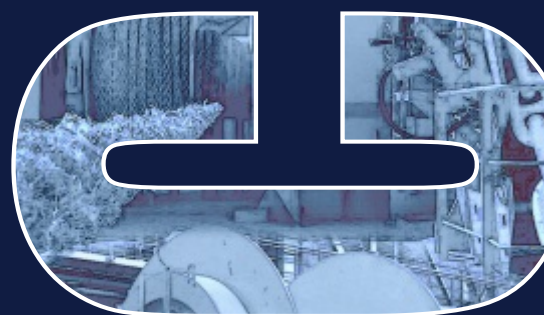




THE MARINE SUPPLIER SINCE 1885





BRÖHL

CONTENT

COMPANY



PRODUCTS



SERVICES





Heavy Duty Machinery for Shipbuilding, Offshore and Shipyard-Technology



In 1885 the Former and Engine Builder Anton Bröhl launched a business called "Brohler Apparate Bauanstalt" in the Rhine valley between Bonn and Koblenz.

The turn of the century was the beginning of the Industrial Age and marked the start of gas and petrol driven motors.

BRÖHL participated in this evolution and produced these motors under the business name "A. Bröhl Maschinen-Motorenfabrik". The assortment was quickly expanded on machines, driven by these motors, mainly for the Rhine river navy.

After the decease of the Founder Anton Bröhl his grandson Anton W. Bröhl, Mechanical Engineer, continued the company tradition as a marine engineering supplier after being refounded in 1955 as "Maschinenfabrik Bröhl".

At present, Bröhl GmbH has since grown into a medium-sized company with three plant locations and revels in status as one of the leading suppliers of equipment for merchant vessels, the offshore industry, special ship constructions and complete maritime installations.

Yet, BRÖHL is also active as a manufacturer of industrial equipment, such as trailers and transporters as well as machinery for the heavy and civil engineering industries.

The product's high quality combined with it's flexible organization and efficient manufacturing processes allow BRÖHL to fulfill individual customer wishes. This in turn has put the company in a solid position in the global market. BRÖHL enjoys a high number of loyal employees. Many of whom have been with the company for the second and third generation sharing in the company's success while preparing it for further prosperity.

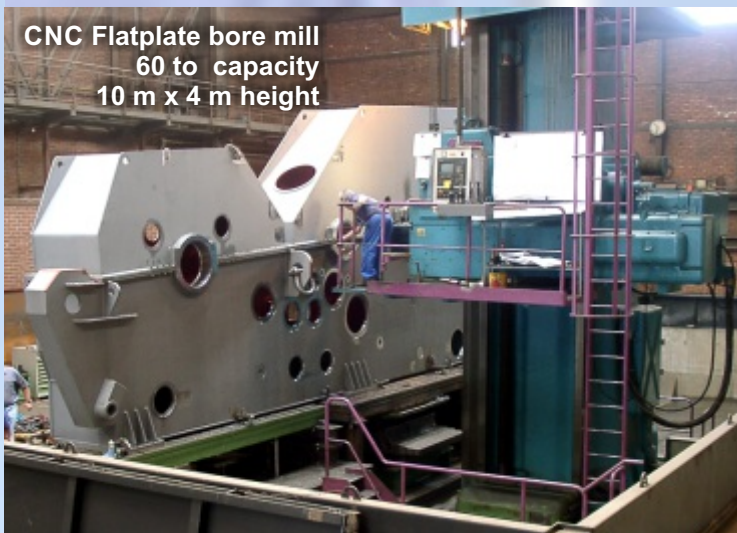




Heavy assembly workshop



CNC Flatplate bore mill
60 to capacity
10 m x 4 m height



CNC Gearwheel cutting machine
12 to capacity
 $\varnothing 5000\text{mm}$ / 30 modul



Heavy assembly workshop



Crane capacity 100t





Winch Power at it's best, Made in Germany



BRÖHL has a long standing reputation in delivering heavy duty equipment for the marine industry. The product groups are:

- Deck Machinery
- Dredger Winches
- Offshore Equipment
- Maritime Installations
- Special Constructions

Each BRÖHL product is treated as a flag ship for our quality and is proof of their industrial performance. BRÖHL's five core values are always reflected in the design of their equipment:

- Quality
- Reliability
- Easy Handling
- Low Maintenance
- Environmental Compatibility

BRÖHL products are built as steel welded constructions, robust and compact in form and always designed with a generous safety factor for longevity.

Products can be tailored to meet the customer's requirements.

BRÖHL has extensive experience with classification and organizations societies as:

- ABS (American Bureau of Shipping)
- API (American Petroleum Institute)
- LR (Lloyds Register of Shipping)
- DNV (Det Norske Veritas)
- NMD (Norwegian Maritime Directorate)
- GL (Germanischer Lloyd)
- BV (Bureau Veritas)

BRÖHL's logistics department offers extensive service with respect to spare parts, delivering expediently and world wide on articles that are in some cases more than a half a century old. BRÖHL maintains a team of competent and experienced service technicians who's mission is short notice global support, around the clock.

**Hoists, Winches and Special
Machinery for Offshore**



PRODUCT RANGE

Maritime Installations



**Heavy duty Hoists and Winches
for Floating Dredgers**



**Deck Machinery
for Merchant Ships**



**Special Constructions
for maritime and nonmaritime
applications**





Offshore Equipment



BRÖHL specializes in meeting the heavy duty demands of the offshore industry. Their product line consists of technically matured solutions for:

- Jack Up Rigs
- Semi Submersible Rigs
- Accommodations Units
- Floating, Production, Storage and Offloading vessels (FPSO)
- Anchor Handling Towing Vessels (AHTV)
- Special Barges
- Crane Ships

Typical products delivered to the offshore industry are:

Winches

BRÖHL winches are designed to withstand the chain or cable breaking strength (MBL) and are matched up with the drive that is best suited for the particular application: AC/VFD - DC/VCR - High Pressure Hydraulic

The product spectrum comprises of, but is not limited to:

- Rope Mooring Winches
- Chain Mooring Winches
- Traction Winches
- Storage Winches
- Luffing and Hoisting Winches

Fairleaders

BRÖHL's rope and chain fairleaders are maintenance free, compact steel welded constructions, designed like the winches with a high safety factor with respect to the chain or cable strength.

Chain Jacks

Both horizontal and vertical mountings are possible with the BRÖHL push design concept. This uses two main hydraulic cylinders fitted into a compact frame as a drive for a mechanically guided traveling block. All systems are equipped with both static and dynamic load monitoring systems and a chain length measuring system that is independent of the main piston's stroke.



Storage winch
1800m / 3 1/2"



Mooring winch 900kN
1400m / 2 1/2"



Traction winch 2200kN / 3 1/2"



Double Anchor Winch 3 1/2" K4



Maritime Installations



Being in contact with shipyards, ports and naval bases worldwide for decades, BRÖHL has developed a wide range of maritime installations for drydocking, and transferring ships and sections of manifold types.

BRÖHL performs supplies and services in all stages of the realization of maritime installation:

- Consulting
- Engineering
- Manufacturing
- Assembly
- Commissioning
- After-sales-service

In the field of dry-docking BRÖHL has gathered experience in around 80 national and international projects, covering:

Ship lifts

Electrically driven hoists lift and lower a platform as a docking basis for ships. Ship lifts can be designed as pier or pit buildings with end- or side transfer.

Slipways

Rail bound carriages will be pulled by one or several winches over a slope in longitudinal or transverse directions.

Dual-level Transfer systems

Rail bound cradles transfer the ship off the platform to a pit-operated side transfer carriage, reaching parking- and repair berths on yard level.

Single-level Transfer systems

Transfer operations will be carried out in a single level yard, either by rail bound hydraulic bogies or rubber- wheeled multi-axle transporters.

Mover Units

Movements of transfer systems can also be carried out by separate mover units, as mobile winches, stationary winches or hydro mechanical linear gripper.

Drydock Equipment

Gate winches, hauling winches or capstans with suitable rope guiding systems serve for positioning of floated-in ships. Electrically resp. hydraulically operated bilge blocks are provided for stabilizing docking manoeuvres.



Steel platform 120m x 20m
30 x 2800kN synchronous lift hoists with electr. Control
14 x 450t to transfer carriages with integrated lifting hydr.
2 x 600kN hydr-mechanical linear mover units



Platform 98m x 16m
22 x 2800kN synchronous lift hoists
with electric control



GRIPPING JACK:
nom. pull = 400 kN



Platform 140m x 25m
30 x 2500kN synchronous lift hoists
with electric control



Dredger Winches



BRÖHL special dredger winches can be found on the world's largest seagoing dredgers and barges.

BRÖHL customises their winch package to fit any dredger type:

- Trailing Suction Hopper Dredgers (TSHD)
- Cutter Dredgers
- Grab- and Profile Dredgers
- Backhoe Dredgers

The following winch types are deliverable:

For Trailing Suction Hopper Dredgers:

- Draghead Winch
- Intermediate Winch
- Trunnion Winch

For Cutter-Dredgers:

- Ladder Winch
- Side-Wire-Winch
- Anchor Boom Winch
- Anchor Hoisting Winch

For General Application for all Dredgers:

- Bow Connection Winch
- Spud Hoisting Winch
- Fairleader

The winches are designed to withstand extreme operational demands 24/7.

All products are made with a high performance-spur gear transmission with forced lubrication and running on high-grade roller bearings. The gears are made of high alloy steel, hardened and ground where necessary.

The gear box is a steel welded construction. On the rope drum an optimised groove pitch ensures the longevity of the wire rope. As an option, it is also possible to have the winch fitted with LEBUS-Grooves.





Deck Machinery



Electrically or hydraulically powered anchor and mooring winches for sea going vessels have been part of BRÖHL's standard program for more than 60 years.

This encompasses the following products:

- Anchor Winches
- Combined Anchor-Mooring Winches
- Mooring Winches with and without Constant Tension Device
- Chain Stoppers
- Anchor Capstans
- Mooring Capstans

The following drives are available:

- AC Poll Changeable
- AC Frequency Converter Controlled
- Medium and High Pressure Hydraulic (nom. pressure 110-260 bar)

Anchor and Mooring Winches

BRÖHL anchor and mooring winches are designed as a robust steel welded construction. The spur-gear transmission is splash lubricated.

All shafts have been fitted with roller bearings, where the rope drum and cable lifter runs on high grade bronze bushings.

By request, the winches can be fitted with an integrated bolt up foundation. This saves the costs of the yard building a foundation construction.

Both the rope drum and chain pulley can be declutched and can be stopped and held in place using a band brake that can be both manually or optionally hydraulically actuated.

- Chain Size: 30 mm – 137 mm K3
- Pull (Rope Drum): 50 – 300kN

Chain Stoppers

BRÖHL chain stoppers are designed to withstand a force equal to 100% of the chain breaking strength. Mechanically and hydraulically actuated lashing devices are integrated into the function of the chain stopper.

Comb. Anchor Mooringwinch
68mmK3 - 100kN



Comb. Anchor Mooringwinch
78mmK3 - 150kN



Mooringwinch 120kN



Mooringwinch 100kN





Special Constructions



The requirement for machinery in the construction industry and for large-scale plants become more and more individual.

In many cases it is necessary to use machinery which are made exactly to comply with the project and the conditions at the side.

Large plants in the mining, steel or energy industry demand mechanical components that suit existing systems.

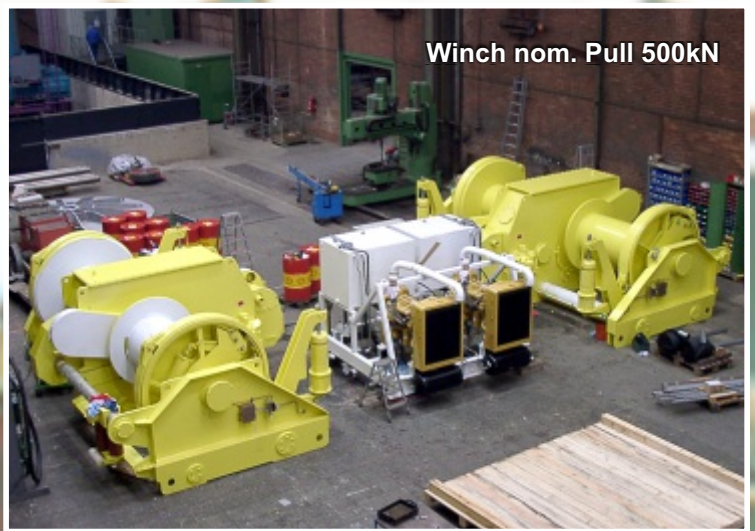
Made to specification or produced in series - the requirements stay the same: machinery for the construction industry and for plants have to be reliable, robust, with minimum maintenance and maximum operation safety.

BRÖHL supplies:

- **Compact electric or hydraulic driven winches** ranging from 10kN to 500kN, with different types of foundation. Optionally designed as mobile winch. Simple operation by single lever control, maintenance free.
- **Power aggregates**, designed as integrated components for power supply to compact winches. Also available as mobile type for emergency power supply at building sites.
- **Manifold special designs**. Whether structural bridge components are to be fitted, flood gates of dam systems to be controlled, or heavy concrete caissons to be handled in the desert - BRÖHL offers solutions for the most individual problems.

BRÖHL is producer of industrial transporter - industrial trailers and transportsystems, floor or rail bound. The offered solutions include all modern drive and control systems.

- **Heavy-duty trailers** from 10 to 250 tons capacity, optionally with axle pivot steering, with multi wheel or all-wheel axle pivot steering, with full range of brake systems. Full floating axle and hydraulic axle compensation for rough or steep tracks.
- **Railway carriages** for work-internal application, load capacity up to 300 tons. Electrically driven by stationary battery or cable drum, or hydrostatically driven by means of internal combustion motors.



Winch nom. Pull 500kN



Railway carriage
lifting capacity 130 to



Railway carriage
lifting capacity 140 to



Spud System 100kN





Luffing Winch 1405kN
Spooling capacity 5000m / 84mm
(One of 27 winches for ASIAN HERCULES III)





Service

BRÖHL's logistics department offers extensive service with respect to spare parts, delivering expeditiously and world wide on articles that are in some cases more than a half a century old. BRÖHL maintains a team of competent and experienced service technicians who's mission is short notice global support, around the clock.

Quality Assurance

BRÖHL's mission is total customer satisfaction. Their quality team is dedicated to their continual process improvement strategy. In order to demonstrate their dedication to quality and preserving a state of the art production, BRÖHL GmbH has gone through the certification process with:

Lloyd's Register Quality Assurance GmbH (LRQA) according to DIN EN ISO 9001:2008

Welding Qualification

As a manufacturer of robust steel welded constructions BRÖHL places high value on their state of the art welding equipment and their experienced welding technicians. Furthermore BRÖHL GmbH is certified by:

Det Norske Veritas – German Lloyd's Approval for welding of hull structures and machinery components according to "Rules for Classification and Construction, II - Material and Welding technology, Part 3 – Welding"

Industrial Policy

BRÖHL scrutinises all of their technology partners in order to assure their quality policy complies with BRÖHL standards. In order to guarantee their position as an industrial leader significant emphasis is placed on R&D and cooperation with German technical universities. This in turn, allows their customers to capitalize on the tangible difference that they find in BRÖHL quality products.





THE MARINE SUPPLIER SINCE 1885

www.broehl.de

Bröhl GmbH
Koblenzer Str. 42
D-56656 Brohl-Lützing

Tel. +49 2633 2910 • Fax. +49 2633 29132 • info@broehl.de

Worldwide Service Centers

USA

Franklin Offshore Americas, Inc.
1325 South Creek Drive, Suite 850
Houston, Texas 77084
United States of America
Phone: +1-281 578 3828
Fax: +1-281 578 2938
e-mail: general@franklinamericas.com

Brazil

Foreship Engenharia Com. Ltda.
Av. W 4, No. 39 Lagomar
Macaé - Rio de Janeiro Batakan
CEP 27901-000
Brazil
Phone: +55-21-39708919
Fax: +55-21-39708933
e-mail: -

South Africa

Concord Maritime Academy Pty Ltd.
PO Box 52038
V&A Waterfront
Cape Town 8002
South Africa
Phone: +27-21-4053660
Fax: +27-21-4053670
e-mail: -

UK

Franklin Offshore Europe Ltd.
Riverside House, Riverside Road Ltd.
Aberdeen, AB11 7LH, Scotland
United Kingdom
Phone: +44-1224-224360
Fax: +44-1224-224301
e-mail: info@franklin-europe.com

The Netherlands

B.V. Technisch Bureau Uittenbogaart
Nikkelstraat 7
2984 AM Ridderkerk
The Netherlands
Phone: +31 88 3680 000
Fax: +31 88 3680 001
e-mail: info@tbu.nl

Singapore

CFE Engineers Asia Pte. Ltd
10 Pioneer sector 1
Singapore 628444
Phone: +65 6861 6006
Fax: +65 68636106
e-mail: info@cfe.com.sg

Egypt

COMMERCE Co.
19, El Nozha Str., El Golf Area
Heliopolis, 407 Cairo
Egypt
Phone: +202-4170022
Fax: +202-2914480
e-mail: commerce@commerceco.net

United Arab Emirates

GMCO German Marine Consultants
Al Masaoud Tower, 11 Floor,
Suite 1101, PO Box 44815
Abu Dhabi
U.A.E.
Phone: +971-2-5312442
Fax: +971-2-6312552
e-mail: deckerr@emirates.net

Qatar

Franklin Offshore Qatar W.L.L.
Street No.45, Gate No. 44
Salwa Industrial Area
P.O.Box 32297 Doha, Qatar
Phone: +974 4500338
Fax: +974 4500339
e-mail: daryling@franklin.com.sg

Azerbaijan

Franklin Offshore Caspian Ltd.
Caspian Business Centre,
Jafar Jabbarly, Street 40, 4th floor
Baku AZ 1065, Azerbaijan
Phone: +994-12 4974750
Fax: +994-12 4974752
e-mail: office@franklin.baku.az

Singapore

Franklin Offshore Singapore Ltd.
11 Pandan Road
Singapore 609259
Phone: +65 6264 3451
Fax: +65 6264 1130
e-mail: general@franklin.com.sg

India

Indostan Corporation
No:715, 7th Floor, Topiwala Center
Off S V Road, Goregaon (W)
Mumbai 400062
Phone: +91 9895 513 284
Fax: -
e-mail: sraju@indostan.in

Indonesia

P.T. Franklin Offshore Indonesia
Perkasa
Kel. Mulawarman RT 05 No. 29A
Manggar, Balikpapan 76116
East Kalimantan, Indonesia
Phone: +62-542-743668
Fax: +62-542-743688
e-mail: general@franklinindonesia.com

Malaysia

Franklin Offshore Malaysia Sdn.Bhd.
Lot W12-A1, 12th Floor, West Block
Wisma Selangor Dredging
142C Jalan Ampang
50450 Kuala Lumpur / Malaysia
Phone: +603-21649288
Fax: +603-21640188
e-mail: general@franklin.com.my

Korea

Franklin Offshore Korea Co., Ltd.
1203-6 Jisa-Dong, Gangseo-gu
Busan
Korea 618-230
Phone: +82 51 832 0156/7
Fax: +82 51 832 0158
e-mail: franklin@franklinkorea.com

Australia

Unirig Pty Ltd. 28020
Perth (Head Office)
10 Sparks Road, Henderson
Fremantle WA 6166, Australia
Phone: +61-8-94102480
Fax: +61-8-91856014
e-mail: d.sewart@unirig.com.au

Singapore

Offshore Technology Development Pte Ltd.
55 Gul Road
Singapore 629353
Phone: +65 6863 7409
Fax: +65 6862 3465
e-mail: support.otd@keppelotd.com





