



MUNCK CRANES AS
- your material handling partner



MUNCK

The Munck Quality policy

Customers are of the utmost importance

Our customers shall notice that Munck is the best when it comes to personal service.

Ability to deliver on time

Priority is given to prompt delivery, and that the customers are always kept informed.

Training

Munck operate an ongoing training programme, to improve skills.

Final inspection

A thorough final test and examination procedure is carried out at our factory before the product is handed over to our customer.

Technology

Our advanced technology shall assist our customers in reducing operational overheads.

Living up to commitments

All the employees at Munck shall live up to our commitments and make all efforts to improve the quality assurance system, and also the customers relationship both internally as well as externally.

Do it right the first time

We believe in doing it right, and doing it right the first time.

It all started in 1924



Sverre Munck

The Company Sverre Munck A/S was founded on 25th October 1924 by Mr. Sverre Munck. Mr. Sverre Munck was educated as an electrical engineer from the University of Trondheim, Norway.

The company initially started as a trading company with products ranging from fuses and light bulbs to escalators, elevators and electric wire rope hoists, latter being of foreign make.

In 1946, the first Munck manufacturing plant was completed, and the number of employees increased rapidly from 30 to 300 people. This mainly as a result of an order for 18 units of trolley busses for Bergen Sporvei, - the local bus company, but also orders from several other bus companies in Norway. During this time, the first Munck electric wire rope hoist was designed, and full production commenced, involving hoists and industrial cranes for all major types of industry on shore as well as onboard ships.

Export Pioneer

The Munck Company has been a pioneer within the Norwegian export industry. The very first Munck hoist for export was shipped to Sweden in

1948, and the same year also to England. Thereafter the export to very many overseas markets picked up very rapidly.

Later, in the 50s and 60s, subsidiary companies were established in the United States, Canada, Great Britain, Sweden and Belgium. Further, a network of agents were established in other parts of the world, still today Munck are working very close with many of these companies, although being managed by local owners.

Ownership

Munck Cranes AS is part of the Furnes Hamjern Group of Companies. As from October 1996 Munck Cranes AS is wholly owned by Furnes Hamjern NCC A/S.

Experience

Nearly 75 years of experience and skill is «built into» the Munck quality products. The staff consisting of well educated and professional engineers are able to offer solutions to most

lifting problems as well as technical assistance to the clients. We are also proud to say that our factory workers and service staff are all skilled and most dedicated.

Total Supplier

Munck represents experience and competence as a supplier of lifting equipment, ranging from 50 kgs. to 500 tonne, and we consider ourselves a total supplier of cranes and material handling equipment for the industries, both in Norway and abroad.

Munck Cranes AS occupies approximately 8000 m² production

and storage area in Bergen. Also the main storage and administration are located in Bergen. In addition, 18 service centres and branch offices are located throughout Norway. Munck employs a total of 145 people, all dedicated and continuously developing the Munck's leading position.

Customers always in the centre.

The Munck company, including each and everyone of its branch offices in Norway, are all approved and certified to ISO9001.

Our aim is to develop ourselves in line with and in accordance with the norms and needs as called for within the industry in Norway and abroad.

Correct and safe use, but also efficient utilisation of cranes and lifting equipment are important elements to maintain and improve productivity and competitiveness within the various industries.

Within selected niches, Munck Cranes AS aims to play an active role in this development, both in Norway as well as in the international markets.



The Flag ship

The Munck hoist is recognised for being a quality hoist. This good reputation, combined with a continuous product development programme, has resulted in Munck maintaining their excellent market position.

The Munck electric wire rope hoist represents the basic foundation and «key-component» for our very comprehensive range of Munck industrial cranes.

The Munck Electric Wire Rope Hoist



The drum is being machined. The drum represents a major component of the hoist.

The first wire rope hoist was introduced in 1948. It was well received in the market place and did soon obtain the reputation for being a modern and well designed and good quality hoist unit!

It rapidly picked up popularity in many countries, and already in the 60s, licence production was established in India, New Zealand, Australia and South Africa!

Although this first generation of Munck hoists were subject to continuous improvements over the years, the next generation of hoists were gradually introduced in the early 80s until the entire family was completed in 1985.

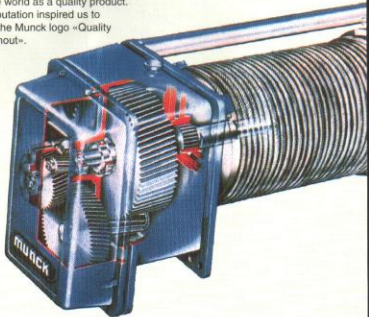
The Munck wire rope hoists as they appear today are further improved and are designed and built to comply with all international rules and regulations, which also qualifies for "CE" - marking.

The present quality and reliability of the «New Munck» wire rope hoist is a direct result of Munck's nearly 75 years of experience within design, manufacturing and supply of these for different applications.

Since the first hoist was introduced to the market in 1948 and up to the present time, thousands of Munck hoists have been delivered to satisfied customers all over the world. As a matter of fact, a considerable amount of Munck hoists from the very first generation are still in full operation!

The Munck hoist is recognised all over the world as a quality product. This reputation inspired us to invent the Munck logo «Quality Throughout».

The Munck wire rope hoists are applied within most types of industry, and are to be found in a small ice-block factory in a village outside Jakarta, in the deep forests of Borneo used in saw mills, in palm oil factories in Ghana and Zaire as well as in the most modern steel making plants and offshore installations in USA and Europe.

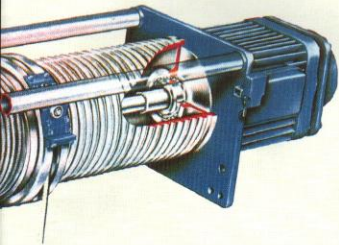




The smallest hoist with the lowest lifting capacity. The Munkk hoist is recognised as an extremely good quality wire rope hoist. It is robust and reliable, having long life and a «service friendly» design.

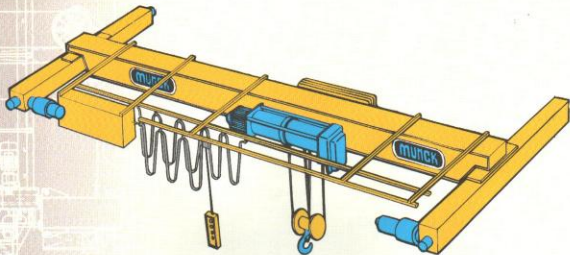
The Munkk hoist ...

- represents one of the most extensive range of electric wire rope hoists
- available on the market today.
- is designed in accordance with the latest NS, FEM, BS, CMAA, and other international «norms».
- is available having lifting capacities, ranging from 800 kgs to 90 tonnes, either as stationary, or mounted on motorised trolleys.
- is available with a comprehensive range of lifting heights.
- is thoroughly tested prior to despatch from the factory and test certificate issued accordingly.
- is supplied with 2 hoisting speeds as standard.
- is equipped with a reliable and robust disc type brake.
- gearbox is equipped with helical gears
- is equipped with ball or roller bearings on all rotating parts.
- is built based on the «modular» principle, thereby offering easy access to parts for maintenance.
- is equipped with a most robust and wear-resistant rope guide, designed for long life!
- is designed with wire rope drum having diameter which ensure minimum wear of the wire rope.
- is equipped with hoist and lower limit switches as standard.
- is equipped with hoisting motor especially designed for use on hoists.
- is flexible and can, upon request, be supplied to suit most special requirements.



The wire rope guide ensures long life of the wire rope, and is also activating the top and bottom limit switches.

Munck Industrial Cranes - Mono



Munck standard MONO crane is built up as single girder crane of beam or box design. The hoist is suspended from the lower flanges and end trucks arranged at each end generally as shown.

The components used are specially designed for crane duty. The MONO design is fully computerised, following the FEM program.

The demand in the market for compact technical solutions and high quality design has made the flexible MUNCK MONO-design suitable for most applications.

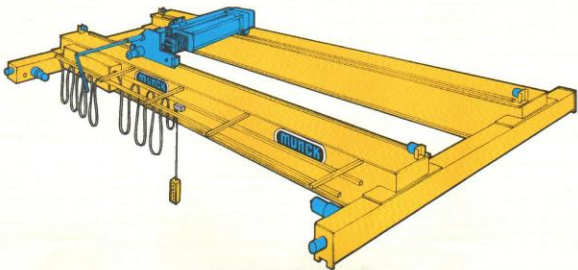
The hoisting - as well as drive motors, are specially designed for crane duty, and special efforts have been made to achieve very smooth starting and stopping characteristics.

This is contributing to the fact that the MUNCK MONO today is nearly "maintenance free", and require a minimum of service. The various components are arranged for easy access facilitating easy service and replacement of parts.

Further, the MUNCK MONO can easily be upgraded at a later date by adding optional equipment, such as

- cross and long travel limit switches.
- anti collision devices.
- service platforms
- walkways
- weighing system
- "black box", (monitoring loads lifted etc.)
- audio or light warning systems.
- flood light
- stepless speed regulation
- remote control (radio or infrared system)
- magnet lifting equipment
- vacuum lifting attachment
- power supply equipment along the runway
- crane runway / rails
- safety equipment, and more.

Munck Industrial Cranes - Duo



Munck standard programme also incorporate double girder cranes. This is designed following the same concept as the MONO, but of double girder design. MUNCK DUO offers further advantages, such as improved headroom and hook approaches. The MUNCK DUO cranes are designed for higher lifting capacities compared to the single girder crane design.

Munck industrial cranes fully meets today's strict requirements for documentation and is also CE marked.



Duo industrial cranes installed at NSB-Norway

Wall mounted cranes at ABB, Drammen-Norway



Munck cranes supplied to ABB-Thailand

Munck Light Weight System



*Munck
handoperated
chain hoist*



The Munck comprehensive light weight system program includes:

- chain hoists
- vacuum lifters
- runway systems
- Jib cranes

Munck chain hoists represent an excellent and economical solution for lifting lighter loads.

The chain hoists are available for different lifting capacities, and are available both as manual or as electrically operated. Lifting capacities ranges from 125 kgs and above.



*Munck
electric
chain hoist*



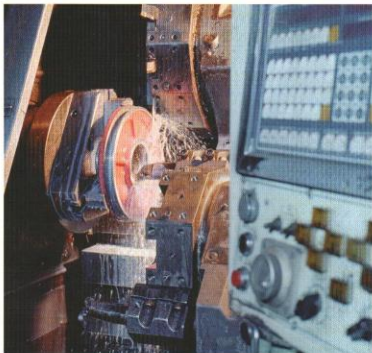
«VacuEasyLift» offers ergonomic solutions for light and frequent lifts, which otherwise would be done manually.

The system is rather simple, which incorporates a vacuum pump, a filter, suction hoses and vacuum unit adapted to the specific load to be lifted! «VacuEasyLift makes the air do the job».

Munck LR lightweight system can be adapted as monorails as well as crane applications, serving larger floor areas, or as Jib-cranes.

Munck LR system offers a considerable degree of flexibility used in combination with the Munck chain hoists and trolleys! The «VacuEasyLift» is also used in combination with and suspended from the Munck LR light weight system.

Munck Crane Components and Spare Parts



CNC control are fully interfaced with the various machine tools. Photo shows a Munck wire rope sheave being machined.

Over the years, thousands of Munck hoists, motors, gearboxes, trolleys have been put in use all over the world.

The sales of spare parts is handled by our after sales and spare parts department, staffed by experienced and skilled personnel. The Munck very comprehensive filing system, built up over the years contains details and background information of each and every crane supplied. This is of great importance for identification of correct parts.

Availability and competitive delivery times for spare parts and components are given the highest priority by Munck!



This is achieved through maintaining a most comprehensive stock, combined with our own and flexible «in-house» production at our main plant in Bergen, where qualified people, machines and equipment are at the disposal of our customers.

Replacement parts are even available for Munck hoists and cranes having been supplied more than 30-40 years ago! Our after sales and spare parts department is available for our clients around the clock, to offer the very best service!

Quite a few of the components as manufactured by Munck for the Munck range of cranes and hoists are supplied to others as part of their product. Typical examples are different types of gears and pinions, machined wheels as well as complete drive units. This is an indication of the quality and confidence by others in our products.



Munck Cranes International



Munck licensee partner in Philadelphia, USA, American Crane & Equipment Corporation.



Crane leaving factory at Munck Cranes Incorporated, Ontario, Canada.

The export activities are handled by Munck Cranes International, which is a division of Munck Cranes AS.

Munck operate on the international markets based on the licensee concept.

Over the years several licensee agreements have been established with companies in different countries, we mention:

The United Kingdom - Sweden - Denmark - Belgium - United States of America - Canada - Hong Kong - Thailand and Saudi Arabia.

Munck Cranes International is also working closely with companies in Australia - New Zealand - Malaysia - South Africa - Egypt and Israel to mention some.

Our licensee partners have over the years built up their own crane expertise, and Munck cranes - standard as well as special - for the light, medium and heavy industries are manufactured locally, adapting Munck hoists, components and design.

The cranes as built by our licensee partners follow the same standards as in Europe, but adapted by the licensee, to meet any local rules and regulations.

Prestigious contracts, in keen international competition, have been awarded to our licensee partners, and - backed by Munck Cranes International, - these contracts have been completed to the full satisfaction of the clients.



Branch office, Vancouver, Canada.

MUNCK Goliath Cranes for handling precast concrete elements. The crane is manufactured and installed by Munck licensee partner in Singapore, Interlift Sales (Pte) Ltd.



Our licensee partners have developed their high degree of expertise over many years - some have been working with Munck for more than 40 years.

Engineers and management staff from Munck are regularly visiting the licensee partners conducting courses and training to ensure that their engineering experience is updated on the development at all times. Therefore, we consider skills

and expertise locally being very much on the same level as in the main office at Munck, Norway. Our licensee partners keep stock of spares, and an experienced and dedicated service staff will ensure that the very best after sales service is offered to the Munck clients at all times.

Our licensee partners - like Munck - consider material handling something more than just moving

load from one point to another. Their expertise and technical know-how will present the most economical solution to the customers specific needs, without sacrificing quality, reliability and safety. Maintenance costs and need for spare parts must also be kept to a minimum.

Munck and their licensee partners are totally committed to this business.



Buildings under construction at Kværner Fjellstrand, Singapore. Interlift Sales (Pte) Ltd. have supplied the entire fleet of MUNCK cranes for their new yard in Singapore.

Munck Special Cranes



Munck are capable of offering tailor made and special cranes designed to meet the individual requirements of our clients.

Availability, long life and maximum safety of the equipment secures an economical overall solution, which is much appreciated by our clients.

Special components which have been developed by Munck, are also manufactured by ourselves. This will ensure that any down time is kept to a minimum, and also that spare parts are available for many years to come!

A crane consists of mechanical, electrical and electronic parts and components. The engineers at Munck have in-depth experience and know-how within each of these fields. This long experience is being utilised when converting the thoughts and ideas of our customers into a complete "turn-key" installation!

Overall responsibility. Within our special fields we carry out the full installation and commissioning of cranes, as well as service, maintenance and refurbishing of existing cranes - if

required. Therefore, our customers can be assured and rely that they are dealing with a supplier who is prepared to accept an overall responsibility.

Our special crane programme covers:

- Computerised cranes
- Grab cranes
- Cranes for Power Stations
- Cranes for Ship building and repair industry
- Cranes for the processing industry.
- Components for special cranes.



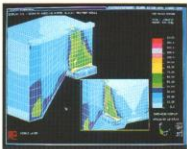
*Munck -Mobilstak- is a speciality by Munck. The Mobilstak can be equipped with special lifting attachments to suit different products which are to be handled.
Photo shows -MOBILSTAK- at one of the Norsk Hydro plants in Norway.*

Cranes for the paper processing industry is a -niche- which is given priority by Munck, and where Munck really have been successful.

Photo shows a small section of Norske Skog A/S new factory in Norway, where Munck had the pleasure to supply the complete fleet of cranes, a contract valued at approximately US\$ 3 mill.



Munck has, since 1990, invested in - and taken full advantage of - computer assisted design (CAD) and construction.



The Munck cranes are designed and calculated in accordance with the international norms and regulations and are optimised using, the latest computer techniques.



Electrical cabinets are built and thoroughly tested in the Munck factory.

Munck cranes - for Power Stations



Calculation and designing of special blocks require skill and experience.



Munck have extensive experience and a long tradition as a supplier of cranes and lifting equipment for installation in power stations, used for lifting water gates, cranes used in the general workshops, but not the least, cranes used in the turbine house. As far as back in the 50's and 60's Munck have had the pleasure to supply heavy cranes as used in the machine hall / turbine house both for customers in Norway and abroad. Thailand and Sweden were initially the most significant export markets.

Most power stations as built in Norway are using cranes supplied by Munck.

The most prestigious installation commissioned recently, without doubt, was the delivery to Bhumbol Power Station (EGAT) in Northern Thailand. In keen international competition, Munck obtained the order to supply, deliver and install 2 units of Munck DuoBox Cranes, each for a span of 20,3m and a lifting capacity of 235 tonne. Included in the Munck contract

was also a lifting yoke, facilitating a tandem lift of 450 tonne (see photo).

Munck have, since 1984, been very active in the developing of control by means of frequency control system adapted for use on cranes. This to obtain stepless control, ranging from 0 to any specific maximum speed.

For the above cranes, EGAT did specify their requirement of +/- 1 mm on the hoisting motion! Munck did manage to achieve this!



Munck cranes - for Shipyards



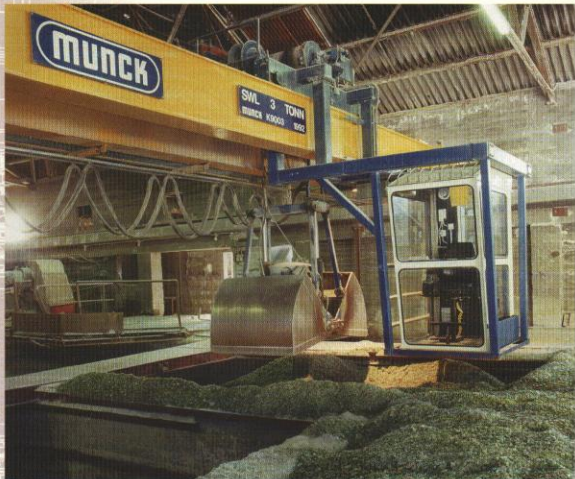
Kværner Flore Shipyard, Norway. Munck cranes, in use during fabrication of technical tankers. In 1966, Munck commissioned 4 units of cranes, installed in their dockyard building. The cranes are to suit a span of 50 meters. Ship sections weighing 440 tonne can be handled, using 2 cranes lifting in tandem. The length of the dockyard building is 204 meters, the width is 60 meters and the height is approximately 60 meters. The cranes are all operated from the ground by means of radio control.

For a considerable number of years Munck have supplied cranes for various shipbuilding- and ship repair yards, as well as yards manufacturing offshore installations in Norway and abroad. Our concept also incorporates design of cranes operating on runways at different level within same building. Further, tandem drifts for heavier loads and control systems offering the highest degree of load handling precision. This is achieved by implementing advanced components offering maximum efficiency, compact design and the latest techniques in crane control. For example a tandem load of 400 tonne can be lifted and positioned within tolerance of 1 mm. In a shipyard where large sections are handled and a high degree of general activity is present, resultant accidents can easily happen. Munck has therefore put special attention to safety, and warning systems are built into the cranes, giving warning to the crane operator, should there at any time be any risk for collision between cranes, or also between hanging loads and any obstacles in the building.



Cranes are operating on different runways at different levels. The cranes can be operated individually, or two cranes lifting in tandem - if required. To prevent interference and / or collision between cranes on same runway, but also between hanging load on a crane on one level and crane operating at a lower level, a fully automated anticollision system has been developed.

Munck Automatic Cranes and Cranes for the Processing industry



Munck fully automatic DUOBOX cranes installed at an existing production line at PLM Moss Glassverk, Norway).

A significant upgrading of engineering skills has gradually taken place at Munck to ensure that we are always one step ahead of the development of the crane technology, as required for the processing industry. The objective of developing automatic cranes is the demand by the clients to obtain maximum reliability, but also to keep operating and maintenance costs to a minimum.

Plants handling so called hazardous waste, are also users of automatic cranes. By replacing fork lift trucks and convey with overhead travelling cranes, and the personnel will all be operating in the safe zones.

Typical application of automatic cranes are cranes used within the following industries.

- Glass processing industry.
- Composting plant
- Galvanising plant
- Zinc production
- Incinerator plants.



Fully automatic Munck crane in operation in an incinerator plant in Oslo Norway.

The new automatic systems and know how as developed by Munck, can also be adapted on existing and conventional crane installations. By converting such cranes into fully automatic cranes, the life time will increase considerably.

Cranes being automated, which represents part of an entire process, are able to provide valuable information of this process, as the crane computer system is connected to the main computer, and is operating along with this.

As an example the waste in an incinerator plant is reduced significantly as a result of the main computer being given exact information of the volume garbage which at all times are fed into the incinerators.

Automation means:

- better environment
- increased reliability
- reduced operation costs.



*Photo above:
A very special «ladle» crane as
supplied to Elkem, Norway.
The crane is used as an
integrated part of their
production of manganese.*

*Photo, right:
Crane, having the hoisting
machinery fully synchronised for
handling of paper rolls.*



Refurbishing - Rehabilitation - Upgrading

Munck is able to offer equipment and systems for rehabilitation of cranes, which may double the life time of existing cranes.

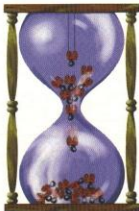
The rehabilitation project of a crane may involve installation of a complete new hoisting machinery, drive system or other additional equipment representing a considerable better and improved design compared to the existing equipment.

This is among other resulting in that the noise level is reduced, improved and safer braking systems are achieved, improved starting and stopping characteristics and generally higher degree of safety is obtained. In addition, and under certain circumstances, the entire crane can be upgraded to a higher lifting capacity.

Our skilled staff will be pleased to examine the existing crane, and present recommendation to what work ought to be carried out, in order

to obtain maximum advantages. The Munck rehabilitation programme offers several advantages:

- Improved working environment by
 - reduction in noise level
 - simpler operation
- Improved safety, by
 - reduced risk of accidents through better control systems
 - reduced risk of break downs
 - Upgrading in accordance with rules and regulations as laid down in: EC's «Machinery Directive» and «Directive for Employers Safety and Health».
 - recording of the crane «life time».
- Improved economy, by
 - giving the existing crane the same status as a new crane.
 - cost efficient solutions.
 - offering an alternative to investing in a new crane, at a considerable lower cost.



Electronic weighing system with «built in» overload switch.

Display giving information of load being lifted at any time. Automatic registering of accumulated loads lifted. Monitoring and registering of the degree of use of the crane (time and load) as well as the «life time» of the crane (safe working period = SWP), expressed in full-load hours.

Safety equipment.

Limit switches for the long and cross travel motion, anti-collision systems between cranes operating on the same runway, but also between hanging load on one crane and crane operating on a lower runway level, are some examples. Further, the cranes can be equipped with equipment which automatically is restricting operation of cranes - or load on the hook - to certain areas or zones inside the building. Munck cranes can also be fitted with equipment preventing over-winding of wire rope as well as a rope wear registering device. Safety is given highest priority at Munck, and the company is therefore working continuously to improve safety.



Remote control.

Remote control will improve safety as operator will obtain better control of crane and load. Several systems and designs are available.



Stepless control.

Stepless control offers accurate positioning of load, it reduces brake wear and wear in general, and prevents «inching» of load. This means increased safety and reduced maintenance costs.



QUALITY SYSTEM CERTIFICATE

To certify conformity
with
Godkjent overensstemmelse med
the QUALITY SYSTEM REQUIREMENTS
kvalitetssystemkravene
of
i henhold til
NS-EN ISO 9001

awarded
tildelt

Munck Cranes AS

manufacturing/supplying following products/services:
for produksjon/leveranse av følgende produkter/tjenester:
**Sales, design and development, manufacturing, installation, service,
testing, certification, re-certification, refurbishing and stockholders of cranes,
hoists and material handling equipment.**

*Salg, konstruksjon og utvikling, produksjon, montering, service, kontroll,
sertifisering, resertifisering, rehabilitering og lagerhold av kraner,
sluifer og løfteutstyr.*

Certificate No: **040**
Sertifikat nr.:

Date issued:
Utsedt dato:
12.03.96

Valid until:
Gyldig til:
12.03.99

Accredited certification by the National Institute of Technology, Norway
Dept. International Certification according to NS-EN 45012.

*Akkreditert sertifisering utført av Teknologisk Institutt,
Avd. internasjonal sertifisering i henhold til NS-EN 45012.*


Chairman




Chief executive
Dept. International Certification

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