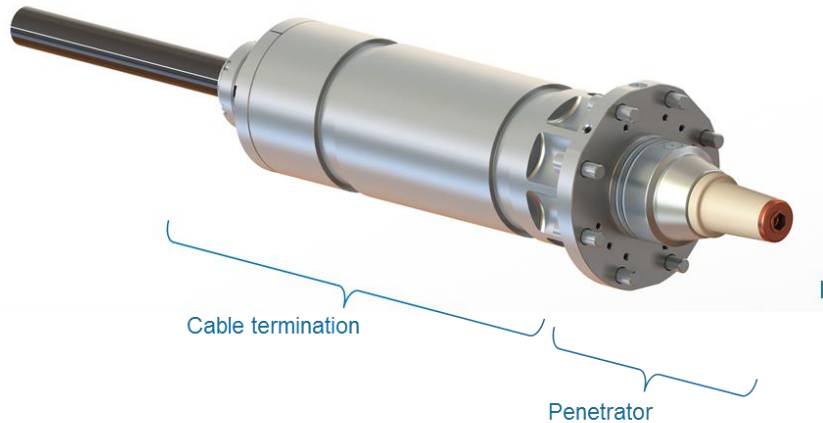
- Number of Contacts: **1**
- Rated Voltage $U_0/U(U_{max})$: **18/30(36)kV**
- Maximum Rated Current: **400A**
- Rated Power Frequency: **15 to 70hz**
- Insulation Resistance at 5kV DC: **>10GΩ**
- Contact Resistance: **<0,1mΩ per contact**

Mechanical Characteristics

- Rated Water Depth: **3000m (10000ft)**
- Rated Number of Mating Cycles: **30**
- Rated Pressure: **300bar**
- Body Material: **Super Duplex**
- Insulation Material: **PEEK**

Environmental Characteristics

- Rated Temperature: **-5°C to +30°C**
- Storage Temperature: **-25°C to +60°C**
- Design Life: **25 years**



Interface in accordance
with standard
CENELEC EN 50180
interface C

Electrical Characteristics

- **Number of Contacts: 1**
- **Rated Voltage $U_0/U(U_{max})$: 18/30(36)kV**
- **Maximum Rated Current: 400A**
- **Rated Power Frequency: 15 to 70hz**
- **Insulation Resistance at 5kV DC: >10G Ω**
- **Contact Resistance: <0,1m Ω per contact**

Other Informations

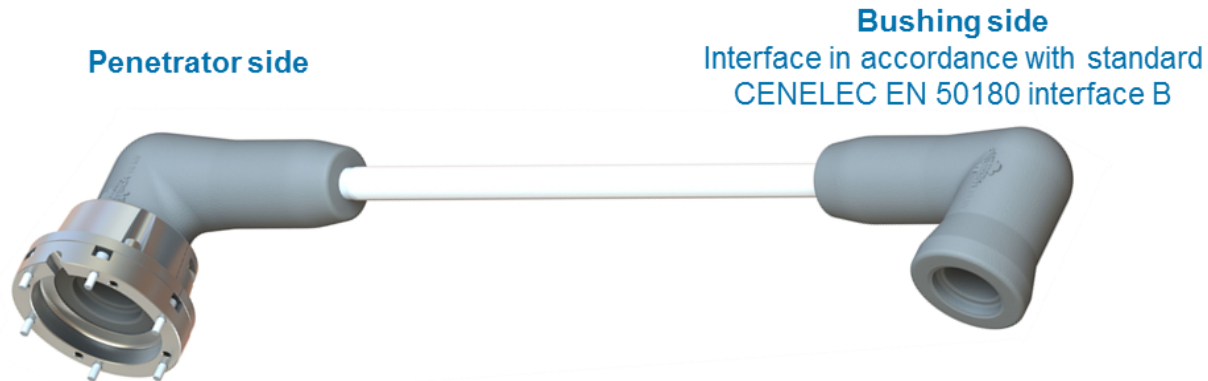
- **Internal module media: di-electrical oil**

Mechanical Characteristics

- **Rated Water Depth: 3000m (10000ft)**
- **Rated Pressure (seaside): 300bar**
- **Rated Pressure (module): 304bar**
- **Body Material: Super Duplex**
- **Insulation Material: PEEK**

Environmental Characteristics

- **Rated Temperature: -5°C to +30°C**
- **Storage Temperature: -25°C to +60°C**
- **Design Life: 25 years**



Electrical Characteristics

- **Number of Contacts: 1**
- **Rated Voltage $U_0/U(U_{max})$: 18/30(36)kV**
- **Maximum Rated Current: 400A**
- **Rated Power Frequency: 15 to 70hz**
- **Insulation Resistance at 5kV DC: >10G Ω**
- **Contact Resistance: <0,1m Ω per contact**

Mechanical Characteristics

- **Rated Pressure: 304bar**
- **Body Material: 316L**
- **Insulation Material: Silicon**

Environmental Characteristics

- **Rated Temperature: -5°C to +30°C**
- **Storage Temperature: -25°C to +60°C**
- **Design Life: 25 years**

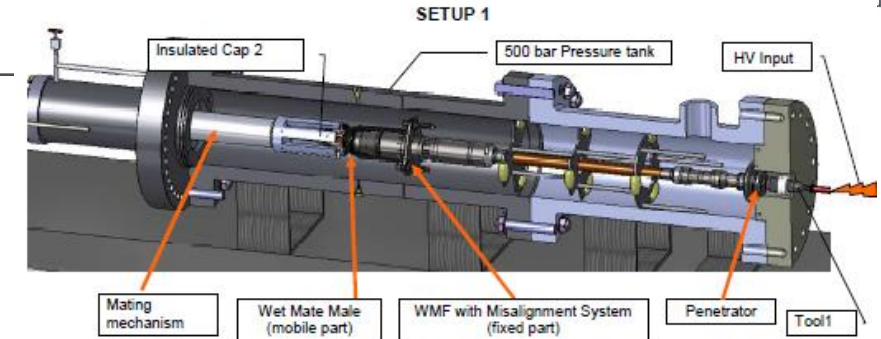
Other Informations

- **Internal module media: di-electrical oil**
- **Cable supplied: 150mm² 18/30(36)kV unscreened**

Qualification Information

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Qualification Tests (TD0153)	Conditions
Prototype Acceptance Tests	Helium leak test / CR < 0,1mΩ per contact / IR > 10GΩ PD level < 10pC at 31,2kV / PD level < 200pC at 45kV HVAC 72kV for 1 hour
Temperature Rise Test	Current rised at 465A 70hz
Thermal Cycles Tests	15 cycles 8h minimum - ambient pressure at 45kV - 465A 15 cycles 8h minimum - 200bar at 45kV - 465A
Pressure Cycling Tests	Step 1: 15 pressure cycles from 0bar to 200bar in mated position Step 2: 30 mating cycles in Turbid condition at ambient pressure Step 3: 30 mating cycles in Turbid condition at 200bar Step 4: 15 pressure cycles from 0bar to 200bar in mated position Step 5: 15 pressure cycles from 0bar to 450bar in mated position Step 6: 10 mating cycles in Tap Water at 450bar Step 7: 15 pressure cycles from 0bar to 450bar in mated position
Thermal Short Circuit Test	2 shock of each 6kA for 1s
Hyperbaric Long Term Test	Step 1: ageing at 90°C - 200bar during 42 days Step 2: 21 days at 450 bar Step 3: 15 pressure cycles from 0bar to 450bar in mated position Step 4: 10 mating cycles at 450bar Step 5: 15 pressure cycles from 0bar to 450bar in mated position
Thermal Shock Tests	3 x High temperature: 60°C - 4 hour then dropped in water between 0°C and 4,5°C 3 x Low temperature: -25°C - 4 hour then dropped in water between 0°C and 4,5°C
Vibration Test	15Hz to 200Hz - 3g acceleration Double sweep on axis Z & Y, 12h endurance on worst resonance frequency
Impact Shock Tests	3 shocks of 500 daN
Drop Test	1m on 5mm thick rubber mattress
Flooded Test	1 sealing barrier removed Step 1: 15 pressure cycles from 0bar to 450 bar in mated position Step 2: 10 mating cycles at 450bar Step 3: 15 pressure cycles from 0bar to 450 bar in mated position



Picture 7 : TURBID - WMM line outside



Picture 29 : Thermal shock - Low Temp - Assy after immersion

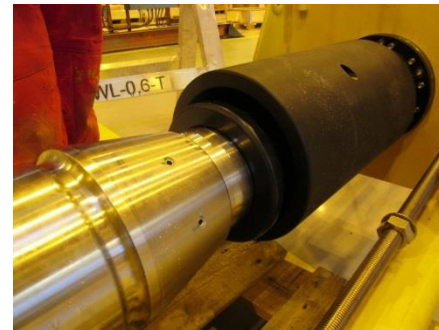


Picture 46 : Drop Test - Assembly 2

Track Record

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- SCM supplied more than 200 off HV 18kV – 400A connectors for these projects:
- Jack & St Malo – Chevron – Gulf of Mexico – Subsea Boosting Pump – 2012
- Asgard – Statoil – Norway – Subsea Gas Compression – 2013
- Gullfaks – Statoil – Norway – Subsea Gas Compression – 2013
- Julia – Exxon – Gulf of Mexico – Subsea Boosting Pump – 2015
- Moho – Total – Congo – Subsea Boosting Pump – 2015



THANK YOU

Your main point of contact :

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