

**GN ROPE FITTINGS**  
Grofsmederij Nieuwkoop B.V. - The Netherlands

Leading manufacturer for your **mooring,**  
**anchor handling, rigging** and **heavy lifting accessories.**

Welcomes you



# Introduction



## **GN ROPE FITTINGS**

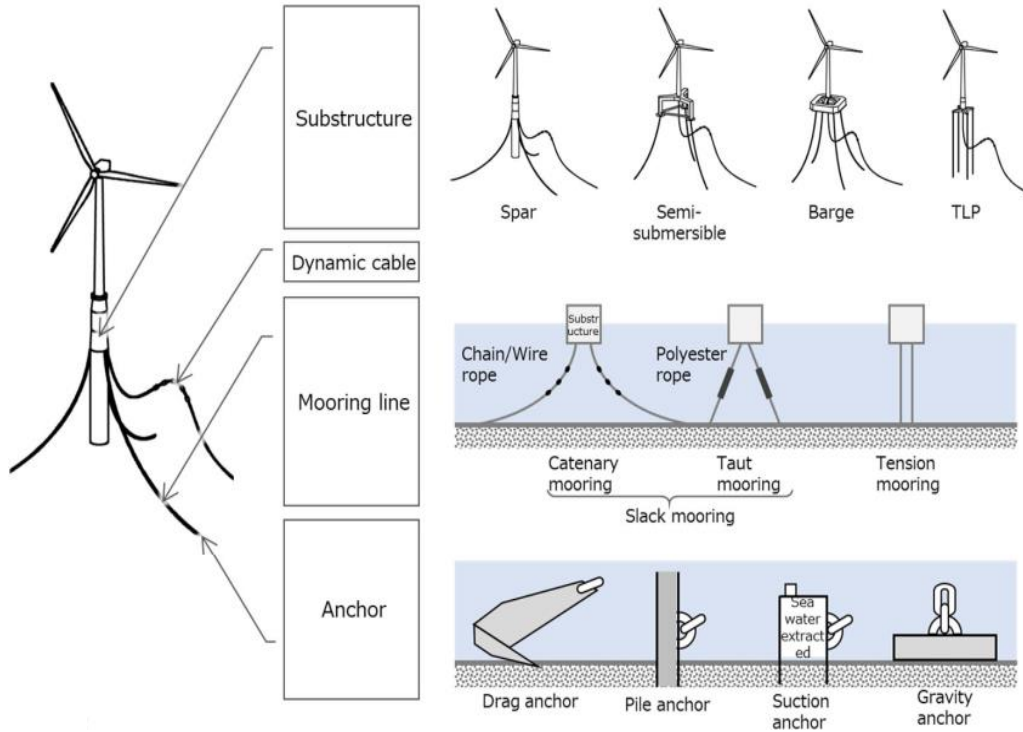
Grofsmederij Nieuwkoop B.V. - The Netherlands

Manufacturer for mooring connector

Marc van den Broek  
Senior project manager

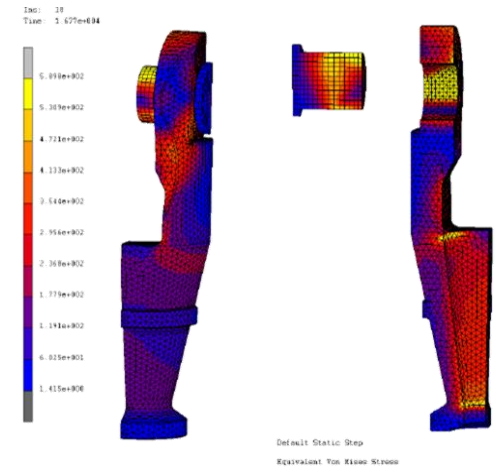


# Type of mooring connectors



# Design mooring connectors

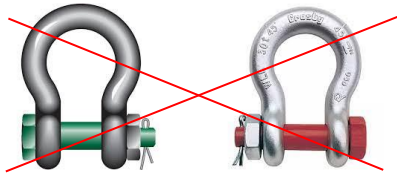
- Project requirements
- Class requirements
- Fitment and sizing
- MBL begin of life and End of life
- Design loads vs class requirements.
- Corrosion allowance (25 / 50 years)
- Safety factors



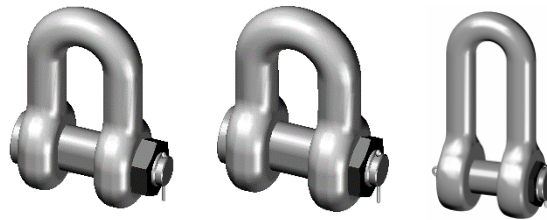
# Shackles

- Standard lifting shackle vs Mooring shackle
  - Different use, loads and safety factors.
  - Standard shackles can not be used for mooring

Lifting shackle



Mooring shackles according recognised standards

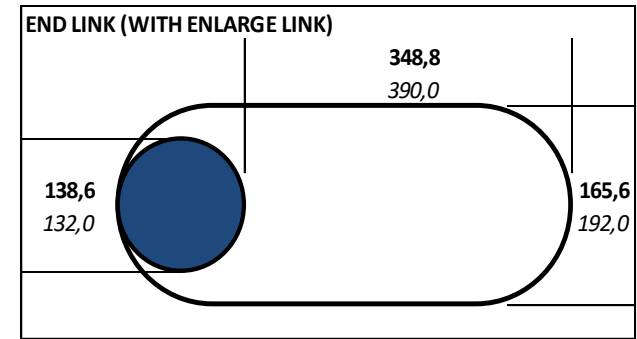
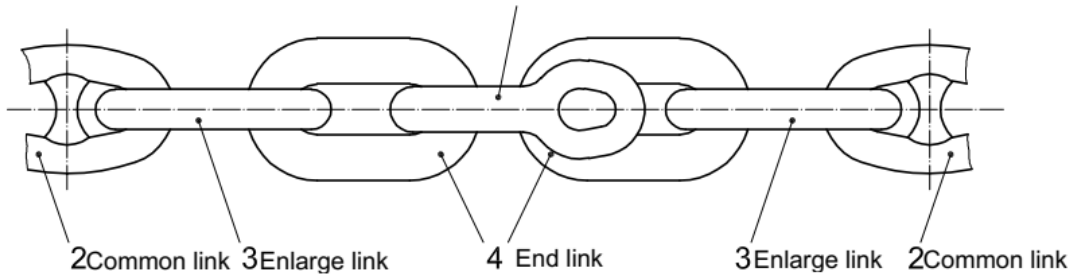


- Special shackles / connectors non-standards require:
  - Strength and fatigue calculation.
  - Classification design review and approval
  - Drawing approval

# Sizes and fitment point of concerns ?

- Limited space in chain

- Shackles made in accordance with standards are design to fit end links and not for common links !
- With tolerances taken in to account
- Shackles with wide jaw gap to suit thimble require bigger pin and palm diameter which cause risk of fitment in standard end links
- Special end links



# Class rules

- Non-standard connectors need class design approval
- Proof load must be as minimum equal as Proof load of Studless chain
- Break load must be the same as the chain
  - BV require an extra 5%
- Pile shackle design require out of plain calculations
- End of life calculation with corrosion in account.
- Manufacturing and testing in accordance with mooring rules.
  - Approved manufacturer
  - Proof and break load testing
  - MPI and US inspection
  - Dimensional report
  - Visual inspection
  
- If lesser design load are required for the mooring line as the chain used, this must be agreed with the classification society !



# How to get ready

- Grow of production capacity
  - Expanding the building by 5300 m<sup>2</sup> from 13.000 to 18.300 m<sup>2</sup>
  - New CNC machineries from 16 to 22
  - CNC machining and robots working 24/7
  - Part deliveries
  - Buying capacity at steel mills by ordering Ingots
- Standardize products
  - Type approvals instead of design approvals
  - Purchase higher volumes raw material steel mills.
  - Less time needed for engineering and production start.





End of presentation

Thoughts  
and  
Questions

