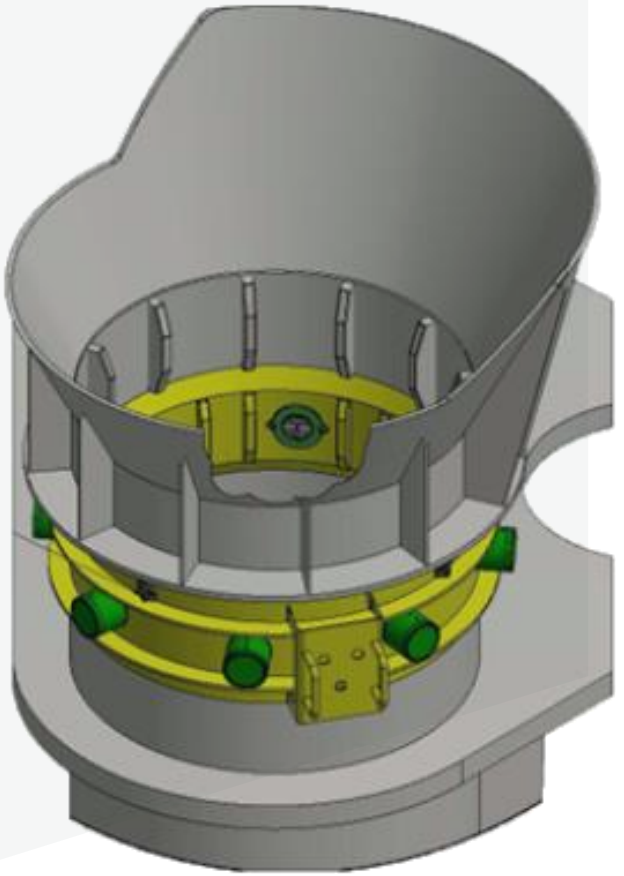
JPG

JACKET PILE GRIPPERS



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YES
YOUR EQUIPMENT SERVICES

DESIGN

- Sizeable to any pile diameter
- Balanced design in number of cylinders versus gripping capacity
- Ring height sufficient to limit heat affected zone close to cylinder fittings and hydraulics during installation (welding) at yard
- Compliant to standards and 3rd party Design Approval (DAD)

FEATURES

- Tailored to jacket design and offshore installation methodology, allowing for:
  - Clearance for hammer and drilling equipment;
  - The installation (and clearance) of levelling equipment;
  - The placement of the grout.

OPERATION

- Hydraulically operated with fail-safe
- Operation redundancy – from surface and/or ROV-panel
- Ability to re-grip by dual-acting cylinders

INSTALLATION

- FAT and packed ready for shipment at fabrication site
- Transport can be arranged for
- Optional on-site installation support, commissioning and SAT

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Examples / Proposals

HVDC-Platform Centre Manche

2GW-Platform TENNET/AMPRION

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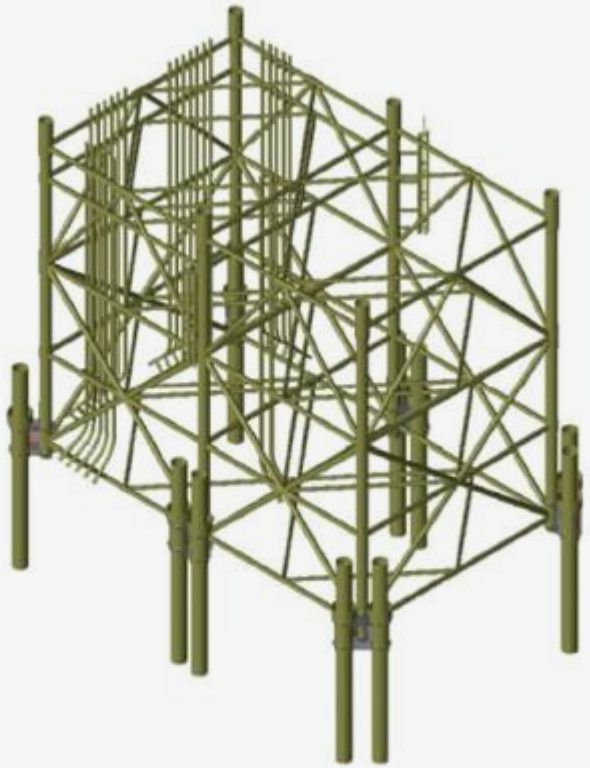
Project Input

Centre Manche

CASE – OFFSHORE SUBSTATION

- 6 legs
- 10 pile sleeves
- Jacket weight 5,250T excl. piles
- Pile diameter 2,438mm (96”)
- Pile sleeve diameter 2,890mm



GRIPPING SCENARIOS

Scenario	Pile Grippers (#)	Max Horizontal Force $F_{h,max}$ (t)	Max. Vertical Force $F_{v,max}$ (t)
Pile gripper per pile sleeve	10	242.64	-993.96
Pile gripper per leg	6	298.43	-1043.39

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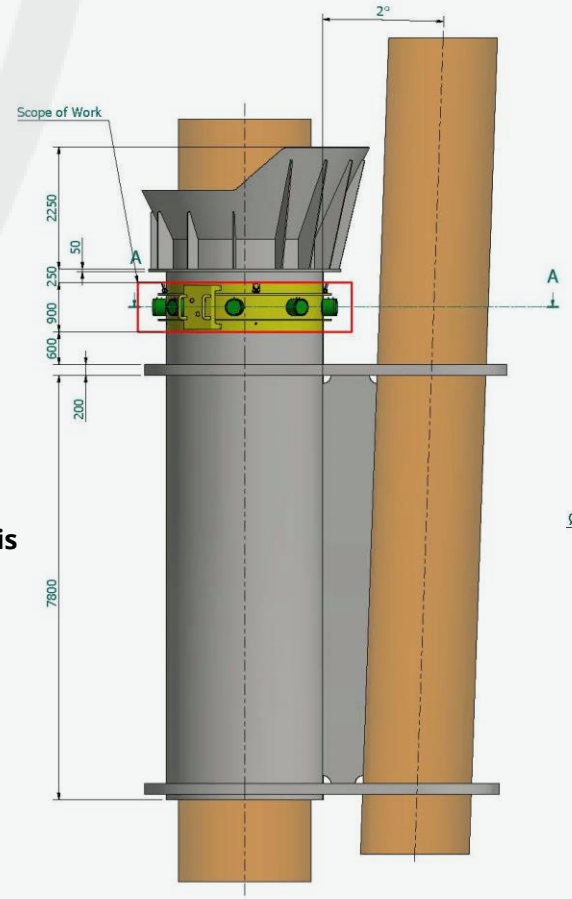
Design – Centre Manche

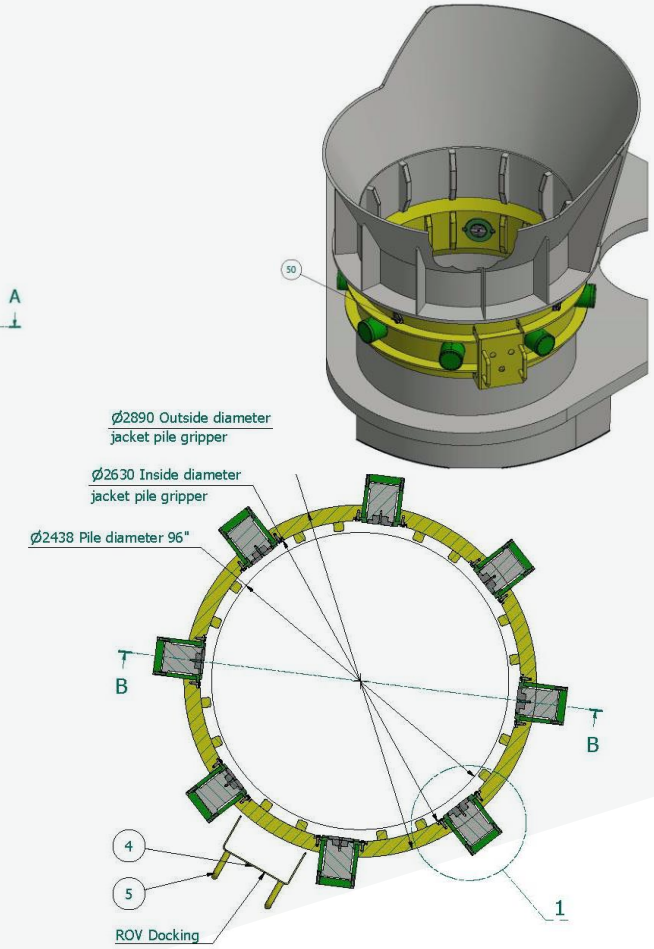
PILE GRIPPER – STRUCTURE

- Scenario one (1) gripper per leg (6 total)
- Eight (8) hydraulic jacks for sufficient clamping force
- No vertical adjustment capability
- Funnel and sleeves are not part of scope
- Grippers to be installed (welded) upon jacket at yard
- Ring height sufficient to limit heat affected zone during installation (welding) close to hydraulics and fitting of jacks

DESIGN ALLOWS FOR:

- Clearance for hammer and drilling equipment so underwater cutting of piles is avoided later,
- The installation (and clearance) of levelling equipment,
- The placement of the grout.





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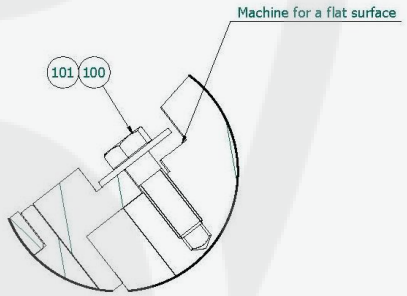
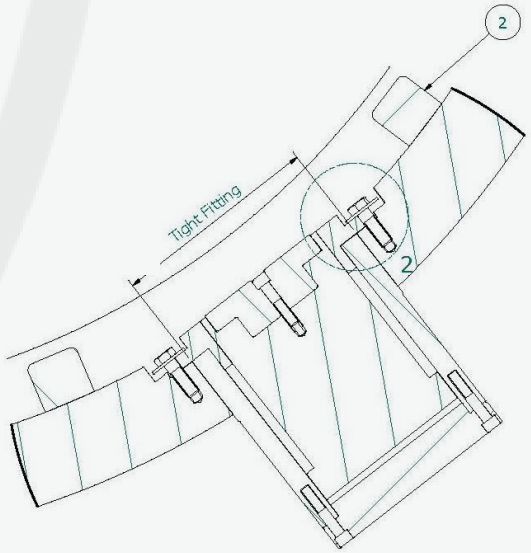
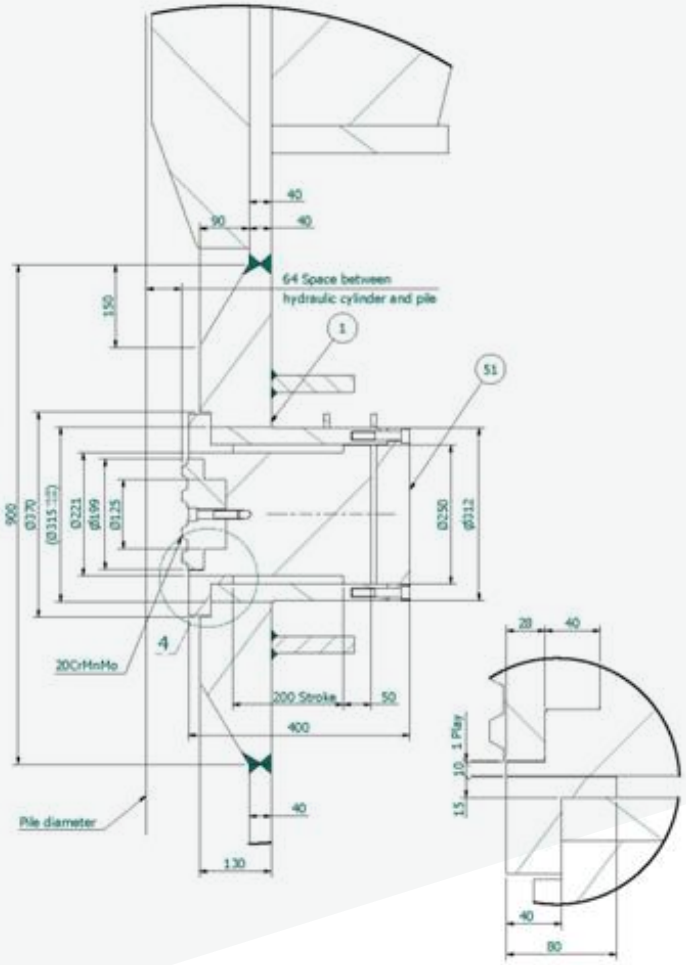
Operation – Centre Manche

PILE GRIPPER – HYDRAULICS

- Double acting cylinders
- Rigid piping installed on gripper ring to feed jacks

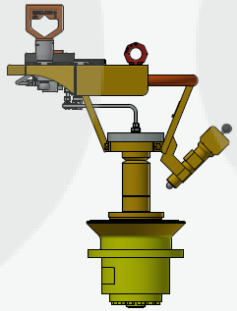






PILE GRIPPER – OPERATION

- Base case is one (1) ROV-panel and hot stab per gripper
- Connecting frame on ring to bolt on ROV-Panel
- Standard operating pressure of 250 bar is assumed
- Stab and receptacle have Ø35 hydraulic bores, when used on 8 jacking cylinders act gradually
- Control from surface is optional



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EPC Bid – Centre Manche

DETAILS

- 2.438 mm Hydraulic pile gripper
- S355J2 steel
- 8* Ø250 mm * 200mm stroke double-acting hydraulic cylinders
- Hydraulic piping for connections between cylinders and ROV panel
- Necessary NAS 6 Biodegradable hydraulic oil BIOVESTA 46
- Surface treatment SA 21/2 Blasting + 150mm epoxy
- Assembly and factory test
- Load testing TBD with client
- Packaging

SERVICES

- On-site support for fitting and commissioning + SAT on day rate
- Class certification on a cost+15% basis
- Transport from fabrication site to construction yard on a cost+15%

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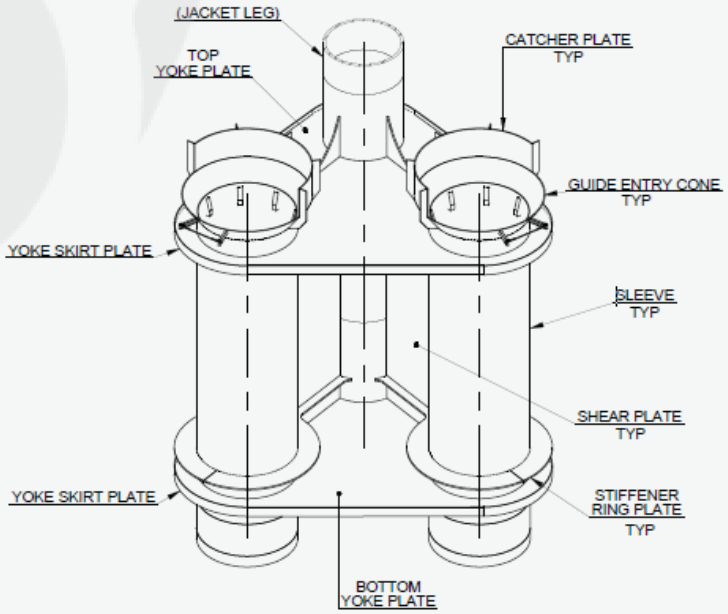
Project Input

2GW Platform

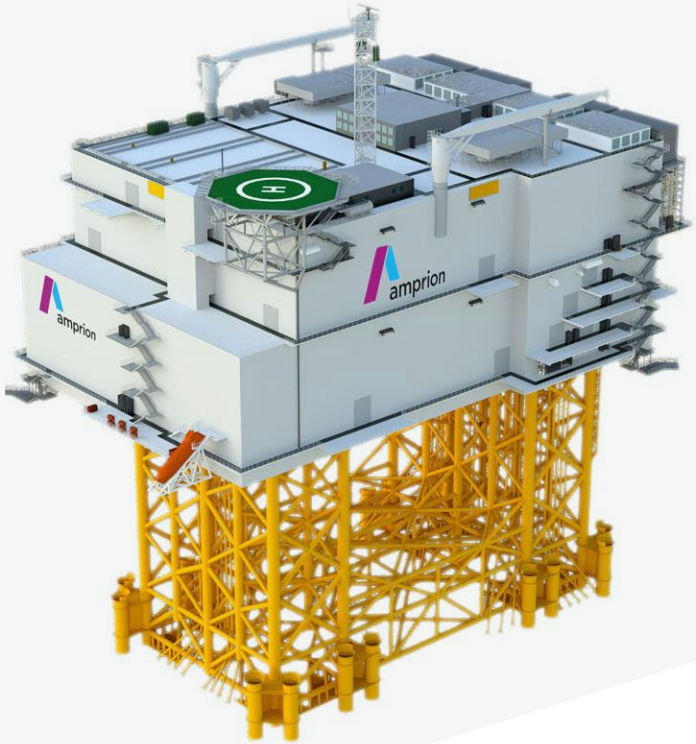
CASE – 2GW OFFSHORE SUBSTATION

- **Five (5) platforms**
- **Eight (8) Jacket Pile Grippers per jacket**
- **Each Jacket Pile Gripper has 1,500T gripping capacity**
- **Jacket weight 12,850T excl. piles**
- **Pile diameter OD 2,743mm**
- **Pile sleeve diameter & thickness 3,125x50mm**



SINGLE PILE CLUSTER ISOMETRIC VIEW

Source: Dragados Offshore, S.A for BalWin1 and BalWin2



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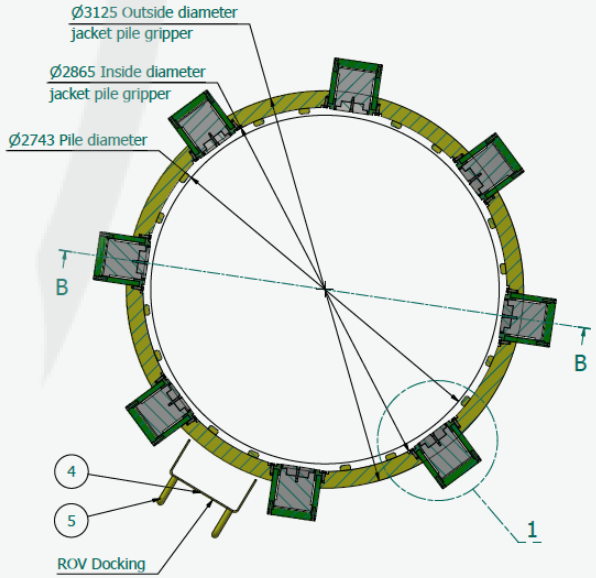
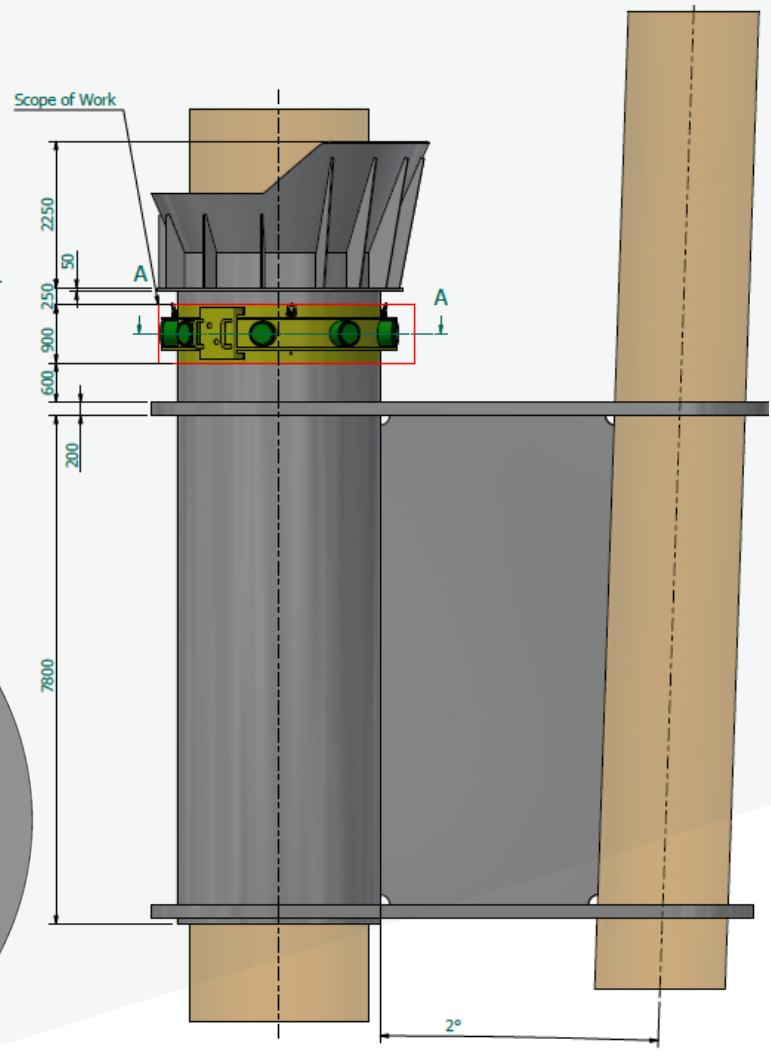
Design – 2GW Platform

PILE GRIPPER – STRUCTURE

- Eight (8) Jacket Pile Grippers per jacket
- Eight (8) hydraulic jacks for sufficient clamping force (8*1,500T)
- No vertical adjustment capability
- Funnel and sleeves are not part of scope
- Grippers to be installed (welded) upon jacket at yard
- Ring height sufficient to limit heat affected zone during installation (welding) close to hydraulics and fitting of jacks





DESIGN ALLOWS FOR:

- Clearance for hammer and drilling equipment so underwater cutting of piles is avoided later,
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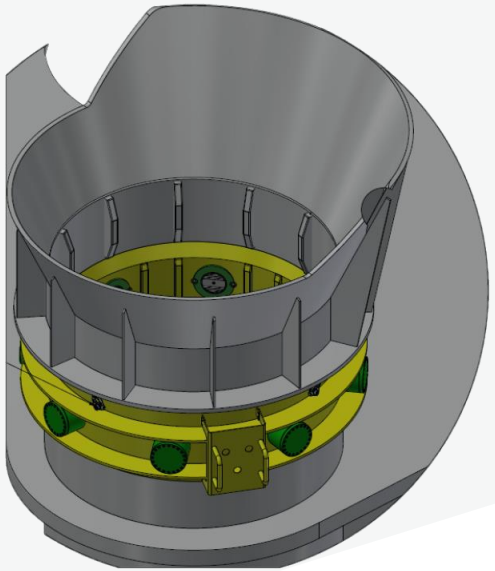

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Operation – 2GW Platform

PILE GRIPPER – HYDRAULICS

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PILE GRIPPER – OPERATION

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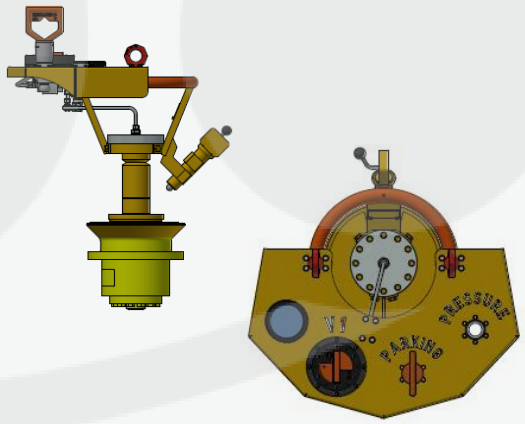

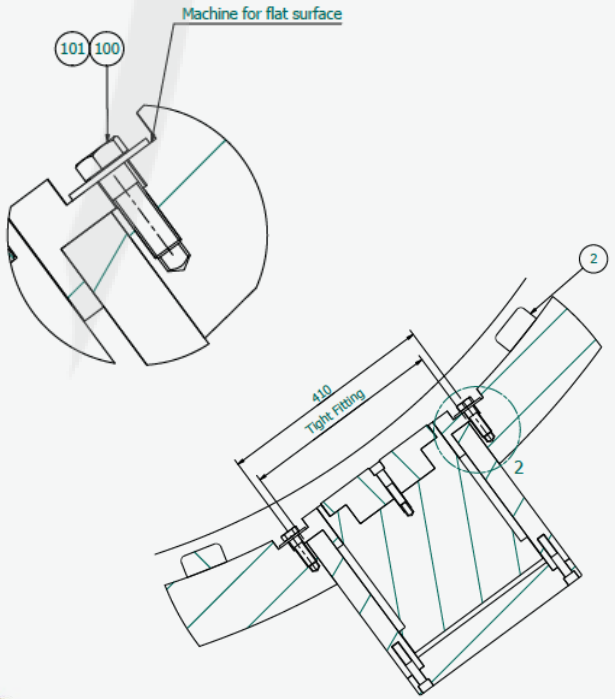

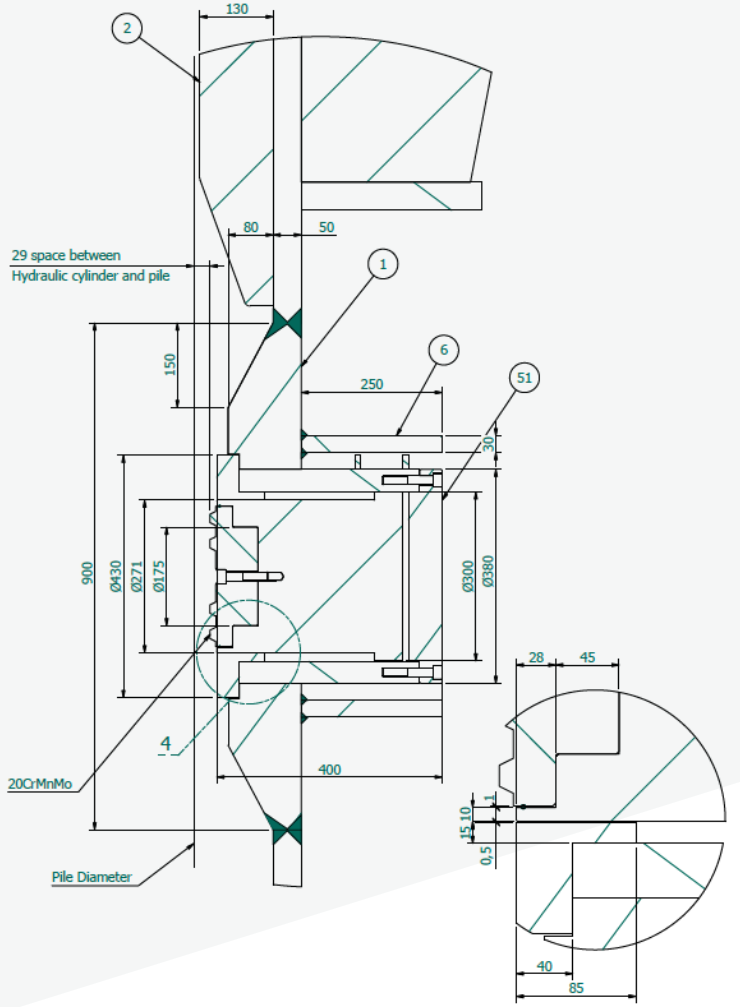

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EPC Bid – 2GW Platform

DETAILS

- 3,125 mm Hydraulic Jacket Pile Gripper
- Design / 3 modelling / 2d drawings / FEM and DNV Design Approval
- IOM Manuals and MRB package
- S420 steel
- 8* double-acting hydraulic cylinders
- ROV-Panel
- Hydraulic piping for connections between cylinders and ROV panel
- Rotating hoist rings + Bolts and washers
- Necessary NAS 6 Biodegradable hydraulic oil BIOVESTA 46
- Surface treatment and Sigmacover380 DFT=125µm+Sigmacover456 DFT=125µm (colour TBD)
- Assembly and factory test
- Packaging

SERVICES

- On-site support for fitting and commissioning + SAT against cost+15%
- Transport from fabrication site to construction yard against cost+15%
    - Batched transport possible 5*8 dependent delivery schedule
- Load-test and number of tests (test interval) TBD

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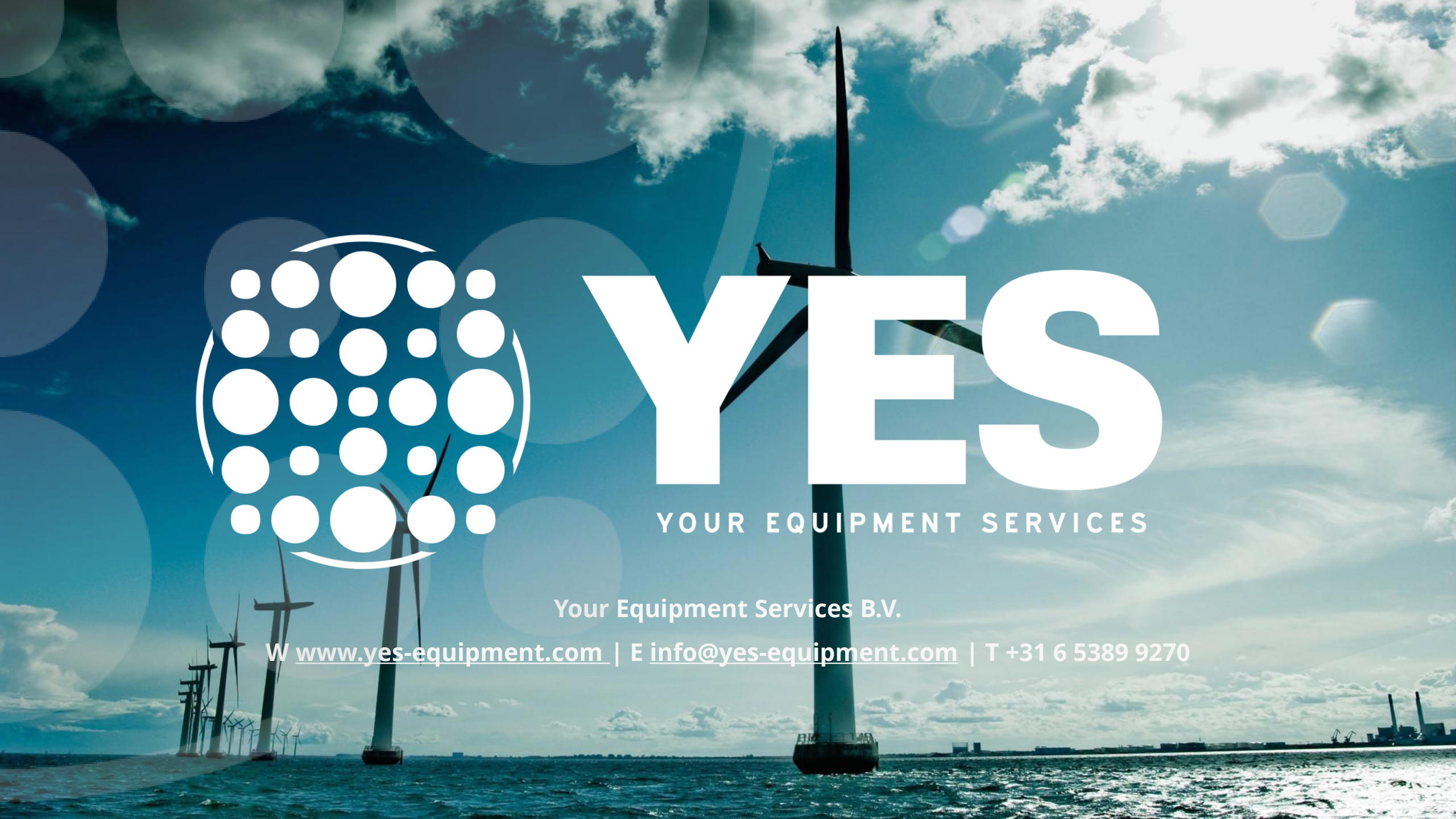

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