Liebherr Port Cranes
FCC and TCC

Liebherr
# Table of Contents

1. Product Range ................................................. 4
2. Design Overview .............................................. 6
3. Modularity ..................................................... 7
4. Applications .................................................. 8
5. FCC - Configuration and Installation ....................... 12
6. TCC - Configuration and Installation ....................... 14
7. Operational Comfort .......................................... 16
8. Liebherr Service ................................................ 17
1 Product Range

Many years of experience in the construction of maritime cranes is one of Liebherr’s core competences. Constant technical progress ensures innovative and flexible solutions orientated towards customer requirements.

The Liebherr FCC/TCC series is designed for the flexible handling of dry bulk, general cargoes and containers in both sea and domestic ports. Low initial outlay as well as minimum running and maintenance costs round off the operational profile of the FCC/TCC series.

<table>
<thead>
<tr>
<th>Series</th>
<th>Radius</th>
<th>Max. Capacity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>350</td>
<td>36 m</td>
<td>45 t</td>
<td>Continuous heavy duty grab and multi-purpose operation</td>
</tr>
<tr>
<td>300</td>
<td>30 m</td>
<td>30 t</td>
<td>Continuous heavy duty grab operation</td>
</tr>
<tr>
<td>280 R</td>
<td>33 m</td>
<td>120 t</td>
<td>Multi-purpose and heavy duty grab operation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
280 series
Radius 35 m
Max. capacity 45 t
Multi-purpose operation

230 series
Radius 29.5 m
Max. capacity 45 t
Multi-purpose operation

230 R series
Radius 32 m
Max. capacity 45 t
Multi-purpose operation

Application:

Optimal

Additional
Design Overview

Liebherr port cranes have been developed using the latest scientific and technical knowledge and excel through the following design features:

**230/280 series**
- Double chord box girder jib (high stability)
- Box type jib
- Luffing cylinder (maintenance free)
- Internal hoisting and luffing winches (optimum protection)

**230 R/280 R series**
- Double chord box girder jib (high stability)

**300 series**
- 4-rope grab
- Luffing cylinder (maintenance free)
- Internal luffing winches
- Single layer holding and closing winch

**350 series**
- Internal luffing winches

Design Overview
Modularity

The Liebherr port crane concept is distinguished by its unique modularity. Three different crane types and two different substructures are available. Under consideration of the infrastructure and individual needs of the port the optimum combination can be determined.

FCC – Fixed Cargo Crane
The FCCs are fitted on fixed pedestals. Due to their slender design they are especially suitable for operation on narrow quaysides. Thanks to jib lengths of up to 36 m vessels and barges can be efficiently loaded and unloaded from a fixed position.

TCC – Travelling Cargo Crane
TCCs are fitted on rail-mounted travelling gantries. A system of parallel tracks under the gantry enables travel along the length of the quayside. This means relocation of the vessels and barges is not necessary during loading and unloading of cargoes, thus improving efficiency.
4 Applications

Whether container, general cargo or dry bulk handling Liebherr port cranes can meet a wide variety of cargo demands ranging from universal to special applications.

Container and General Cargo Handling

No matter what type of vessel thanks to the various jib lengths Liebherr port cranes invariably fulfill your needs. With up to 25 cycles per hour vessels and barges can be quickly and efficiently loaded or unloaded. For container and general cargo handling the cranes can be equipped with a rotator. Manual, semi or fully automatic spreaders are available for all regular container sizes.
Dry Bulk Handling
Various types of grab, ranging from motor grab up to four-rope grab, can be easily fitted and operated. Liebherr’s leading position in dry bulk handling is emphasized by its high performance crane series 300 and 350 offering the following benefits:

- classified for 360 days 24 hours continuous operation
- up to 45 cycles per hour
- operation of all 3 motions simultaneously at full load/full speed
- continuously variable speed control from zero to max. speed
- independent closed hydraulic circuits for each crane motion
5 FCC – Configuration and Installation

**Practical Application**
Liebherr port cranes are tailor-made to meet individual customer requirements and are especially suitable for operation on narrow quaysides thanks to their compact design and the following features:

- economical and robust pedestal design
- point reinforcement of the quayside keeps the foundation costs at a minimum
- relatively low forces and moments affect the crane’s pedestal making dense positioning of the cranes on the quayside possible
- electric components are protected from the environment

**FCC series**
B1 = ship width
B2 = quay
B3 = ship width
R = max. working radius
**Pedestal**
The upper pedestal of the crane is welded to the lower pedestal, enabling straightforward and uncomplicated installation of the cranes.

**Power Supply**
An external electric cable provides power for the electro-hydraulic cranes. This cable is embedded in the quayside and is lead through the inside of the lower pedestal to the terminal box on the slipring.
# TCC – Configuration and Installation

## Gantry Design
Based on many years of experience in gantry construction, Liebherr designs and manufactures tailor-made gantries to meet the requirements of individual port infrastructures.

- the width of the gantry is determined by the rail span
- the working height of the gantry and the TCC port crane is optimized to suit the types of vessels to be handled
- the clearance height of the gantry depends on the transport requirements on the quayside. For example, TCCs in intermodal ports can be designed to enable the free movement of trucks and rail-mounted vehicles under the gantry in order to allow for improved cargo clearance
- the number of bogies is dependent on the type of crane and the maximum permissible wheel load on the quayside
- counterweights are necessary where rail spans are narrow in order to reduce overturning moment and ensure safe operation and stability

---

**TCC series**

H1 = clearance height
H2 = eye level
W = track gauge
Installation
- Gantry drives are electrically powered
- Prevailing forces and moments are evenly distributed to all wheels on the gantry and so absorbed by the quay foundation
- Crane can be either central or side-mounted depending on cargo handling requirements
- Safe and direct access to the driver's cab via stairway and ladders
- Gantry is optionally fitted with a mechanical locking device in order to prevent gantry travel during gales/storms

Power Supply
An external electric cable provides power for the electro-hydraulic travelling cargo cranes. This cable is embedded in the quayside and leads to the TCC through a cable guide which should be positioned in the middle of the quayside in order to optimize the size of the cable drum.
7 Operational Comfort

Optional Driver’s Cabin
Particular attention has been paid to the ergonomic layout of the cabin as well as the optical and acoustic requirements of the driver:
- comfortable adjustable driver’s seat
- full vision with front, overhead, floor and side windows of tinted safety glass
- two self-centring ergonomically positioned joysticks allow all motions to be operated simultaneously
- air-conditioning
- swing equalizers to reduce vibration to a minimum

Litronic Crane Control
Liebherr’s own crane control system Litronic facilitates smooth and high speed operation as well as preventive maintenance and includes:
- load indication and limitation
- load recording
- machine data recording including alarms and failures
- determination of service / inspection intervals
- modern access for remote fault-finding
- software available in several languages
8 Liebherr Service

Over 10,000 marine and port cranes are attended by Liebherr-Werk Nenzing GmbH through a world-wide network of service centres with the aim of providing maximum efficiency through maximum machine availability.

Competence on Site
Speed and reliability are inherent attributes of Liebherr’s service. Short response times mean reduced downtime and contribute to the quick restoration of crane productivity. A close service network throughout the world guarantees support within 24 hours, if necessary. Qualified specialists are on stand-by to provide maximum availability, round the clock if required.

Optimal Spare Parts Logistics – quick, reliable, at all times
Every working hour is vital for the efficiency of a port crane. The Liebherr original spare parts service is available for customers round the clock, even at weekends and on public holidays. Liebherr’s standardised overnight distribution service secures quick and universal delivery of original parts.

Dependable Partnership
Comprehensive know-how ensures first-class and effective execution of all service and maintenance work, which contributes to availability and productivity. Liebherr combines expertise with customer’s practical experience in order to constantly optimize equipment and service.

- preventive maintenance and safety checks
- individual customer service and maintenance agreements
- comprehensive training for crane drivers, service and maintenance personnel
- world-wide 24-hour customer hotline
- implementation of technical modifications and up-grades
- remote diagnoses for fault-finding and rectification

Organisation with high-speed guarantee
The Liebherr Group – Partner for the Future

Today, Liebherr is among the leading manufacturers in the fields of hoisting technology and materials handling equipment. The name Liebherr stands for products and services. It has become a synonym for ideas and innovations.

Liebherr – A Family Enterprise

In family-operated companies, ownership merges with active entrepreneurship. This results in characteristic principles. Liebherr is both a family business and a corporation. This does not have to be a contradiction, as the continuous success and steady growth prove.

To create top products, the development capacities and production facilities must measure up to the highest standards. This requires substantial investments. From stable locations, Liebherr is following a solidly financed expansion course. The profits made are almost entirely retained within the Group. This provides ample scope for extensive investments. The economic power of the Liebherr Group is best shown by its unusually high equity ratio of more than 50%. This sound economic basis makes Liebherr highly independent in its strategic decisions, and it provides an important basis for future investment and innovation strategies. Offering high-quality products and services which are aimed towards customers’ needs remains the benchmark.
**Mastering Key Technologies**

In view of the high quality that Liebherr demands of its products, mastering key technologies internally and keeping core competencies in-house has always been of great importance to the company. Therefore, Liebherr develops and produces crucial components, such as the entire propulsion and control technology, themselves. Further examples are hydraulic components, slip ring elements, and diesel engines. Here, Group suppliers are measured against the best and most efficient external provider.

**Decentralized and International, Based on Tradition**

Operating efficiently in manageable, self-dependent units and aiming strategically at emerging markets have always formed part of the basic business principles. Thus, Liebherr regularly invests substantially in further marketing and service companies as well as in new production sites. Entering and expanding into new markets means being locally available to assure the customer receives full and lasting manufacturer support. While maintaining the proven decentralized organizational form, a divisional company structure, whose international expansion is being carried forward, was implemented globally.
Members of Liebherr-MCCtec GmbH (Maritime Division):

Liebherr-Werk Nenzing GmbH
P.O. Box 10, 6710 Nenzing/Austria
Tel.: +43 50809 41 0
Fax: +43 50809 41 500
E-Mail: info.lwn@liebherr.com

Liebherr Container Cranes Ltd.
Killarney, Co. Kerry
Republic of Ireland
Tel.: +353 64 70 200
Fax: +353 64 31 602
E-Mail: sales.lcc@liebherr.com

Liebherr-MCCtec Rostock GmbH
Liebherrstrasse 1
18147 Rostock
Germany
Tel.: +49 381 60 06 0
Fax. +49 381 60 06 100
E-Mail: info.mcr@liebherr.com

Liebherr Sunderland Works Ltd.
Ayres Quay, Deptford Terrace
Sunderland
Tyne and Wear, SR4 6DD
Great Britain
Tel.: +44 191 51 43 001
Fax. +44 191 51 44 191
E-Mail: info.lsw@liebherr.com

Burleigh Nenzing Service GmbH
Am Neuländer Baggerteich 1
21079 Hamburg
Germany
Tel.: +49 40 767 022 00
Fax: +49 40 767 587 86

Liebherr Singapore Pte. Ltd.
8 Pandan Avenue
Singapore
609384
Tel.: +65 6265 2305
Fax. +65 6261 6485

Liebherr-Maritime Benelux B.V.
Beeldschmerweg 2
3821 AH Amersfoort
Netherlands
Tel.: +31 33 4500 830
Fax: +31 33 4500 899

Liebherr Russia
1-ajo Borodinskaja str. 5
Office 302
121059 Moscow
Russian Federation
Tel.: +7 495 502 1734
Fax. +7 495 933 7223

Liebherr EMtec Italia S.p.A.
Via dell’Industria, 8-12
24040 Lallo (BG)
Italy
Tel.: +39 035 69691 40
Fax: +39 035 69691 49

Liebherr India Private Limited
D-16/3 MCD, Ground Floor
TCC Industrial Area, Turbhe
Navi Mumbai - 400 703
India
Tel.: +91 22 6795 7500
Fax. +91 22 6795 7505

Liebherr Brasil Port Equipment
Latin America
Rua do Rocio, 288 - Cj 81 e 82
Vila Olímica
04552-000 Sao Paulo - SP
Brazil
Tel.: +55 11 3845 4161
Fax. +55 11 3845 7298

Liebherr Ibérica S.A.
Carretera A-2, km 41
c/Aluminio, parcela 6-8
Polígono Industrial Miralcampo
19200 Azuqueca de Henares,
Guadalajara
Spain
Tel.: +34 949 348 730
Fax. +34 949 262 853

Sales and Service Stations:

Liebherr Nenzing Crane Co.
11801 NW 100th Road, Suite 17
Miami, FL 33178
USA
Tel.: +1 305 889 0176
Fax. +1 305 889 0655

Liebherr Great Britain Ltd.
Stratton Business Park
Normandy Lane
Begliswade, SG18 8QB
Great Britain
Tel.: +44 1767 602 160
Fax. +44 1767 602 161

Liebherr Nenzing Service GmbH
Am Neuländer Baggerteich 1
21079 Hamburg
Germany
Tel.: +49 40 767 022 00
Fax: +49 40 767 587 86

Liebherr Singapore Pte. Ltd.
8 Pandan Avenue
Singapore
609384
Tel.: +65 6265 2305
Fax. +65 6261 6485

Liebherr-Maritime Benelux B.V.
Beeldschmerweg 2
3821 AH Amersfoort
Netherlands
Tel.: +31 33 4500 830
Fax: +31 33 4500 899

Liebherr Russia
1-ajo Borodinskaja str. 5
Office 302
121059 Moscow
Russian Federation
Tel.: +7 495 502 1734
Fax: +7 495 933 7223

Liebherr EMtec Italia S.p.A.
Via dell’Industria, 8-12
24040 Lallo (BG)
Italy
Tel.: +39 035 69691 40
Fax: +39 035 69691 49

Liebherr India Private Limited
D-16/3 MCD, Ground Floor
TCC Industrial Area, Turbhe
Navi Mumbai - 400 703
India
Tel.: +91 22 6795 7500
Fax. +91 22 6795 7505

Liebherr Brasil Port Equipment
Latin America
Rua do Rocio, 288 - Cj 81 e 82
Vila Olímica
04552-000 Sao Paulo - SP
Brazil
Tel.: +55 11 3845 4161
Fax. +55 11 3845 7298

Liebherr Ibérica S.A.
Carretera A-2, km 41
c/Aluminio, parcela 6-8
Polígono Industrial Miralcampo
19200 Azuqueca de Henares,
Guadalajara
Spain
Tel.: +34 949 348 730
Fax. +34 949 262 853

Sales and Service Stations:

Liebherr Nenzing Crane Co.
11801 NW 100th Road, Suite 17
Miami, FL 33178
USA
Tel.: +1 305 889 0176
Fax. +1 305 889 0655

Liebherr Great Britain Ltd.
Stratton Business Park
Normandy Lane
Begliswade, SG18 8QB
Great Britain
Tel.: +44 1767 602 160
Fax. +44 1767 602 161

Liebherr Nenzing Service GmbH
Am Neuländer Baggerteich 1
21079 Hamburg
Germany
Tel.: +49 40 767 022 00
Fax: +49 40 767 587 86

Liebherr Singapore Pte. Ltd.
8 Pandan Avenue
Singapore
609384
Tel.: +65 6265 2305
Fax. +65 6261 6485

Liebherr-Maritime Benelux B.V.
Beeldschmerweg 2
3821 AH Amersfoort
Netherlands
Tel.: +31 33 4500 830
Fax: +31 33 4500 899

Liebherr Russia
1-ajo Borodinskaja str. 5
Office 302
121059 Moscow
Russian Federation
Tel.: +7 495 502 1734
Fax: +7 495 933 7223

Liebherr EMtec Italia S.p.A.
Via dell’Industria, 8-12
24040 Lallo (BG)
Italy
Tel.: +39 035 69691 40
Fax: +39 035 69691 49

Liebherr India Private Limited
D-16/3 MCD, Ground Floor
TCC Industrial Area, Turbhe
Navi Mumbai - 400 703
India
Tel.: +91 22 6795 7500
Fax. +91 22 6795 7505