



Cranes.

igus® solutions for crane builders and operators

Industry

plastics for longer life® ...igus

... www.igus.eu/cranes ...

Reduce cost...



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e-chainsystems® for Cranes:
Reduced cost. Increase expected service life. Have been tried and tested.

Dear customers,

We would like to introduce you to the high-tech products of igus® for your particular branch of industry. igus® energy chain systems® are a highly effective alternative to conductor rails, festoon systems and motor cable drums.

igus® e-chainsystems® and chainflex® flexible cables are in use worldwide in more than 10,000 port-facility applications: Ship-to-shore cranes, bulk-cargo handling cranes, RTGs, RMGs, Goliath cranes, spreaders, reach stackers etc.

The main advantages for crane builders and operators are:

- Space-saving design
- No additional drives are necessary
- No control system is necessary
- All media can be transported: energy, data, air, water etc.
- Easy maintenance lowers your downtime
- Wind and weather resistant
- Synchronous run of trolley and energy chain system®
- Easy and fast installation of additional cables
- No spare parts
- Spare part guarantee for ten years and more

Also, see our industry website:

 www.igus.eu/cranes

Here you can find detailed information, helpful online tools and much, much more. Our crane experts can be reached in the most important countries worldwide. You can obtain direct and personal information from our highly competent staff in the igus® "Cranes" business unit, which is located in Cologne.

Enjoy reading!

... Improve technology ...



... with motion plastics® from igus®



Straddle Carrier
Spreader Travel



Rubber Tyre Gantry (RTG)
Trolley Travel



igus® e-rover:
RTG electrification
for Stack Travel



Goliath Crane
Upper & lower
Trolley Travel



Rail Mounted Gantry (RMG)
Trolley Travel



Spreader



Ship To Shore Cranes (STS)
Trolley Travel



Ship To Shore Cranes (STS)
Crane Travel



Automated Stacking Cranes (ASC)
Trolley Travel



Reach Stacker
Boom & Cabin Travel

Advantages of the e-chainsystems®: Cost down ...

Travel	94 m
Max. speed	240 m/min.
Max. acceleration	1 m/s ²
e-chain®	4040RHD.25.250.S10.0.E
chainflex® types	CF38 / CF37 / CF10 / CF11 / CFLG
Location	Netherlands



... Service life up. Proven.

Travel	20 m
Max. speed	60 m/min.
Max. acceleration	0.4 m/s ²
e-chain®	400.25.250.0
chainflex® types	CF300 / CF9 / CF11
Location	Malaysia



Advantages of the e-chainsystems®: Cost down ...

Travel	78 m
Max. speed	150 m/min.
Max. acceleration	0.5 m/s ²
e-chain®	P4.56.20.300.S40.0.AG
chainflex® types	CF340 / CF330 / CF38 / CF37 / CF10 / CF9 / CFLG
Location	USA



... Service life up. Proven.

Travel	180 m
Max. speed	50 m/min.
Max. acceleration	0.1 m/s ²
e-chain®	5050RHD.40.250.S10.0.E
chainflex® types	CF310 / CF34 / CF9 / CF11 / CFLG
Location	China



Reach Stacker

Advantages of the e-chainsystems®: Cost down ...

Travel	boom 8 m, cabin 2 m
Max. speed	15 m/min.
Max. acceleration	0.25 m/s ²
e-chain®	4040.15.250.0
chainflex® types	CF9
Location	worldwide



Straddle carrier

... Service life up. Proven.

Travel	12 m
Max. speed	18 m/min.
Max. acceleration	1 m/s ²
e-chain®	14550.055.200.0
chainflex® types	CF9, CFBUS
Location	Germany



Long travels ...

Solutions from the igus® e-chains® construction kit

Profile roller e-chain®: For very high fill weights and speeds

Particularly quiet and low vibration, abrasion-resistant and energy-efficient on very long travels up to 800 m and more. igus® P4 – profile rolling e-chains® for very high filling weights and speeds. Increase energy efficiency and lower energy consumption with the P4 e-chainsystem®.

 www.igus.eu/P4



Suitable chainflex® range of cables from stock, also assembled with connectors.



P4 e-chain® – mounted on STS application

... energy-efficient

... long travels of 800 m and more

rol e-chain®: rolling instead of gliding

The igus® rolling e-chain® is ideally suited for applications in which long travels with high speeds must be implemented. Travels of over 800 metres or extreme travel speeds of up to 10 m/s with cable loads of up to 50 kg/m are possible.

 www.igus.eu/role



Suitable chainflex® range of cables from stock, also assembled with connectors.



HD rolling e-chain® – mounted on STS application

the-chain – moving energy ...

Solutions from the igus® e-chains® construction kit

One e-chain® series for almost any application: System E4.1

The E4.1 system combines all the advantages of the previous three versions and is the best igus® e-chain® in the product range. The series E4.1 is more stable at the same or even smaller dimensions than the previous versions. Almost all accessories and mounting dimensions are identical. You can increase the service life of your application again with the igus® system E4.1 while lowering costs.

 www.igus.eu/E4-1



Suitable chainflex® range of cables from stock, also assembled with connectors.



igus® e-chain® in a reach stacker

... made easy

... high loads up to 100 kg/m and more

Heavy duty: highly-stable e-chains® for the highest loads

igus® HD e-chains® have been developed specifically for the highest loads and long travels. Up to 20% higher tensile strength than comparable igus® series. Extremely torsion-resistant and wear-resistant thanks to large sliding surfaces.

 www.igus.eu/E4HD



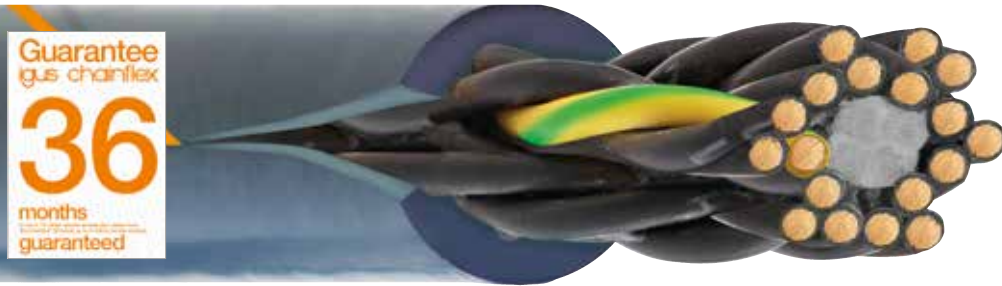
Suitable chainflex® range of cables from stock, also assembled with connectors.



igus® HD e-chain® in aluminium guide trough

chainflex® for the ...

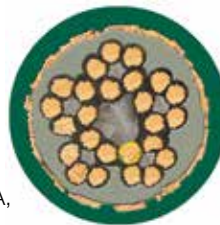
36 months guarantee for all cables* ...



More than 1,040 chainflex® cables for use in e-chainsystems®

- Wear-resistant TPE, PUR and oil-resistant PVC outer jacket
- Halogen free and/or flame retardant materials
- Smallest bend radii down to 4 x d
- 36 months guarantee for chainflex® cables
- Various approvals and standards: UL, CSA, CE, DESINA, CEI ...

www.igus.eu/chainflex



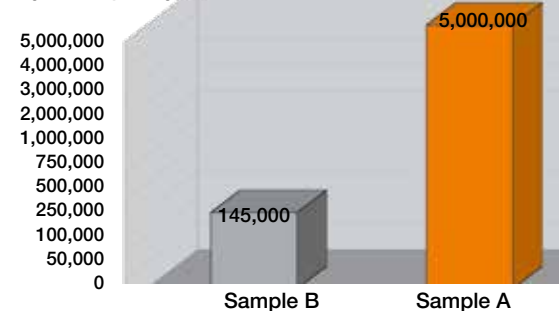
chainflex®
motor cable



chainflex®
control cable

Tested! Tested! Tested!

Cycle frequency



Corkscrew after 145,000 double strokes (Sample B)



igus® CF27: no wear, even after 5 million double strokes (Sample A)

* 36 months or up to 10 million double strokes (5 million for cables of the chainflex® M family); whichever is first



Order your catalogue:
www.igus.eu/catalogue

... crane industry

... more than 1,040 chainflex® cable types from stock

Single core CF330.D and CF340



The halogen-free TPE individual connectors for extra high levels of mechanical stress on cranes and in installation.

- UV resistant outer jacket
- Flexible at low temperatures
- Nominal voltage: 0.6/1 kV
- Oil resistant, bio-oil resistant
- PVC and halogen free
- Bend radius in the e-chain®: 7.5 x d

Halogen free motor cables CF37.D and CF38



The halogen-free TPE-power line for extra high levels of mechanical stress on cranes and in installation.

- UV resistant outer jacket, gusset-filled extruded
- Flexible at low temperatures
- Nominal voltage: 0.6/1 kV
- Oil resistant, bio-oil resistant
- PVC and halogen free
- Bend radius in the e-chain®: 7.5 x d

Four-core motor cable CF30, CF31m CF34.UL.D and CF35.UL



Shielded motor cable for inverter function up to 600/1000 V and up to 70 mm²

Single core motor cable CF300.UL.D and CF310.UL



Shielded and unshielded single core motor cables for demanding requirements

Fibre optic cables



Fibre-optic cable (62.5/125 or 50/125), 2, 6 or 12 cores – all fibre-optic cables are tested for several million reverse bends

Single-core motor cable



Shielded, highly flexible single cores for medium voltages of up to 6/10kV for the highest requirements in crane construction, heavy engineering, etc.: 1 x 25/16 to 1 x 95/16 cross section

Data cables, e.g. CF211, CF240, CF11



Available for all throughput data systems in e-chains® applications. Even for large cross-sections, e.g. at 3 x 2 x 2.5 mm², or with voltage carrying connecting cores inside a cable.

Control cables, e.g. CF5/CF6, CF9/CF10



PVC, PUR, TPE – a broad product range is available for any application – shielded and unshielded cables and a large number of cross-sections and core types

Aluminium trough ...

The standard: modular aluminium guide-trough construction kit

Aluminium guide troughs – heavy duty version for crane systems

- Heavy duty version of the construction kit system
 - Very simple, modular assembly
 - Side-mounted glide strips for wear protection for high speeds
 - Corrosion resistant, seawater resistant aluminium profile (acc. to EN 6060)
 - Flexible assembly - Fastening on substructure independent of profile lengths and butt joints
 - Plastic glide bar made of high-molecular-weight PE
 - Glide pads and insertable rubber profile for minimised noise and reduced wear
- Heavy duty bracket for a secure hold even in demanding applications
 - U-profile for mounting the bottom clamp or assembly bracket

 www.igus.eu/s-alu



"Super-Alu" guide trough – mounted on RTG application

... lightweight, low cost, safe

Aluminium trough with riser guard ... for more safety

Riser guard – easy to retrofit

In the case of extremely long travels and/or very high push/pull forces, the igus® riser guard offers increased safety during movement of the e-chain®. The riser guard can now be supplied as a ready-to-install module from the modular igus® aluminium guide-trough construction kit. No complex and cost-intensive customised designs any more.

- Riser guard for use in the case of very long travels now available from stock
- Seawater- and corrosion-resistant
- Greater safety where high forces and long distances are involved, available from stock

 www.igus.eu/s-alu



"Super-Alu" guide trough – mounted on STS application

Steel guide trough

Very stable and robust for heavy duty applications

For use where high levels of stress are encountered

- very stable and robust guide trough made of steel
- Easy to fit with assembly sets for butt joint connection and attachment to the underlying surface
- Easy mounting directly to the base of the C-profile
- Large selection, two-piece design, adjustable to e-chain® width
- Available in galvanised steel and stainless steel (Materials: 1.4301, 14404, 14571)
- Plastic glide bar made of PE
- Side sections are mounted with the appropriate clearance and attached to the underlying surface
- Fixed end module option, for fast and easy mounting - without any drilling available
- Conductivity according to DIN EN 61537 (standard)

 www.igus.eu/steelguide



Heavy duty guide trough made of stainless steel – mounted on STS application

Torsional & circular motion

Rotating movements, e.g. on the trolley

The igus® system for fast rotary applications as a "standard product"

The rotary module consists of two circular guide elements. One part of the guide trough is attached to the static part of the system and the other part to the rotating part of the system. Because the rotary modules can be turned in both their inner and outer parts, the fixed end for the e-chains® can be chosen freely. The e-chains® from the E4.1 series are used for the rotary modules.

- Maximum angle of rotation in very small installation space
- Rotating speed of up to 360°/s
- Lighter and more compact than static guide troughs
- Minimum displacement forces and maximum service life due to divided guide trough
- Modular construction with standardised mounting variants
- Integrated strain relief and cable guides in guide trough

 www.igus.eu/RBR



Suitable chainflex® range of cables from stock, also assembled with connectors



Stainless steel guide trough – for rotating installations

Special solutions ...

igus® engineering: e-chain® solutions ...



'Floating' moving end for compensation of lateral difference between travel of trolley/crane and that of the readychain®. Optionally available with electronic push-pull displacement force monitoring in conjunction with continuous monitoring of target/actual parameters and an emergency stop function



e-spool power

- For lengths when extended of more than 25 m
- Long service life due to motorised retraction system
- Outdoor use also possible at temperatures below 0 °C

 www.igus.eu/engineering



... from the construction kit

... especially for all your requirements in cranes



igus® trough mounted on the RTG girder: igus® supplies special tailor-made troughs for the protection of readychains® against different types of weather



Coupling at the coupling point, including limit switch that monitors the connection



Hold-down devices: readychains® move safely over long travels and at a high rate of acceleration. The hold-down device prevents the readychains® from rising when the crane accelerates very quickly



Coupling element: Port cranes are equipped with a boom. In order to ensure that the trough on the boom and the trough on the crane girder are correctly connected to the guide trough, igus® has developed a special means of attachment for the pivot point. The chain can therefore run next to or beneath the crane girder

Condition Monitoring ...

PPDS: Push pull force detection system



Condition monitoring: Push Pull Force Detection System – PPDS

The PPDS-System is an electronic diagnostics tool that performs online monitoring of the forces on the e-chains® in order to avoid system damage and stoppages. Excessive dirt, ice, and snow and foreign objects that fall into the e-chain® can block the system, causing the e-chain® to break.

The PPDS system measures the forces on the e-chain® several times per second, and compares the information with the calculated specification. If a variance occurs the system can be automatically stopped with the help of the PPDS system.

- 3 PPDS systems are available
- Easy installation by means of non-interchangeable connectors
- Easy programming using the membrane keypad directly at the device
- Compact housing, strong, corrosion resistant
- The force limit is programmed in tensile and compression direction
- The plant stops when the force is exceeded
- Custom programmable and event logging in the data memory



Avoid equipment failures

Electronic diagnostic tool

Trigger an alarm in the event of an e-chain® component defect

The EMA system is an electronic diagnostic tool that displays necessary maintenance tasks to prevent system damage as well as downtimes. Foreign objects, such as a tool box, for example, that fall onto the e-chain®, or other e-chain® overloads can lead to a side part breaking. This breakage is then signalled to an analysis unit via a sensor polymer wire to ensure that the second side part does not break which would result in a standstill. Without the EMA, the e-chain® would continue to run and the second side part would then be subjected to an overload. This second side part would also break after a short time and result in the system coming to a standstill.

The maintenance signal allows you to monitor the system and change the chain link at the next possible time. The "EMA system" can also be combined with the igus® PPDS.

 www.igus.eu/EMA



igus® coupling for RTGs ...

Automatically couple RTGs with electricity and data:
The e-rover from igus®

The system supplies mobile container bridges via an extendible telescopic arm

With the e-rover, igus® has developed a system that automatically couples rubber tyred gantry cranes with an energy-chain system in a flash. A telescopic arm connects the energy supply chain, which is guided in a trough, to the RTG. This ensures a reliable energy supply and good data transmission – including via FOC cables.

Rubber tyred gantry cranes (RTGs) are mobile container bridges. You can switch between the container lanes. The RTGs are generally fuelled with diesel. To reduce energy costs and protect the environment, development activities in recent years have increasingly focused on electrically operated vehicles that are

coupled to an energy supply when they are currently in a lane. igus® GmbH has implemented improvements to its e-rover, which now enables automatic coupling to and uncoupling from the energy chain system®. This makes it possible to reliably transmit energy and data in a wired manner – even using FOC cables with Gigabit speed. Coupling can be completed in around a minute and there are no restrictions on the RTG's operating speed. Once the RTG has been "plugged in" to the energy chain system®, the diesel-fuelled energy supply is cut off. Cables with a cross section of 180 mm² per phase can currently be used.

 www.igus.eu/e-rover



... automatic coupling

Highest data rates reliably transmitted by igus®

Compensation of horizontal and vertical unevenness.

The system uses a retractable/extendible telescopic arm on the RTG. This has two benefits: firstly, it enables automatic coupling and the energy chain®, which can be used to simultaneously guide all media, is moved with the RTG. Thereby guaranteeing the supply of energy and data. Secondly, it is possible to compensate horizontal and vertical unevenness and misalignments in the travel. The system is suitable for long travels of up to 500 meters and more depending on the customer requirements in the container port.

- Fast and reliable data transmission e.g. with fibre-optic cables
- Wide selection of performance, data and control cables, incl. fibre-optic cables for data transmission
- Two RTGs in one container aisle with one trough system possible. If there are three or four RTGs per aisle, a second trough is necessary
- Reduces RTG operating costs. The savings potential is comparable with that of conventional systems
- Environmentally friendly
- Resistant to dirt
- Very little maintenance required, no wearing parts that have to be replaced at specified intervals
- Travels of up to 500 m and more possible

How the igus® coupling works:



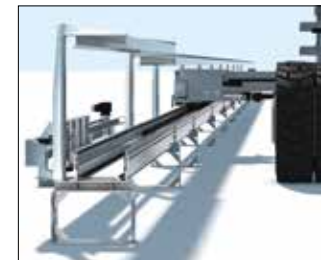
The RTG is coupled to the electrical supply system during operation in the stack ...



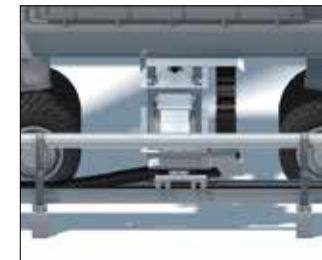
... the igus® e-rover reliably transmits all power, data and signals (including FOC) ...



... once coupling is complete, the RTG is operated electrically offering low emissions ...



... compensation of horizontal deviations ...



... and vertical deviations (height differences) ...



... igus® e-rover saves costs and improves the performance of the technical equipment

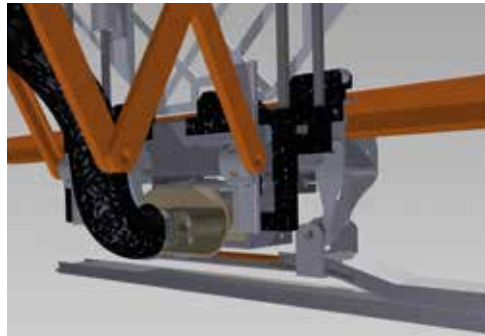
d-rover – data transmission

RTG coupling for data: up to 10 Gbits

The system combines reliable and uninterrupted high-speed data transmission (maximum data rate of 10 Gbits), with FOC cables. Suitable for HD video streams and travels of 800 m and more.

 www.igus.eu/e-rover

- Reliable transmission also with FOC signals with data rates of 10 Gbits
- Several fillings and travels
- Environmentally friendly
- Travel 800 m and more
- Reliable coupling and uncoupling
- Slim design



Vertical cable guide

guidelok slimline P: 80% less guide trough costs

guidelok slimline P – reliable vertical cable guide up to 50 m

In highly dynamic storage and retrieval systems a speed for the horizontal movement exceeding in 7 m/s is not uncommon. With the igus® guidelok slimline, the e-chains® are guided safely, even at very high speeds.

- Up to 7 m/s and 10 m/s²
- Save up to 80% troughs
- Saves costs and weight significantly
- For hanging systems up to 50 m
- No swinging of the chain®, high reliability due to the lock mechanism and guiding rails
- Faster and easier installation
- Reduced noise
- Easy access for servicing
- Energy + data + media are safely and smoothly transmitted in one system

 www.igus.eu/GLSLP



Passenger lift: Cables, guided by guidelok slimline

As assembled system

readychain®: chain - cable - guarantee ... delivered in 3-10 days



readychain® – fully harnessed systems in 3-10 days

1,600 systems produced per week in 12 readychain® factories around the world – assembly time optimised to increase your cash-flow.

- Eliminate storage costs for cables, e-chains® and connectors
- Cut turnaround times by half
- Flexibility when orders vary
- Reduce the number of suppliers and orders by 75%
- Minimise your machine downtime
- igus® system guarantee – depending on the application

 www.readychain.eu



Pre-assembled systems of up to 200 m are possible



readychain® installation on a bulk-material handling crane with the help and support of igus®. The weight of the e-chain® including chainflex® is more than 2 t



Delivered ready for installation and just in time

readycable®: harnessed drive cables ... in 24-48h



readycable®

igus® provides more than 4,000 harnessed cables for drives according to 24 different manufacturer standards. Professionally produced, 100% tested.

 www.readycable.eu

Installation, retrofit, monitoring

Save time and money on maintenance and installation of your energy chain systems®

Design, harnessing, delivery up to complete assembly of energy chains® with all components

Machines must work reliably and without problems. This requires reliable energy chain systems® and cables, which guarantee a long service life and a quick service, by which machine downtimes can be avoided or reduced in case of emergency.

 www.igus.eu/assembly

Our service:

- Predictable fixed cost for the installation, maintenance or inspection of energy supply systems on your system
- Fast and accurate installation and maintenance of all components by qualified specialists
- Minimal down time
- Products and services (energy chains®, cables, strain relief, guide troughs, etc.) from a single source – less logistics costs for you
- igus® system guarantee – depending on the application
- Online installation-cost calculator – Calculate the costs quickly



New installation



Upgrades / Replacement



Chain monitoring



Repairs

Mobile shore supply ...

igus® quayside connections: Different technologies ...

The materials handling capacity at the quayside is the crucial criterion for the economic efficiency of a container terminal. Stationary shore terminal boxes restrict the mooring position of the ship to be loaded or unloaded and reduce economic efficiency; igus® energy supply solutions eliminate this restriction as they make the shore connection mobile. This ensures that the container terminal is highly flexible and therefore economically efficient

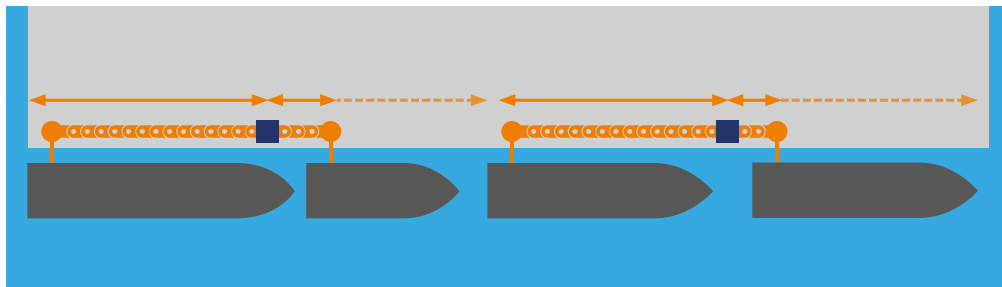
- Seawater, oil, corrosion and weather resistance
- Certified and with igus® system guarantee
- Perfect fit and ready to connect, all from a single source
- Low weight but very robust
- No slip ring, no gearbox and no additional drive
- With control unit
- Free cable selection with easy cable change or addition
- Very little preventive and corrective maintenance necessary

 www.igus.eu/shorepower

Stationary shore supply



igus® mobile shore supply



... flexibility

... always the perfect match for your application



igus® rol e-chain® guided in the shaft

The optimum solution for greenfield terminals



igus® rol e-chain® on stilts construction

The space-saving solution for brownfield terminals

Tested! Service life ...

Tested in the 2,750 m² chain and cable laboratory in Cologne.
4,100 tests, 7,512 findings added to the electronic database,
10 billion e-chains® cycles per year for chains® and cables ...



Better products for less – a key element is the industry's largest test lab. 2,750 m² lab, more than 15,000 tests and 2 billion test strokes per year

The igus® lab and field experience

Cutting costs while also guaranteeing maximum process reliability - only those who conduct intensive research and testing will successfully bridge this gap. The industry's largest test lab conducts more than two billion test cycles per year on a total of 107 test rigs.

Our mechanical engineering components pass the test presented by production reality because they have already passed this test before leaving the igus® warehouse.

 www.igus.eu/test



Polymer bearings technology: tested a thousand times ... under real conditions

... predictable

Tested, tested, tested ... For example:



Many types with fire class UL94-V2 or V0



Service life test under high vibration



Test for torsion with e-chains® and chainflex® cables



Determining the maximum e-chain® sag, as a "chain-in-chain" solution in this example



Outdoor test facility with up to 240 m travel for the 24 hours outdoor test



Determination of the maximum service life, tested in e-chain®. More than 65 million strokes

Low maintenance ...

Ship-to-shore cranes



Ship-to-shore cranes

Travel	120 m
Max. speed	max. 4 m/s
Max. acceleration	0.5 m/s ²
e-chain®	P4.56.20.300.S40.0.AG
chainflex® types	CF300 / CF10 / CF9 / CFLG
Location	China
More references	Europa
In use since	2009



Ship-to-shore cranes

Travel	99.8 m
Max. speed	3.5 m/min.
Max. acceleration	0.8 m/s ²
e-chain®	4040CR.15.200.S10.0.E
Location	Europe
More references	worldwide
In use since	2009



Ship-to-shore cranes

Travel	118.5 m
Max. speed	210 m/min.
e-chain®	4040RHD.21
chainflex® types	CF300 / CF9 / CF10 / CFLG
Location	Europe
More references	worldwide
In use since	2003



Ship-to-shore cranes

Travel	78.5 m
Max. speed	120 m/min.
Max. acceleration	0.5 m/s ²
Cycles/year	42,000
e-chain®	5050R.27.250.0
chainflex® types	CF300 / CF11 / CF9
Location	Europe
More references	worldwide
In use since	1999

... no spare parts

Bulk-material handling cranes



Bulk-material handling crane

Travel	26.5 m
Max. speed	1 m/s
Max. acceleration	0.5 m/s ²
e-chain®	4040CR.18.200.0
chainflex® types	CF9 / CFBUS / CF300
Location	Germany
More references	Europa
In use since	2009



Bulk-material handling crane

Travel	224 m
Max. speed	40 m/min.
Max. acceleration	0.2 m/s ²
e-chain®	4040CR.22.300.0
chainflex® types	CF11 / CF9 / CF34
Location	China
More references	worldwide



Bulk-material handling, quayside operation

Travel	195 m
Max. speed	20 m/min.
Max. acceleration	0.2 m/s ²
e-chain®	5050CR.35.300.0
chainflex® types	CF300 / CF9 / CF11
Location	Germany
More references	Europa, Asia

... corrosion resistant ...

Ship unloading crane



Ship unloading crane

Travel	151.5 m
Max. speed	300 m/min.
Max. acceleration	0.5 m/s ²
e-chain®	4040CR.15.250.0
chainflex® types	CF12 / CF11 / CF9
Location	Canada
More references	Europa, Asia
In use since	1998



Ship unloading crane

Travel	106 m
Max. speed	240 m/min.
Max. acceleration	0.6 m/s ²
e-chain®	5050RHD.12/15/12.300.0
Location	Europe
More References	worldwide
In use since	2004



Ship unloading crane

Travel	441 m
Max. speed	30 m/min.
Max. acceleration	0.1 m/s ²
e-chain®	5050R.28.300.0
chainflex® types	CFCRANE
Location	Asia
More references	Europa, Canada
In use since	2002

... space-saving ...

RTG / RMG



RTG

Travel	19.5 m
Max. speed	60 m/min.
Max. acceleration	0.4 m/s ²
e-chain®	400.25.250.0
chainflex® types	CF300 / CF34 / CF9 / CF11
Location	Panama
More References	worldwide
In use since	2000



RMG

Travel	69 m
Max. speed	120 m/min.
Max. acceleration	0.4 m/s ²
e-chain®	4040R.31.250.0
Location	Europe
More References	worldwide
In use since	2001



Container RMG

Travel	113 m
Max. speed	2.5 m/s
Max. acceleration	0.5 m/s ²
e-chain®	P4.56.20.300.S40.0.AG
chainflex® types	CF300, CF330, CF9, CFLG
Location	Germany
More references	Asia
In use since	2009



RTG

Travel	20 m
Max. speed	60 m/min.
Max. acceleration	0.4 m/s ²
Cable weight	9.8 kg/m
e-chain®	4040.46.300.0
chainflex® types	CF34 / CF9 / CF11 / CFLG
Location	Russia
More References	worldwide
In use since	2003

No additional drives ...

Grab cranes



Grab crane	
Travel	115 m
Max. travelling speed	165 m/min.
Max. acceleration	0.7 m/s ²
e-chain®	5050RHD.30.300.S10.0.E
Location	Europe
More References	worldwide
In use since 2007	



Grab crane	
Travel	28.6 m
Max. speed	80 m/min.
Max. acceleration	0.3 m/s ²
e-chain®	400.25.300.0
chainflex® types	CF30 / CF31
Location	Europe
More References	worldwide
In use since 2000	



Grab crane	
Travel	21.3 m (trolley) / 52 m (crane)
Max. speed	1.33 m/s
Max. acceleration	0.25 m/s ²
e-chain®	5050R.27.300.S10.0 / 5050R.35.350.S10.0
chainflex® types	CF5 / CF6 / CF30
Location	Europe
More references	Europa
In use since 2003	

... and steel construction

Mining crane / Garbage crane



Mining crane	
"Rotating travel"	10 m
Max. speed	0.1 m/s
Max. acceleration	0.5 m/s ²
e-chain®	600.35.300/4650.0
chainflex® types	Motor, data and control cables
Location	Europe
More references	Europa
In use since 2001	



Gantry crane	
Travel	20 m
Max. speed	1 m/min.
Max. acceleration	1 m/s ²
e-chain®	5050.40.200.0
chainflex® types	CF9
Location	Europe
More references	Europa
In use since 2004	



Spreader	
Travel	8.4 m
Max. speed	18 m/min.
Max. acceleration	0.1 m/s ²
e-chain®	3838.07.150.0
Location	Asia
More References	worldwide
In use since 1998	



Spreader	
Travel	8.4 m
Max. speed	15 m/min.
Max. acceleration	0.1 m/s ²
e-chain®	3838.10.125.0
Location	Asia
More References	worldwide
In use since 1998	

Energy, data, media ...

Straddle carriers / Goliath cranes



Straddle carrier

Travel	12 m vertically
Max. speed	17 m/s
Max. acceleration	1 m/s ²
e-chain®	14550.06.200.0
chainflex® types	CF45 / CF9, additional pneumatic hoses
Location	worldwide
More References	worldwide
In use since	2006



Goliath cranes

Travel	195 m
Max. speed	40 m/min.
Max. acceleration	0.1 m/s ²
e-chain®	5050R.40.250.0
chainflex® types	CF300 / CF9 / CF11
Location	Asia
More references	USA
In use since	2001



Goliath cranes

Travel	123 m
Max. speed	40 m/min.
Max. acceleration	0.5 m/s ²
e-chain®	40.15/15.250.0
Location	Asia
More references	USA
In use since	1997

... guiding in one system

Reach Stacker



Reach Stacker

Travel	7.8 m
Max. speed	15 m/min.
Max. acceleration	0.25 m/s ²
e-chain®	4040.15.250.0
Location	Europe
More References	worldwide
In use since	2004



Reach stacker (cabin movement)

Travel	2 m
Max. speed	5 m/min.
Max. acceleration	0.25 m/s ²
e-chain®	3838.20.150.00
Location	Europe
More References	worldwide



Reach Stacker

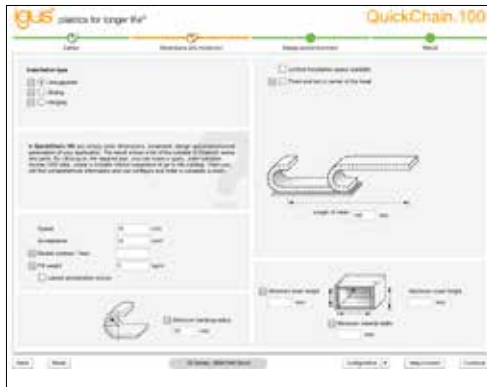
Travel	7.6 m
Max. speed	15 m/min.
Max. acceleration	0.2 m/s ²
e-chain®	E4.56.15.200.0
Location	Asia
More References	worldwide
In use since	2008

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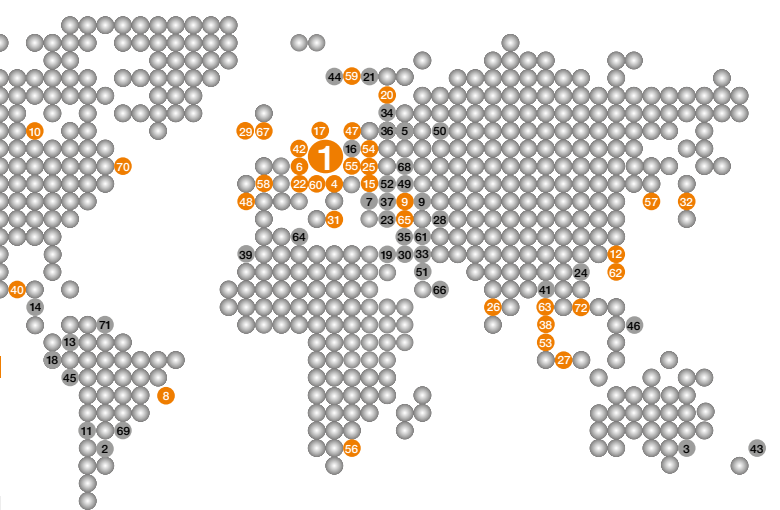
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