indoor cranes

motion plastics® solutions for indoor crane manufacturers and users

plastics for longer life®

... www.igus.eu/indoorcranes
Reduce costs ...  

igus® energy chain® solutions for indoor crane manufacturers and users.

Whether single girder or double girder cranes, roller or box girder section cranes, as well as overhead travelling, ceiling or boom cranes, igus® offers the ideal energy supply solution for all requirements with flexible chainflex® cables as an alternative to bus bars, festoons or motor drums. The space-saving igus® energy chain system made of high-performance plastics for trolley drive can be mounted either directly to the crane girder or on top of it easily and safely.

The main advantages of using igus® products:

- Space-saving design, higher clearance tolerances
- No additional drives or steel structures are necessary
- No control system is necessary
- Synchronous run of trolley and energy chain system
- Quick and easy assembly (guidefast guide trough)
- Replacement and/or installation of cables is possible quickly and easily
- High-speed data transmission using fibre optic cables (FOC)
- All media types guided in one system: energy, data, gases, fluids
- Easy maintenance lowers your downtime
- No spare parts
- Spare part guarantee for ten years and more
- TÜV tested

With more than 100,000 igus products from stock, every customer can find the right solution. Injection moulding and mass production guarantee a cost effective solution for all motion plastics® applications, from rugged energy supply systems and flexible cables to lubrication- and maintenance-free plain bearings.

Our online tools also enable you to reduce process costs. igus® delivers from stock in 24-48 hours! Also visit our industry website

[www.igus.eu/indoorcranes](http://www.igus.eu/indoorcranes)

We look forward to your call or email.

... Improve technology ...

e-chain® solutions for indoor cranes. Advantages compared to the example of festoon or bus bar systems.

- Compact installation
- A loop station is not necessary, the trolley is able run on the full beam length!
- No down hanging cable loops!
- e-chainsystems® prevens the cables from any external mechanical stress, i.e. uncontrolled whipping, swinging, getting stuck
- No additional drives or steel structures are necessary
- Spare part guarantee for ten years
- Quick and easy installation of additional cables
- Quick and easy installation of additional cables
- e-chainsystems® for speeds up to 10 m/s
- e-chainsystems® make travels up to 800 m possible
- Synchronous run of trolley and e-chainsystem®

Without e-chainsystem®

With e-chainsystem®
Secure transmission of...  
igus® products for indoor cranes

1. **guidefast**
   - Trough for quick and easy side mounting on the crane girder of standard indoor cranes.
   - [www.igus.eu/guidefast](http://www.igus.eu/guidefast)

2. **e-spool**
   - The alternative to a cable reel - reduce cable wear and reliably guide different media.
   - [www.igus.eu/e-spool](http://www.igus.eu/e-spool)

3. **liftband**
   - Up to 13 m for vertical applications as an alternative to the zig-zag solution.
   - [www.igus.eu/liftband](http://www.igus.eu/liftband)

4. **Heavy duty rol e-chains®**
   - Reduce drive output for long travels by up to 57% by rolling (instead of sliding).
   - [www.igus.eu/role](http://www.igus.eu/role)

5. **Floating moving end**
   - The floating moving end provides compensation and as a result, a force-free run of the energy chain® into the guide trough on moving arms with strong lateral offset.
   - [www.igus.eu/FTA](http://www.igus.eu/FTA)

6. **Aluminium-trough system**
   - Removable aluminium trough system for applications ranging from basic to heavy duty.
   - [www.igus.eu/s-alu](http://www.igus.eu/s-alu)

7. **chainflex® cables**
   - Highly flexible chainflex® cables for energy supply systems. Fail-safe for all indoor crane applications. Meets standards and guidelines such as NFPA 79, UL, CSA, VDE, Interbus and Profinet.
   - [www.igus.eu/chainflex](http://www.igus.eu/chainflex)

8. **e-chain® E2/000**
   - Light and versatile e-chains®. Easy assembly, high level of stability paired with quiet operation, long cable life and a wide variety of mounting options.
Quickly assembled to the crane girder

- **guidefast trough** – for crane girders on standard indoor cranes.
  - Up to 80% less assembly time
  - Fits virtually any standard crane girder
  - Suitable for any side-mounted application – not only on cranes
  - Simplified electrical hook-up, fixed installation
  - Permanently installed cable can be fixed to the trough brackets
  - Less abrasion: Optionally available with plastic glide bar
  - Very low weight

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

[www.igus.eu/guidefast](http://www.igus.eu/guidefast)

lightweight and chemical resistant

- **Modular polymer guiding system: guidelite plus**
  - The guidelite plus guide system is a guide trough enclosed on both sides and made entirely of plastic components. Very quick and easy to install, save costs twice in terms of installation costs and the purchase price.
  - Resistant to chemicals and corrosion
  - Time saving due to fast installation
  - Low weight, lighter than guide troughs made of metal
  - Considerably less expensive than a comparable stainless-steel trough

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

[www.igus.eu/guidelite](http://www.igus.eu/guidelite)
Aluminium troughs ... light and cost effective

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 at high-speed
● Corrosion resistant, seawater resistant aluminium profile
● Flexible assembly - Fastening on substructure independent of profile lengths and butt joints
● Interface connector – plastic with snap mount
● Plastic glide bar made of high-molecular-weight PE
● Trough can be fixed directly to the surface or on a C-profile - inside or outside of the trough
● Glide pads and a rubber profile that can be inserted for minimizing operation noise
● Heavy duty bracket for a secure hold even in demanding applications
● U-profile for mounting the trough or mounting bracket

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

www.igus.eu/s-alu

Conductive in accordance with DIN EN 61537

Steel guide troughs – Quickly and easily assemble the suitable guide trough for your application

● Very stable and robust guide trough made of steel
● Easy assembly due to installation set for joint and attachment surface connection
● Easy mounting directly to the base of the U-profile
● Large selection, 2-piece, easily adjusted to the chain width
● Available in galvanised steel and stainless steel (Materials: 1.4301, 14404, 14571)
● Plastic glide bar made of PE
● Side parts are assembled and mounted to the support with the corresponding distance
● Fixed end module option, for fast and easy mounting - without any drilling available
● Conductivity according to DIN EN 61537 - standard

Optional: available with specially reinforced mounting bracket. For particularly harsh environments!

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

www.igus.eu/guides
The alternative to a cable drum...

**e-spool modular construction kit – The alternative to a cable drum: reduce cable wear and reliably guide different media**
- No tensile load on the cables
- Different media and diameters possible in one reel
- Energy supply possible in all directions (horizontal, vertical, diagonal... everything works with one chain)
- Space-saving - no "chain festoons"
- No lower run remains, paths remain unobstructed
- Cable diameters up to 19 mm

![www.igus.eu/e-spool](https://www.igus.eu/e-spool)

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

**Reduced space...**

**.liftband – For vertical applications up to 13 m height.**
- Alternative to zig-zag solution
- Lighter and smaller installation space
- Vertical applications implemented with ease
- Speeds up to 1 m/s
- Acceleration up to 2 m/s²
- Max. extension length 13 m
- Cable bend radius up to 250 mm

![www.igus.eu/liftband](https://www.igus.eu/liftband)

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

Compensate for errors in parallelism
The igus® compensator for gliding applications. The floating moving end provides compensation and as a result, a force-free run of the energy chain into the guide trough on moving arms with strong lateral offset. This ensures that the service life of your application is extended.

- Small, light and affordable
- Compatible with PPDS basic analysis unit
- The basic “floating moving end” can be used with the following chain series: 2500, 2700, 3500, E4.28, E4.32, E4.42
- Maximum travel distance: 100 m

www.igus.eu/FTA

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 signaled 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
Long travels ...

The versatile one – System E2/000
The E2/000 system symbolises easy and versatile installation combined with ruggedness - high stability combined with low-noise operation, long service life for cables and many mounting options. Mechanical engineers all over the world rely upon this range. The design is consistent within all E2/000 variants. It is the standard product range for indoor crane manufacturers around the world.

www.igus.eu/E2000

Implement long travels in an energy-efficient and cost-effective way – E2/000 rolling e-chains®
- Required drive power is reduced up to 57% while increasing the service life of the e-chain®
- Speeds up to 2 m/s
- Available as a ready-to-install, assembled system
- System with many accessory parts

www.igus.eu/E2000-rol

For all installation types: suspended, upright, unsupported, etc.
Long gliding travels up to 150 m
Save drive power using rolling movements
Long rolling travels of 150 m and more
Suitable chainflex® range of cables from stock, also assembled with connectors

... energy-efficient

One e-chain® series for almost any application – System E4.1
The system E4.1 combines all advantages of 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 accessory components 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

Lower drive power for moving energy chains – E4.1 standard system as a rolling e-chain®
- Very quiet operation thanks to the profile rollers
- Even distribution of the profile rollers and normal chain links as well as "ramps"
- Energy-efficient – reduce drive power by up to 57%
- Max. speeds: 10 m/s

www.igus.eu/E41-rol

For all installation types: suspended, upright, unsupported, etc.
Long gliding travels up to 400 m
Save drive power using rolling movements
Long rolling travels of 600 m and more
Suitable chainflex® range of cables from stock, also assembled with connectors
Profile roller e-chain®: For very high fill weights and speeds
Reliable, quiet, 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

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 m 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

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/heavyduty

ESD & ATEX – e-chains®
- ESD material tested with over 10 million cycles for the highest requirements
- Snap-open e-chains® with mounting brackets and interior separation in ESD and ATEX version available from stock.
- Standardised product - igumid ESD with PTB certificate
- Proven over years of use in ATEX areas
- Short delivery times: 24h from stock

www.igus.eu/ESD
Torsional & circular motion ...

... 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 minimum installation space
- Rotating speed 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

Zig-zag solutions ...

... for reliable vertical application guidance

Modular, silent, space saving - vertical guidance for energy, data and media.

The modular design of igus® e-chains® facilitates this space-saving and unconventional solution. It is necessary to reliably guide a wide variety of cables in the vertical movement for many crane applications. Lack of space in particular almost invariably presents difficulties. The photo above shows an e-chain® in a zig-zag configuration. The "folded" e-chain® is stored in a custom-made basket in the platform below. If the platform is raised, the e-chain® unfolds, generating little or no noise. Please consult igus® for these kinds of applications.

www.igus.eu/zigzag

Zig-zag application:
Nearly all existing cranes can be converted from conventional solutions – festooning, motor cable drums and bus bar systems – to igus® e-chainsystems®.

Improve technology ...

... reduce costs solutions – festooning, motor cable drums and bus bar systems.

Rotating applications solved with igus® RBR systems ...

... rotation angle up to 540° and more possible

Gliding e-chainsystems® in harsh environments

High loads as a result of brick dust

e-chainsystems® assembled on the crane girder

e-chainsystems® at the end of the beam
**Improve technology ...**

Nearly all existing cranes can be converted from conventional systems – to igus® e-chainsystems®.

**... reduce costs**

solutions – festooning, motor cable drums and bus bar

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*liftband, for vertical applications*

*E4 e-chainsystems® in a steel guide trough on a long travel*

*Save drive energy through rolling e-chains®*

*Assembly crane, zig-zag solution*

*High reliability despite extreme levels of contamination*

*Very long travel on a crane, guided reliably in igus® trough systems*
Cable design ...

More than 1,040 igus® cables from stock

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

- Wear resistant TPE, PUR and oil resistant PVC outer jackets
- Halogen free and/or flame retardant materials
- Smallest bend radii down to 4 x d
- 36 months guarantee for chainflex® cables acc. to igus® guarantee specifications
- Various approvals and conformities

Tested! Tested! Tested!

Cycle frequency

<table>
<thead>
<tr>
<th>Cycle frequency</th>
<th>5,000,000</th>
<th>1,000,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sample A</td>
<td></td>
<td></td>
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</tbody>
</table>

Corkscrew after 145,000 double strokes (Sample B)

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

... chainflex® for indoor cranes

Overview of chainflex® cables for the crane industry

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 shell
- Oil and bio oil resistant
- PVC-free/halogen-free
- 0.6/1kV nominal voltage
- 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
- Oil and bio oil resistant
- 0.6/1kV nominal voltage
- Flexible at low temperatures
- PVC-free/halogen-free

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

- chainflex® data cables are available for all throughput data systems in e-chain® 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.
As assembled system ...

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

*readychain®* – fully harnessed systems in 3-10 days
1,000 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 downtimes
- System guarantee - depending on application

Assembled igus® readychain® systems: individual or serial production

www.readychain.eu

**readychain® assembly rack**

Save 80% at prototyping. Assembly transport rack for ready-to-install energy supply systems.

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

**readycable®**
igus® provides more than 3,200 harnessed cables for drive technology to 22 different manufacturer standards. Professionally produced, 100% tested.

www.readycable.eu

Installation ...

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](http://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

New installation

Upgrades / Replacement

Chain monitoring

Repairs
More products of the igus® motion plastics® range

Lubrication- and maintenance-free ...

iglidur® plain bearings
- Media-resistant
- Temperature-resistant
- Corrosion free
- Very low weight
- Foodstuff compatible
- Special dimension and designs available
- Predictable service life

www.igus.eu/iglidur

igubal® spherical bearings
- Self-aligning bearings components
- Easy to install
- Adapt to all angle variations

www.igus.eu/igubal

drylin® shafts
- 8 different shaft materials
- Aluminium for low weight
- Round or supported
- Stainless steel for high corrosion resistance
- Dynamic and metal-free with carbon
- Individual processing is possible

www.igus.eu/drylin-shafts

drylin® lead screw technology
- dryspin® technology: Higher efficiency due to optimised thread angle
- Self-locking trapezoidal and metric threads
- Lead screw nuts made from 5 iglidur® materials

www.igus.eu/leadscrew-technology

... cost-effective, online calculation available

drylin® linear and drive systems
- Dimensionally interchangeable with standard recirculating ball bearings
- Resistant to corrosion and chemicals
- Resistant to dirt
- Low weight enables highest cycle numbers and maximum acceleration rates
- Resistant to impacts and vibrations, quiet
- Predictable service life

www.igus.eu/drylin

xiros® polymer ball bearings
- High chemical and corrosion resistance
- For temperatures up to +150°C
- Non-magnetic
- Low weight

www.igus.eu/xiros
Tested! Service life ...

igus® chainflex® cables for e-chainsystems®. 2,700 cables tested per year. 58 test facilities. Tested, tested, tested ... For example:

**Test 4003:**
Data cable
65 million strokes tested
Data cable CF113 tested in the e-chain®. More than 65 million strokes with a bending factor of 5.4 x d.

![Test 4003](www.chainflex.eu/test4003)

**Test 4011:**
Fibre optic cables
50 million strokes tested
Control cable CFLG.2LB tested in e-chain®. More than 50 million strokes with a bending factor of 4.2 x d.

![Test 4011](www.chainflex.eu/test4011)

**Test 2233:**
Control cable
41 million strokes tested
Control cable CF5.10.25 tested in e-chain®. More than 41 million strokes with a bending factor of 5.3 x d.

![Test 2233](www.chainflex.eu/test2233)

**Test 3089:**
Control cable
76 million strokes tested
Control cable CFBUS.045 tested in e-chain®. More than 76 million strokes with a bending factor of 9.4 x d.

![Test 3089](www.chainflex.eu/test3089)

... predicted accurately.

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

Part of the igus® laboratory, Cologne.

Continuous operation and wear tests on short and long travels

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

Cold test at -40 °C for chainflex® cables and e-chains®

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

Visit our industry web pages for more information, products, application examples and useful online-tools.

www.igus.eu/indoorcranes

... quick and reliable

The igus® delivery service
Over 97% availability of all catalogue parts – no need for you to hold stock
● Over 100,000 products from stock
● No minimum order value
● No surcharges for small quantities
● No costs for cutting cables
● No packaging costs

www.igus.eu/24

Modern injection moulding technology
The igus® GmbH quality policy is based on the objective of identifying and meeting customer needs, and of always being a professional partner and reliable supplier. igus® has always been committed to producing products of the best possible quality and consistently developing innovative solutions.

www.igus.eu/test

For any task – in any batch size

Different industries need different solutions. Whether in mechanical engineering, automotive manufacturing or in the robot industry – igus® offers customised support for specialised applications. igus® already has many years of experience and specialised resources for many industries

www.igus.eu/industry

Quickly find and configure products and calculate service life – all online.
Using our online product finders, you can find the right igus® product and get a service life prediction.

www.igus.eu/online

igus® motion plastics®

One vision has been driving us for more than 50 years – motion plastics®: moving parts made of plastic that cost less and last longer. Our core technology consists of tribo-polymers – high-performance plastics, which we have optimised for friction and wear. The technology has made us into a world leader for developing and manufacturing energy supply systems and plain bearings.

www.igus.eu/online
igus® is certified in accordance with ISO 9001:2008 and ISO/TS 16949:2009 in the field of energy supply systems, cables and harnessing, as well as plastic bearings.

Free of charge! Discover more about the latest trends and innovations from the world of igus® motion plastics®. Many exciting applications and videos for your industry. Register here: www.igus.eu/newsletter

Your contact person for your industry and your country: www.igus.eu/contact

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