

A wide-angle photograph of a modern cable-stayed bridge stretching across a large body of water. The bridge features tall, white, A-frame pylons and numerous stay cables. In the background, a dense urban skyline with various skyscrapers is visible under a blue sky with scattered white clouds. The sun is low on the horizon, creating a warm glow and lens flare effect on the left side of the image.

Welcome to the World of Trelleborg

Offshore Wind
Trelleborg OWF sealing solution

Trelleborg Group

A world leader in engineered polymer solutions

 Focused
**polymer
group**

 founded
1905



Annual sales

SEK ~34 billion

EUR ~2.97 billion

USD ~3.21 billion



>15,600
employees



40+
countries



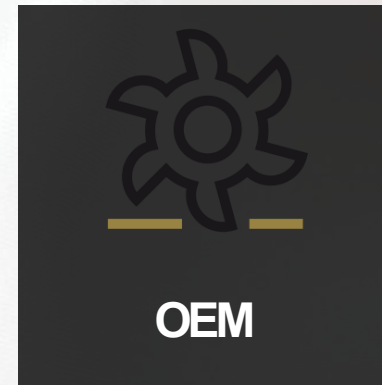
~120
manufacturing
facilities

Trelleborg Infrastructure – founded in RIDDERKERK, 1879

Engineered polymer solutions for build infrastructure



5000+ Foundation Seals



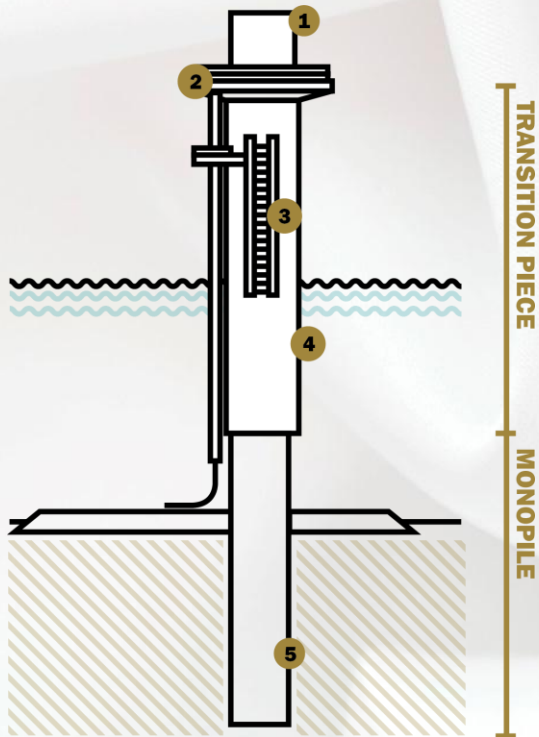
Offshore Wind Power Grout Sealing

Main foundation form

Monopile

- Grouted
- Non-Grouted

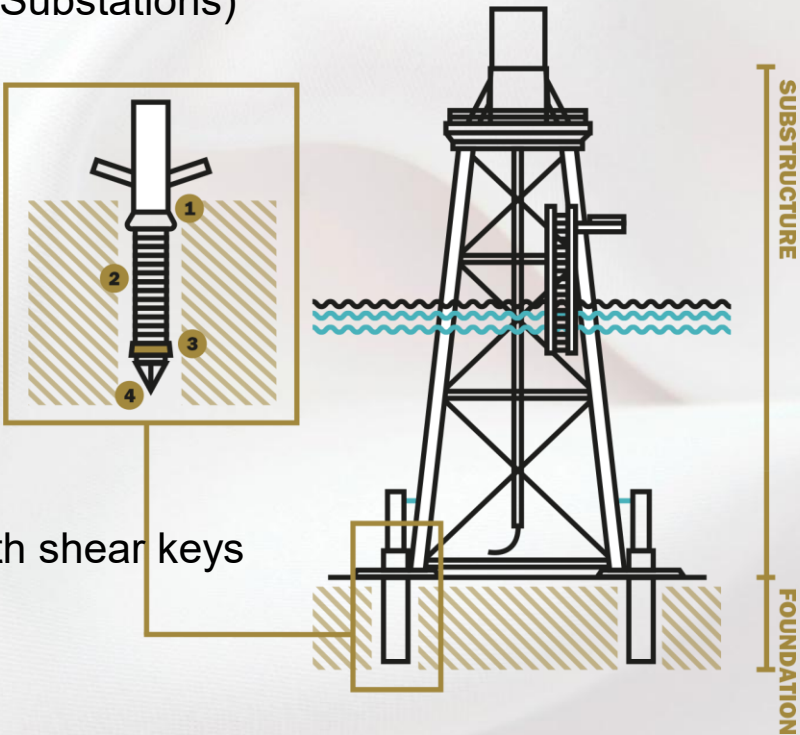
- 1 Tower
- 2 Work Platform
- 3 Boat Landing
- 4 Transition Piece
- 5 Monopile



Jacket

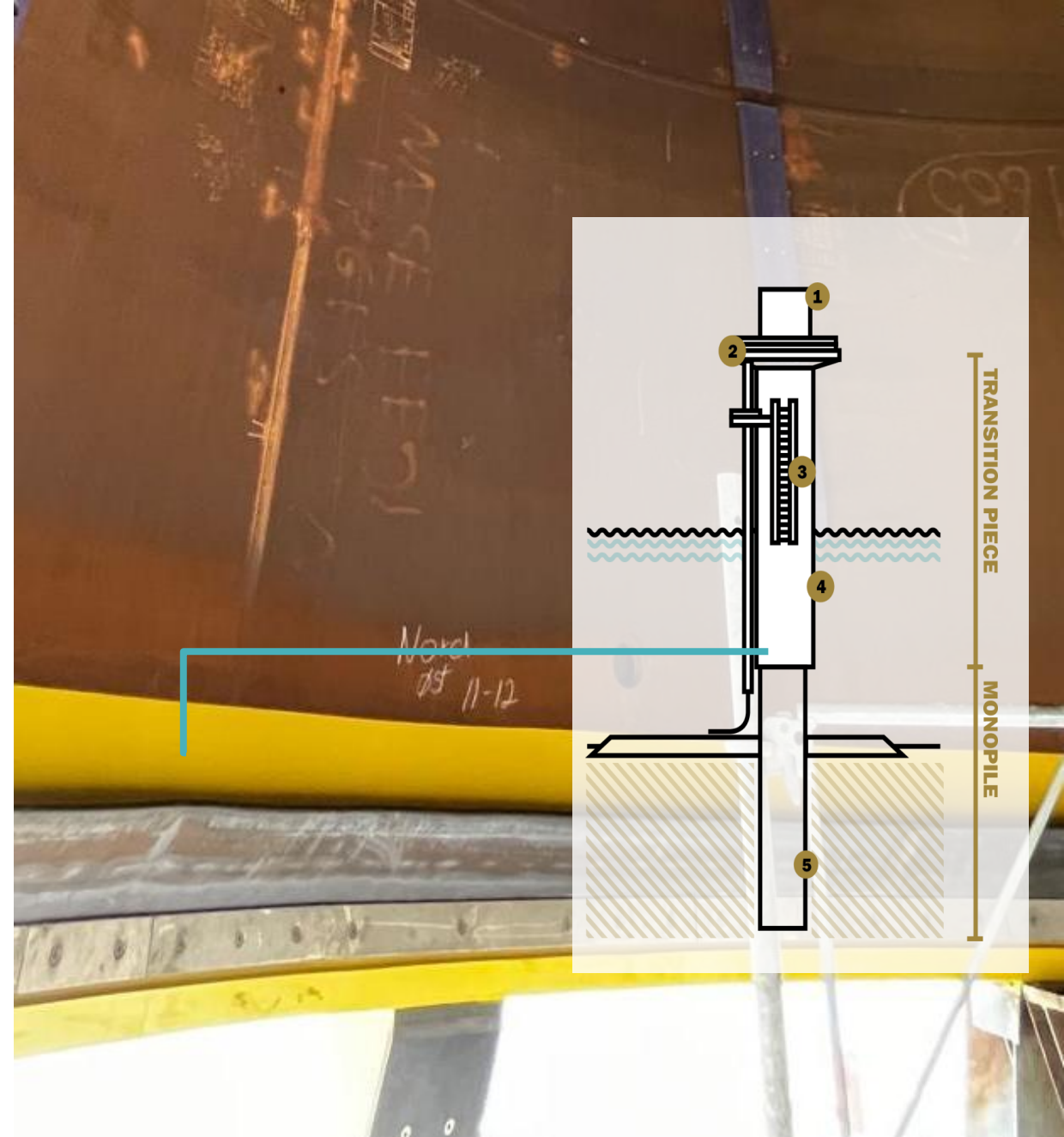
- Pre-Piled grouted (Wind turbine foundations)
- Post-Piled grouted (Substations)

- 1 Shim plate
- 2 Jacket pinpile with shear keys
- 3 Seal
- 4 Centralizers



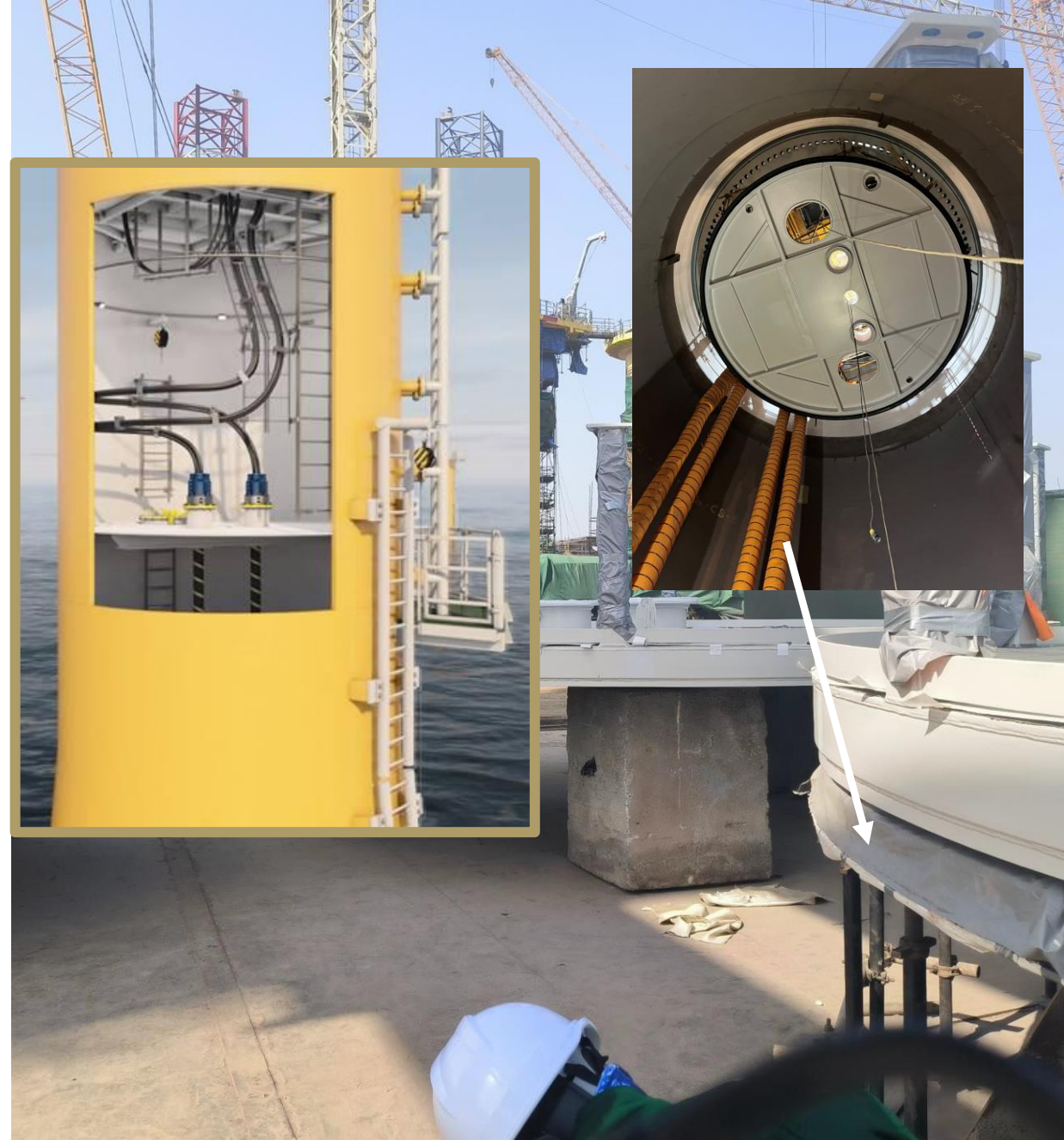
Monopile Grout Seal

- Conventional self-activating grout seal
- Installed inside the TP directly above the seafastening flange
- Structural grout, load carrying
- Grout (seal) provides protection from water ingress over lifetime



Airtight Platform Seal

- Different seals are available with different features
- Compression seal between airtight platform and monopile landing ring
- Minimum required compression is 8 mm
- Maximum compression depends on available force

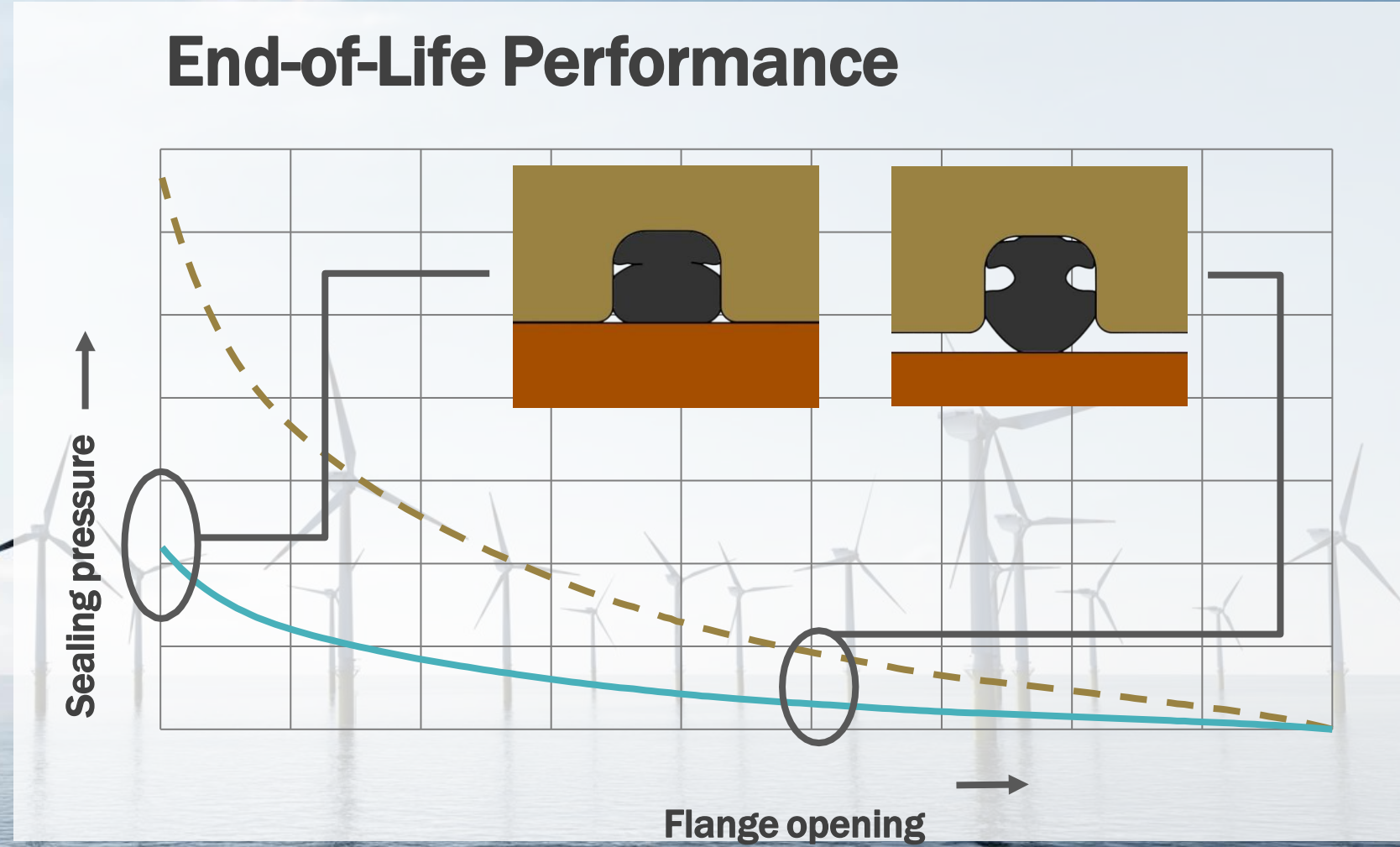


Airtight Platform Seal



Flange Seal

- Initial performance
 - Max opening
 - Min opening
- Stress relaxation
 - Profound in beginning
 - Reduces in time
- End-of-life performance
 - Max opening
 - Min opening



Jacket Foundations

- Pre-Piled: WTG*
 1. Position template
 2. Drive piles
 3. Lower jacket
 4. Grouting
- Post-Piled: OSS*
 1. Lower jacket
 2. Drive pin piles
 3. Grouting

**Typically applied configuration*



Pre-Piled Jacket Foundations

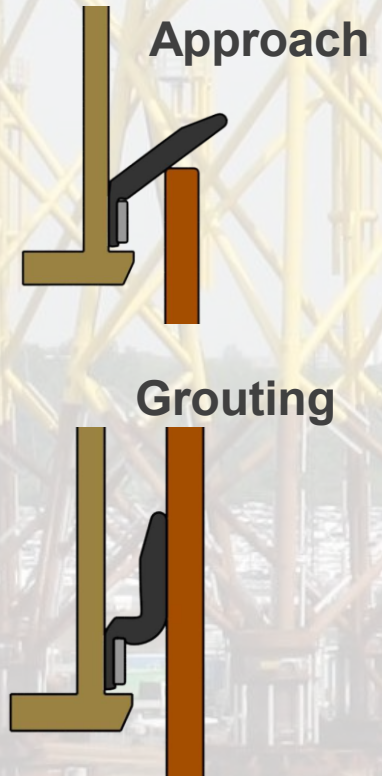
- Grout seal attached to the jacket structure
- When soil conditions are challenging
- Improved grout quality by reduced mixing with mud
- Very large seal gaps due to tolerances can be challenging to cover



Typical grout seal configuration for a Chinese pre-piled jacket project

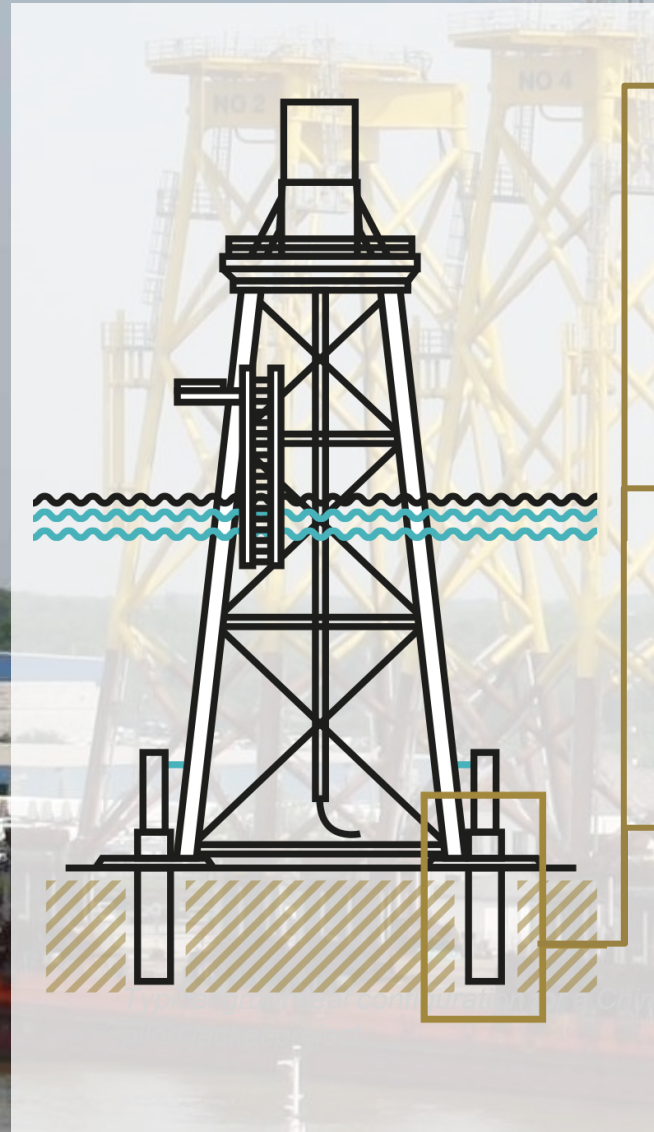
Grout seal

Passive system to contain the grout



Post-Piled Jacket Foundations

- Typically applied for substations
- Grout seal attached to the jacket structure
- Many instances of failure
- for passive grout seals
- Active grout seal provides certainty for installation



Inflatable grout seal

Active system to contain the grout, flat prior to inflation



Mud wiper

Preventing mud ingress and mixing with grout due to pile driving

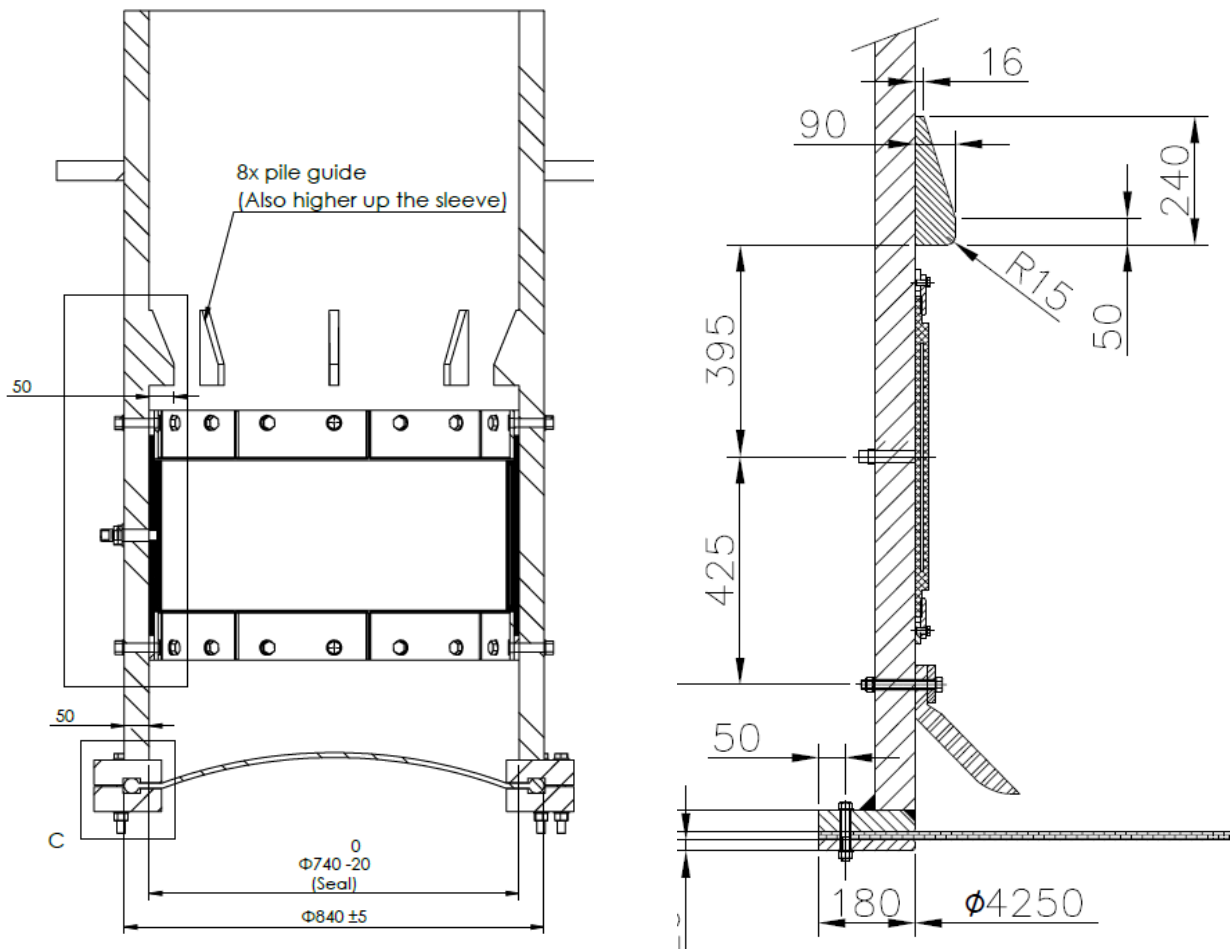


Diaphragm closure

Providing buoyancy for jacket positioning, pierced by the pin pile



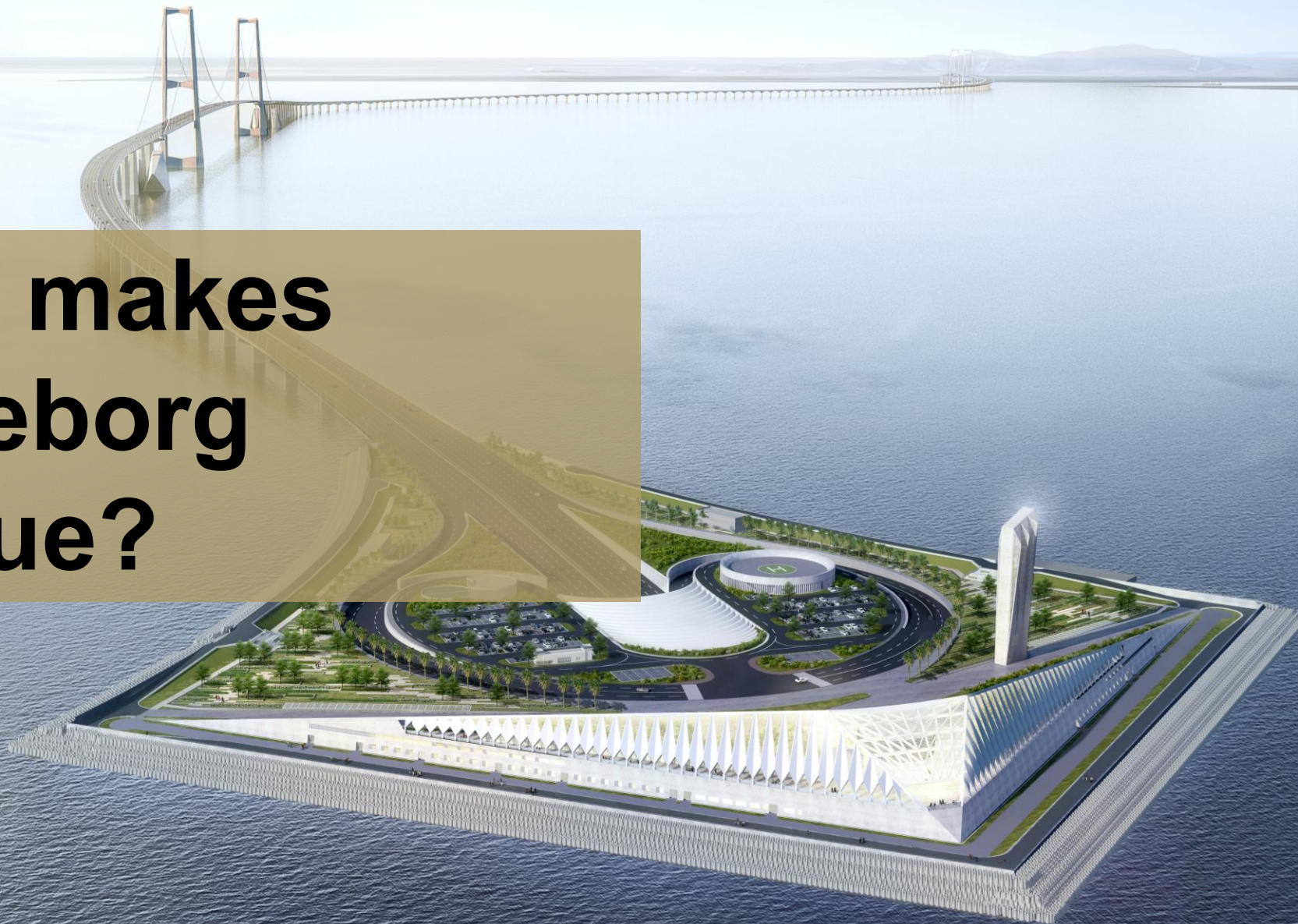
OSS (Substation) sealing solution



OSS (Substation) sealing solution



What makes Trelleborg unique?



What makes Trelleborg unique?

Database

- Reference list
- Reputation
- Compound recipe

Design ability

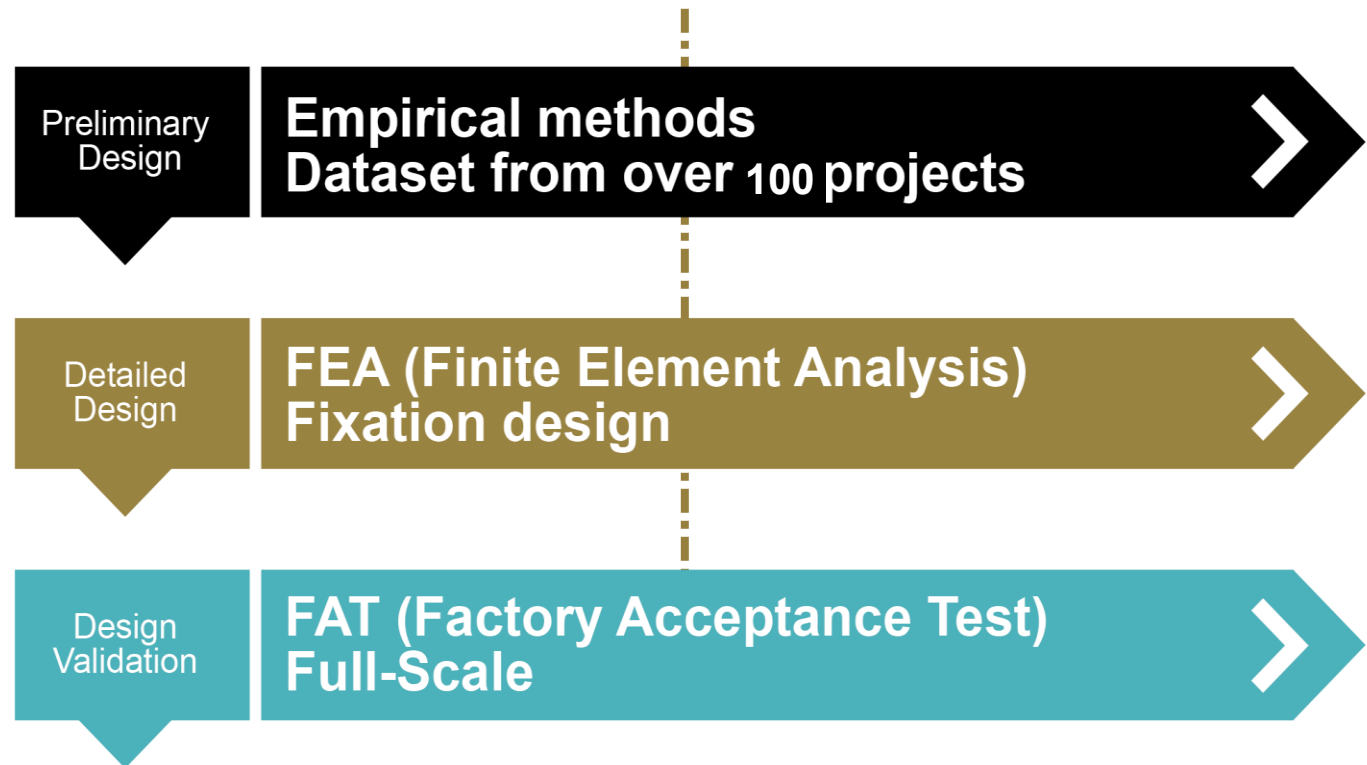
- FEA simulation
- Full-scale seal test
- Global engineering team

Reliability

- Service life 35+ years for OWF, 120+ years for IMT
- Zero failure

Innovation

- Floating platform innovation project is ongoing



Want to know more?



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