



**IHC**

> 016 piles installed for wind foundations in 59 projects

**Europe**

**Market share 75%**

**Reliable pile driving & handling equipment**

- Pile diameters from 1.52 m up to 6.50 m
- Hammer Types: SC-150 up to S-2000
- Water depths 0 up to 45 m
- Internal Lifting Tools LT
- Lift-Soil-Systems
- Levelling-Systems

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**Pre-Piling Solutions**

- Base frame is lifted by Internal Lifting Tool = LT (same size as pile LT)
- Up-end Tool guides the pile towards vertical position = UET
- TIS Template Inclination Stick-up solution secures footprint, inclination and stick-up pile level
- LT is stabilizing the pile directly in TIS frame
- Jacket lifting by Flange Lifting Tool = FLT

**Easy Piling Method**

- Through sleeve pile driving without obstacles
- Low COG and one hoist option hammer & pile
- Secures compressed first layer, no grout mixing with soil
- No followers involved
- No dredging when driving below sea bottom

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**Pre and Post-piling methods for Jackets**

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**Post-piling method for Jackets**

Hydrohammers used: S-500 – S-1200

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**Pre-piling method for Jackets**

Ormonde – S-500 – 124 x 1820 mm OD piles (Contractor GeoSea)

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**Pre-Piling Solutions**

- Jacket lifting by Flange Lifting Tool = FLT
- Up-end Tool guides the pile towards vertical position = UET
- Internal Lifting Tool = LT is lifting the pile directly in jacket foot
- Levelling Tool secures the jacket inclination
- Jacket Pile Gripper = JPG secures the inclination during grouting



**IMC**

Moto piles / hammers




Hydrohammers used:  
 S-800 – S-2500

S-800 – S-1400  
 Anvil 4300 mm

S-800 – S-2000  
 Anvil 4300 mm +  
 Anvil ring 5100 mm


S-1400 – S-2500  
 Anvil 5500 mm

S-1800 ->  
 Anvil 5500 mm +  
 Anvil ring 6500 mm

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Integrated solutions - Meerwind project




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Moto piles / hammers


Standard hydraulic hammer ranges:

- S-30-90-120-160-280
- S-500-600-800-1200-1400
- S-1800-2000
- S-2500-3000-4000 ★



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Integrated solutions - Meerwind project



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Reference projects: Meerwind & Riffgrund 1

Integrated solutions: Meerwind project

- Hydrohammer S-2000
- Upending Tool 700 ton
- Pile Guiding and positioning tool



Integrated solutions: Borkum Riffgrund project

- Hydrohammer S-2000 w/ 5,100 mm sleeve
- Noise Mitigation System NMS-000
- NMS-Guiding Tool 220 ton
- Upending Tool 1,000 ton
- Transition Piece Lifting Tools 375 ton



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Upending tool

- Maximum pile weight 700t




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Pipe Guiding Positioning Tool

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Comparing weights

Toyota Yaris = 1000 kg, NMS = 520.000kg, Pile = 750.000kg, Transition piece = 350.000kg

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Integrated solutions - Parkim Bittgrund project

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Noise Mitigation System 6000

Dimensions:

- Height over all 57 meter
- Height NMS 34 meter
- NMS Outer Diameter 8.800mm
- NMS Inner Diameter 8.000mm
- Mud mat Outer Diameter 9.000mm
- Mud mat Inner Diameter 7.300mm
- Centralizer Tool OD 9.390mm
- Centralizer Tool ID 4.300 - 6.000mm
- Weight in air - in water - in water with air  
520 ton - 480 ton - 280 ton

Environmental conditions

- Significant wave Hs 2m, period Tz 2-10s
- Current 0.8 m/s

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IHC Integrated Piling Solutions

- IHC Hydrohammer S-2000
- NMS 6000
- NMS Gripper Tool
- Upending Tool 1000t

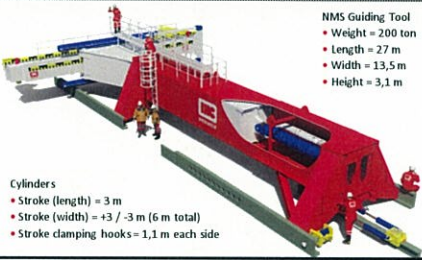
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Integrated solutions - Pipe Guiding Tool



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NMS Guiding Tool



NMS Guiding Tool


- Weight = 200 ton
- Length = 27 m
- Width = 13,5 m
- Height = 3,1 m

Cylinders

- Stroke (length) = 3 m
- Stroke (width) = +3 / -3 m (6 m total)
- Stroke clamping hooks = 1,1 m each side

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Transition Piece Lifting Tool 375 ton

What?


- Lifting of Transition Pieces vertically
- Using the flange
- Adjustable to COG of TP
- Remotely operated
- Hydraulic power pack integrated
- Redundancies / backups included
- Remote monitoring pressure and position
- Full certification (Lloyds)
- No steel contact points
- Flange/pile integrity checks

When and why?

- Improve efficiency
- Improve safety

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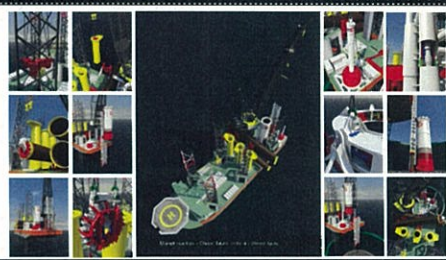
NMS-6000 Riffgrund = project installation tool



**IMC** **DONG energy**

Next Step: NMS & LARS suitable for XL mono Pile 9m

Depth: 40m - 2 to 4; Ht: 25 m; Payload: 350t - 53000; Weight: 1000MT



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Lifting Tool 1.000 ton

