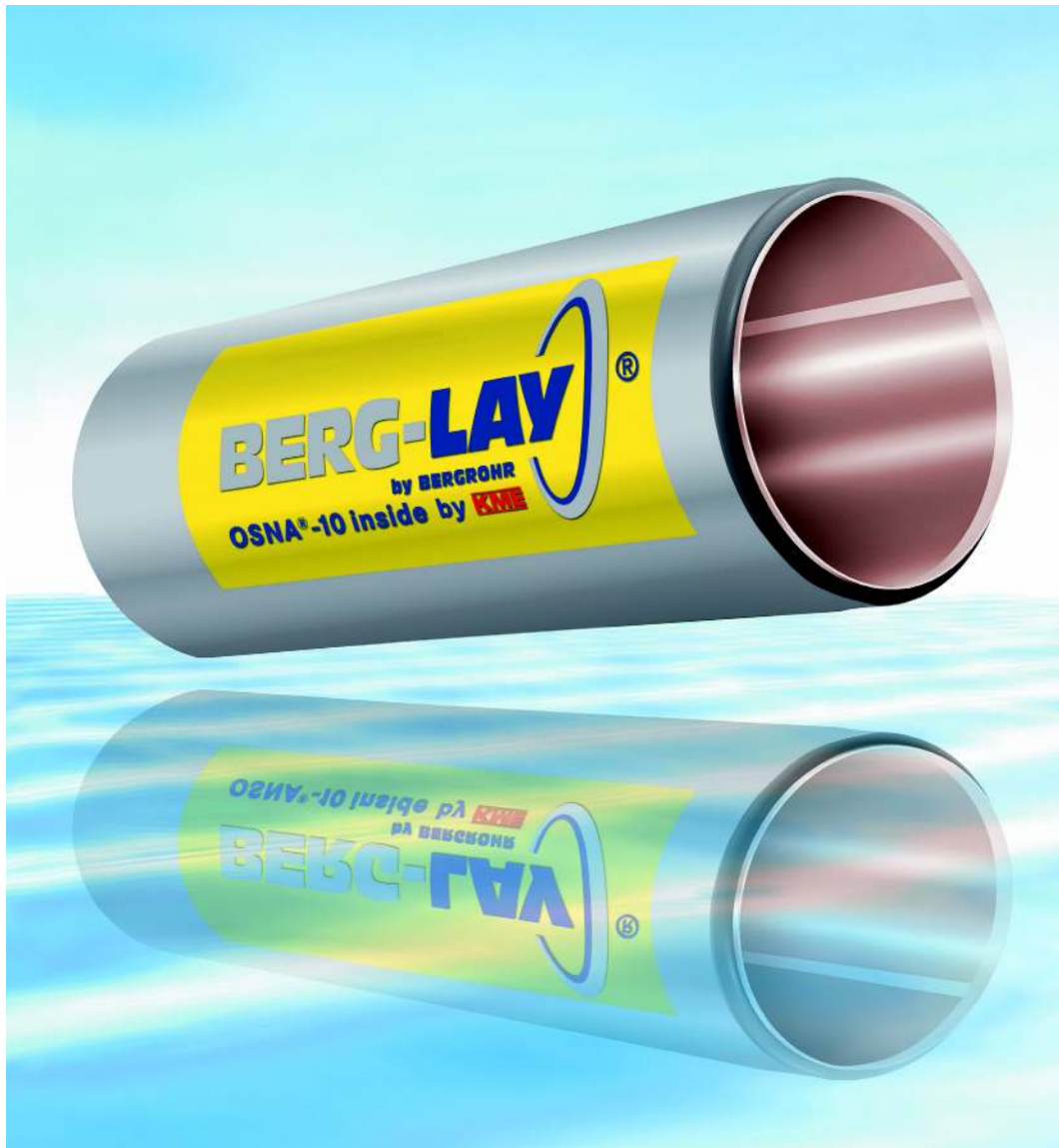


OSNA®-10 Copper-Nickel Lined Pipes

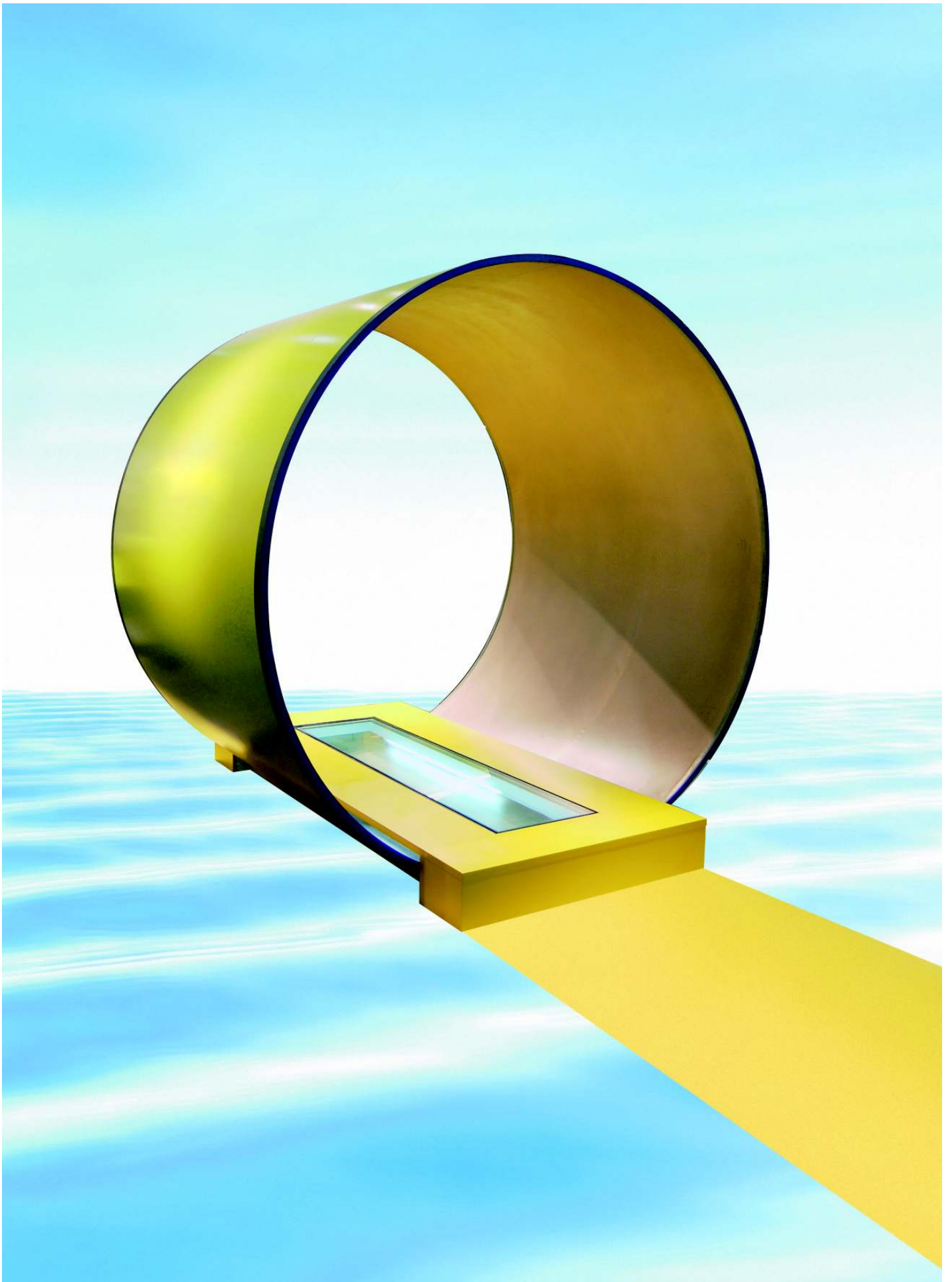


Seawater corrosion resistant piping systems
for large diameters up to 100" / 2.5 metres O.D.

KME Germany AG & Co. KG
Copper-Nickel Lined Pipes
[GB]



Member of the
KME Group



OSNA®-10 Copper-Nickel Lined Pipes – the most cost-effective, long-term alternative to conventional steel piping systems



Seawater, with its various compositions, temperatures and biological diversity is known to be one of the most natural corrosive mediums for most materials. Seawater carrying systems made of steel pipes present a challenge to the engineer to overcome the problem of corrosion. In addition even if they are lined with a corrosion resistant liner they can also suffer the problem of marine growth, or so called biofouling. This problem increases the static loads on the pipe line and increases the flow resistance inside the pipes, to prevent this problem additional protection solutions are necessary in form of chlorination or costly coating systems.

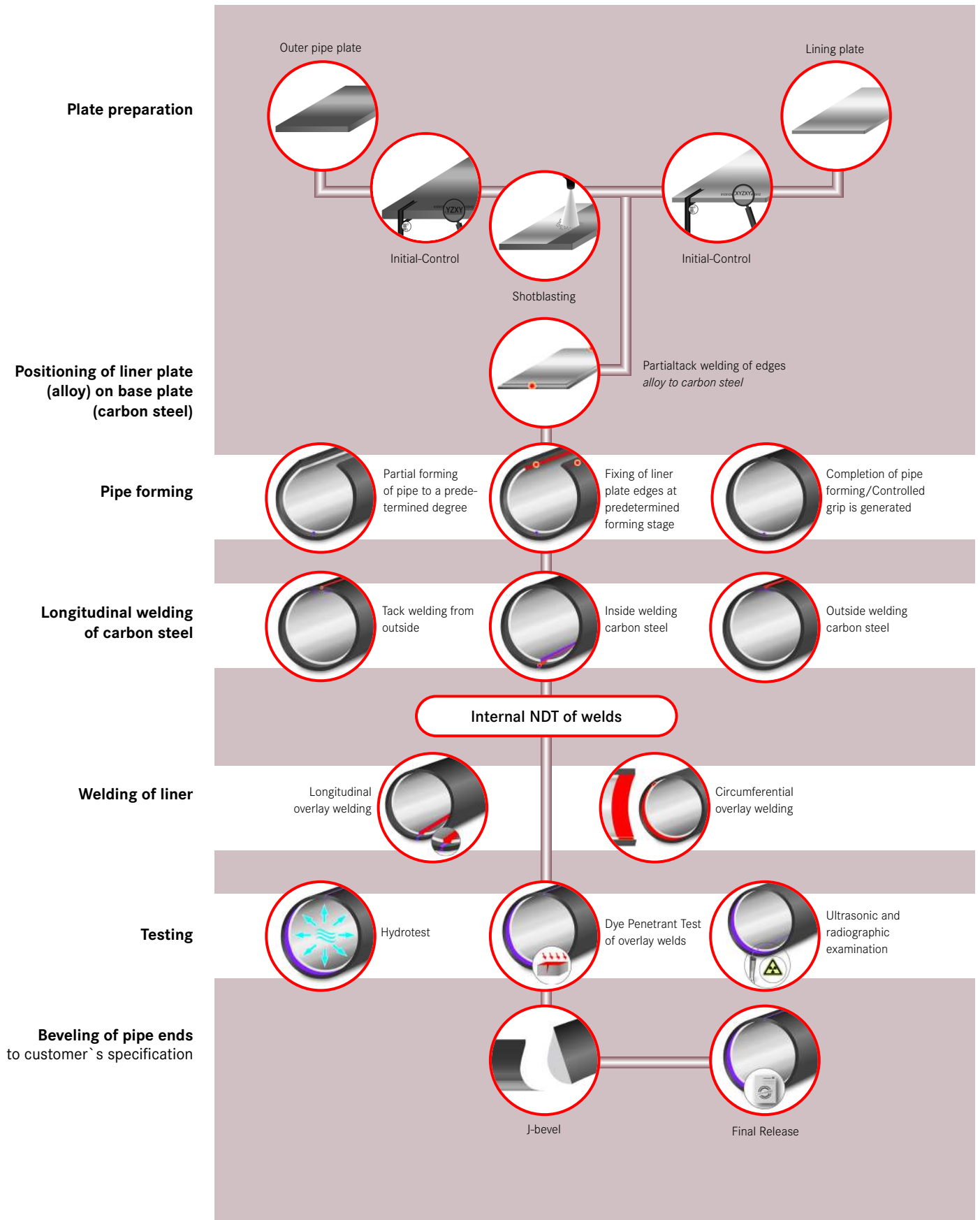
These two problems present a unique problem to the metallurgist as there is not one single material with these properties. A composite-material solution is the obvious choice, but the selection of appropriate materials that will give sufficient performance at reasonable cost is absolutely crucial. Conventional metallurgical bonded copper-nickel 90/10 lined steel pipes have been proved to provide a cost-effective solution which meets the technical and cost requirements, but a major downside is the limited availability and long lead times.

By joining together KME's technology with our **OSNA®-10 copper nickel 90/10** alloy and Bergrohr's innovative manufacturing process BERG-LAY® we have produced a new concept in steel lined pipes which are a cost effective solution for sea water piping systems.

The processing of two plates together to form a pipe using a carbon steel plate and a separate plate made of **OSNA®-10**, results in a new kind of composite pipe. Bergrohr's innovative manufacturing process results in a pipe with a pressure-resistant outer surface with a permanent bonded corrosion proof and biofouling resistant inner-lining.

With this landmark concept, KME present a new kind of copper-nickel pipe for seawater applications with previously unrivalled qualities.

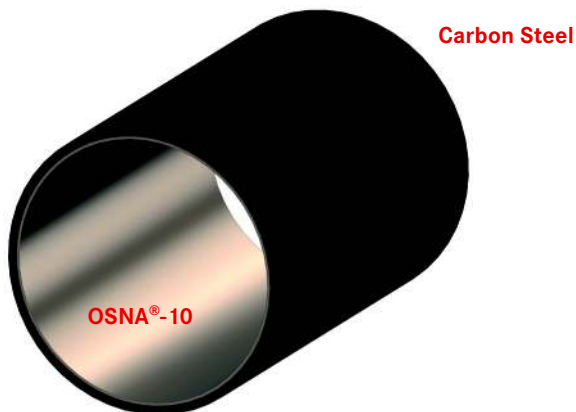
The unique BERGROHR manufacturing process



- **A combination of the best properties of different materials**

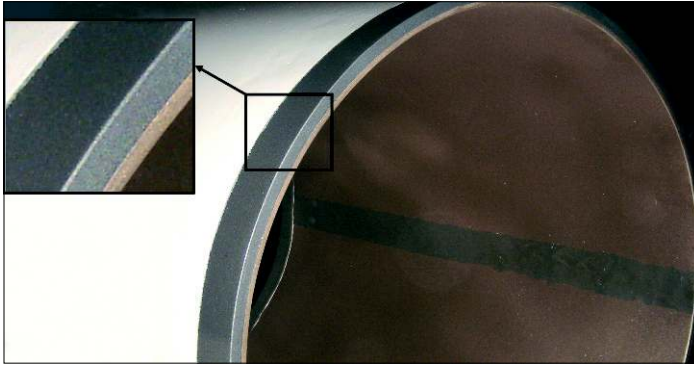
Outside: standard carbon steel which provides the structural integrity of the pipe, this material is readily available and can be fabricated very easily.

Inside: Copper-Nickel OSNA®-10, which guarantees the resistance of the pipe against corrosion and biofouling



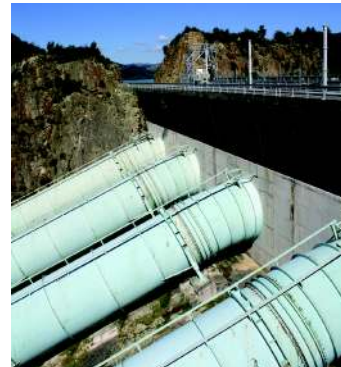
- **Highest possible adhesion between** the backing steel and the copper-nickel liner
- **Proven production technology** which has been used for 20 + years
- **Uniform chemical composition** throughout the thickness of the liner material (no diffusion of the liner material into the steel backing material)
- **Significantly lower cost** due to use of lined steel with thin OSNA®-10 inlay instead of massive copper-nickel pipes
- **Short Lead Times** due to better availability of sheet material
- **Range of dimensions:**
 - outside:* 24" (610 mm) – 100" (2540 mm)
 - total wall thickness:* up to 1,5" (40.0 mm) in max. 12 m length
up to 3" (76.0 mm) in 6 m length

Advantages of Copper-Nickel Lined Pipes



Copper-nickel alloys are widely applied in:

- Seawater cooling systems
- Fire water systems
- Deck steam systems
- Deluge systems
- Hydraulic and pneumatic systems
- Seawater feed lines to desalination and processing units
- Splash zone sheeting



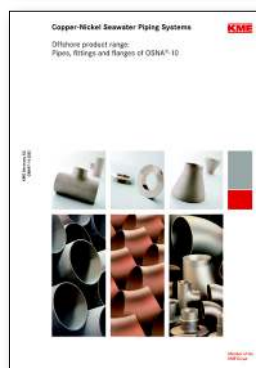
Further KME information:



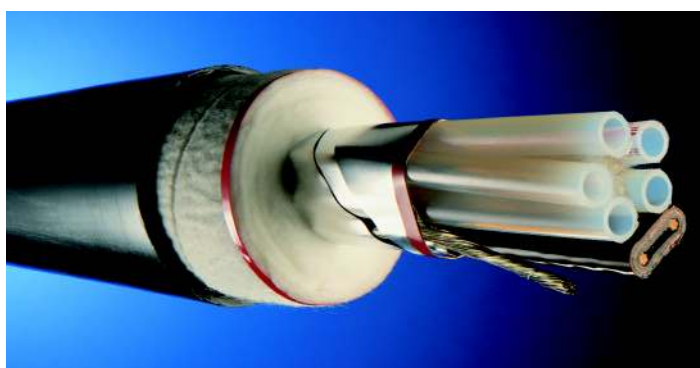
OSNA®-10 Copper-Nickel Sheathing on Offshore Structures



OSNA®-10 and OSNA®-30 Product Range: Shipbuilding



Copper-Nickel Seawater Piping Systems Offshore product range: Pipes, fittings and flanges of OSNA®-10



OSNALINE® Tubes and tube bundles

KME Germany AG & Co. KG

Marine Applications

P.O. Box 3320

49023 OSNABRÜCK

Klosterstraße 29

49074 OSNABRÜCK

GERMANY

Fon +49 (0)541 321-3220

Fax +49 (0)541 321-3020

info-maritime@kme.com

www.kme-marine-applications.com

Special Products



® = registered trademark

All changes reserved. Owing to limitations in printing technology, the colours reproduced in this brochure should be regarded as approximate equivalents to the colours described.

0910.010.0500