

maritime.

igus® solutions for the shipbuilding
and offshore industry



plastics for longer life ... igus

... industry

... www.igus.eu/maritime ...



Frank Schlögel

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Resistant to sea water, tough, light, lubricant- and maintenance-free; igus® plastic solutions for the maritime industry.

Tried and tested in numerous applications on the high seas: energy chain systems® and plain bearings from igus® withstand the toughest environments. They provide reliable energy supply and allow highly dynamic movements with a long service life in wind turbines, oil rigs and the ship building industry. We test all products in the largest test laboratory in the industry under real world conditions.

In this way we can guarantee the reliability of our products and implement tailored solutions for energy chain systems® and plain bearings in a wide variety of customer applications. Travels for e-chains® of up to 800 metres, cable fillweights of 600 kg/m or high edge loads of up to 250 MPa with plain bearings. More than 200,000 customers per year rely on motion plastics® solutions from igus®.

From the port area to the high seas, we offer igus® products for the offshore industry:

e-chains®:

- Maintenance-free, resistant to sea water and oil
- Fill weights of up to 600 kg/m
- Strong, yet lighter than steel
- Corrosion-resistant
- Conductive ESD options

chainflex® cables:

- Certified cables, e.g. according to Germanischer Lloyd
- Flexible down to -40°C, UV-resistant
- Resistant to oils according to MUD NEK606
- Specifically designed for highly dynamic movements in energy chains®

iglidur® bearings:

- Dry-running and lubrication-free
- High edge loads and surface pressure up to 250 MPa
- Resistant to dirt

With our 30 online tools you can also save design costs. igus® delivers in 24 to 48 hours from stock! Visit our industry website

 www.igus.eu/maritime

I look forward to speaking with you.

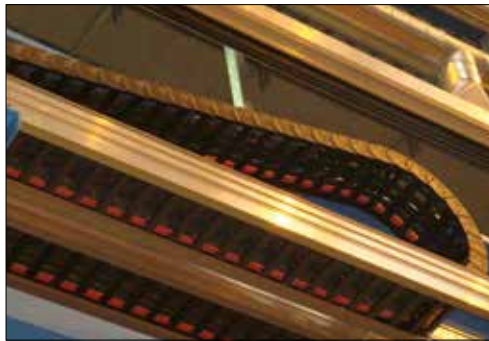
Frank Schlögel



**Cost down,
service life up!**

Prevent downtime in shipyards ...

... with igus® e-chainsystems®



Meyer Werft Papenburg

Eight gantry cranes connected in series travel a total length of 180 m. Both the longitudinal and transverse travels are reliably supplied by igus® e-chains® from the E4/4 range. The compact design of the e-chain® and guide trough allows the system to integrate seamlessly into the beam seamlessly leaving no cable loops hanging in the crane beam area or field of view.



Reliable in offshore applications



... Rig skidding



Working since 1993

e-chain®: 50.20/20/20/20.400.0

Fill weight: 39 kg/m

Travel: 42 m

Claymore drilling rig, North Sea

e-chain®: 5050.18/18/18/18.450.0

Fill weight: 36.5 kg/m

Travel: 29.7 m



Jack up rig, China

Transverse travel

Travel: 6,4 m

Fill weight: 37,7 kg/m

Speed max.: 0,3 m/s

e-chain®: 800.40.600.0

Longitudinal travel

Travel: 19,2 m

Fill weight: 74,5 kg/m

Speed max.: 0,3 m/s

e-chain®: 600.25/178/178/25.600.0



... for long travels



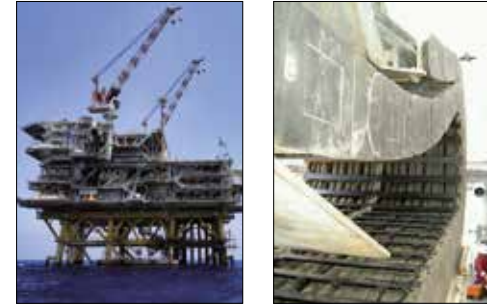
Rig skidding concept with e-chain® E4.350 for large diameter hoses and cables. Smaller cables, can be guided with e-chains® Series E4.168 and E4.112.



AMORAS - long travel reference in the Port of Antwerp

Travel:	137 m
Speed max.:	1,5 m/s
Acceleration:	1 m/s ²
e-chain®:	E4.350R.500.1000.0
chainflex®:	CF300
Total fill weight:	100 kg/m

... and high loads



Jack-up rig, Caspian Sea

Year Built:	2000
Nested e-chains®:	600.45/45.350.0 600.45/45.500.0
Fill weight:	267 kg/m
Travel:	21,5 m



Largest polymer e-chain®...



Flexlay vessel: Seven Waves

The vertical tiltable lay tower works with the biggest polymer e-chain® in the world.

e-chain®: E4.350.800.1000.0

Fill weight: 120 kg/m

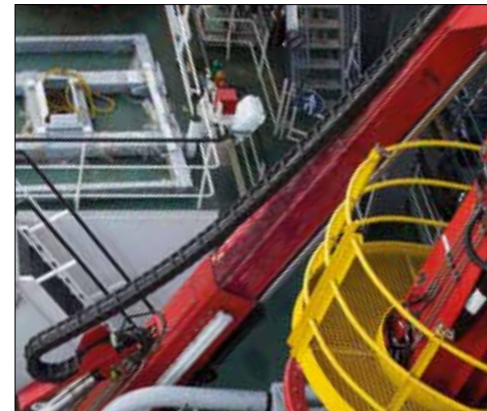


Seven Waves Pipelayer equipped with igus® e-chainsystems®.

... Pipelay vessel



Long travel skidding application with E4.56.



E4.42 working on a Remote Operate Vehicle (ROV).



e-chainsystem® 4040 on a vertical tensioner.



E4.350 at the hinge point of the lay tower.

Robust and seawater-resistant ...

... Pipe handling



Gantry Crane with e-chain® 5050C.26.250.0



Vertical pipe handling systems with opposing e-chains® E4.80.23.300.0



Catwalk machine with e-chain® 5050C.25.200.0



NOV Starracker with Series 600



Starracker with e-chain® 600.20/25/25.500.0



Long travel with e-chain® 5050C.55.400.0

Anchor handling tugs



Anchor Handling Tug supply Vessel.

The A-Frame structure of this vessel makes it possible to use the 5050C.47.400/400.0. e-chain®.

The special design with a “reversed bend radius” allows safe operation in any position on the vessel.

The system was installed and commissioned in 2008.

Deepwater construction vessel (DCV)



Vessel: Aegir

The heavy-duty crane has a maximum rotation angle of 560°. igus® e-chains® guide the cable package for the main hoist and the slewing system.

The lay tower is equipped with two parallel E4.350 e-chains®.

Series E4.1 is used for the tensioners.

Wind farm construction vessel ...

... with 900° multi-rotation modules



The Innovation is a heavy-duty jack-up vessel for installing and maintaining offshore wind farms. The igus® multi-rotation module is the main power supply for the crane which operates around the leg. The 2 layer design allows a rotation angle of 900°.



INNOVATION: Wind farm installation vessel

Operation area: North Sea
Rotation angle: 900°
e-chains®: E4.56.60.200/6000.0
E4.56.60.300/6000.0
chainflex® cables: CF300, CF34, CF10 CFPE,
CFLG, CFBUS



igus® has designed a customized rotary trough system for the Innovation and Vidar. Both systems were developed by the igus project team in Cologne before they were assembled at Crist shipyard in Gdynia, Poland.



Heavy Lifting ...

... with heavy duty rol e-chains®



Sheerleg Crane 1, Singapore

e-chain®: 5050.15/17/15.300.0
 Fill weight: 34,6 kg/m
 Travel: 54 m
 Speed: 1,0 m/s
 Acceleration max.: 1,0 m/s²
 Installation/commissioning: 2001



Sheerleg Crane 2, Singapore

e-chain®: 5050RHD.18/18/18.300.S10.0.E
 Fill weight: 45 kg/m
 Travel: 74,4 m
 Speed: 1,2 m/s
 Acceleration max.: 1,0 m/s²
 Installation/commissioning: 2014



Heavy duty ...

Due to the igus® rotational module in this heavy-duty crane, it can rotate by 540°. Other areas equipped with igus® products on such vessels are:



... heavy lift vessel



... on welding equipment.



... on pipe handling equipment.



... on handling systems.



... on the tensioner.

Reliable energy supply ...



Power supply for rotary crane

Rotation angle: 470°
Speed: 1.82 m/s²
e-chain®: 4040C.40/40.300/3792.0
chainflex® cable: CF27, CF11, CF14,
CF Coax, CFLG

Split guide trough system
Total weight of the e-chain® and cables: 3.5 t



... for heavy-duty cranes



Opposing series 5050 e-chains® with igus® guide trough system and support structure – outer diameter: 12 m, rotation angle: 340°.

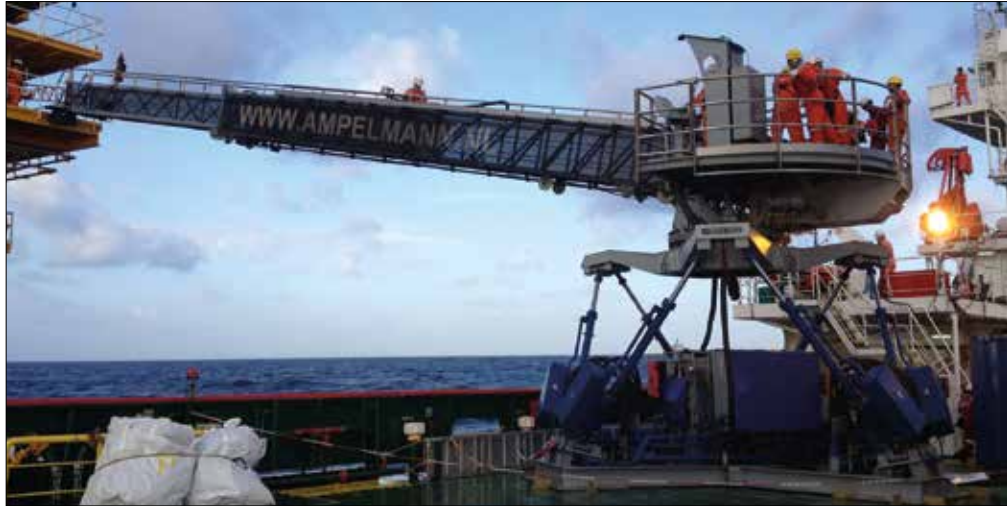


Rotary system with “floating islands” for safe operation on rough seas – rotation angle 540°



e-chain® 4040C

Motion compensation platform



Self-stabilizing "Ampelmann" platform

The "Ampelmann" platform automatically compensates all wave movements, so that oil platforms can be worked on safely using a ship as a base. In order to do this the platform is supported by several hydraulic cylinders. The energy supply is guaranteed by igus® triflex® R energy chains®.

e-chains®: E4.56.17.200.0
chainflex® cables: CF78.UL.15.25, CF78.UL.15.25,
CFBUS.045, CFPE.100.01

Deep sea drilling rig



Deep sea drilling rig

The Vibrocooler VKG-6 drill, is used in water depths of up to 200 metres, controlled offshore from a ship. igus® chainflex® servo cables from the CF27.D series with two shielded control pairs are used for the energy supply and to control the drilling head, as well as for data transmission to display the drilling depth.

Explosion protection on FPSO ...

... thanks to ATEX/ESD solutions



ATEX version of the igus® e-chainsystem®, series E4, harnessed with hydraulic hoses and igus® chainflex® cables. Here shown on a test stand, now in operation on the Dalia FPSO (linear motion of mooring).




igus® rol e-chain® on a maintenance crane.

e-chain®: 2828R.10.200.0.E
 Travel: 202 m
 Speed max.: 1.5 m/s
 Acceleration max.: 1.0 m/s²

ATEX material

The conductive material igumid ESD has offered explosion protection and protection against electrostatic buildup since 2002. This material is in turn based on a material which was developed as early as 1992, modified in 2002 and certified by the PTB as far back as eleven years ago.

- igumid ESD with PTB certificate.
- all standard e-chains® are available in igumid ESD.
- tested and successfully used in explosion-protection areas for many years.
- identification:  II 2 GD – special ESD e-chain® colour: grey (RAL 7015)



E4.350 to be installed on a skidding application on an FPSO. Stainless steel guide trough with hook attachment.

e-chain®: E4.350.450.1100.0.ESD.E44
 Fill weight: 108 kg/m
 Travel: 14.7 m

High loads, corrosion-free ...

Save cost and increase productivity!

Lubrication- and maintenance-free products for the shipbuilding and offshore industry.

The construction of increasingly bigger ships and complex offshore facilities poses high demands on the production processes in any shipyard. igus® products can demonstrate a proven track record of many applications in the world of shipbuilding.

For example, igus® products ensure a reliable energy supply to overhead cranes, welding systems and cutting equipment in shipyards as well as to handling applications on offshore platforms or the rotary movements of heavy-duty cranes. Use igus® products made from high-performance plastics to optimise the service life of your systems while also reducing costs and weight. igus® products are suitable for applications subject to almost any environmental condition: whether hot, cold, humidity or dirt – we can always offer the right solution.

Key benefits:

- Individual problem solutions through the igus® engineering team
- Maintenance- and lubrication-free, predictable service life
- Resistant to heat/cold, corrosion, seawater, chemicals and UV radiation
- Rotation and linear motion are possible
- Easy installation, flexible, reliable and modular



... long service life

Strong, corrosion free, UV and sea water resistant energy supply systems

Polymer e-chains® with inner heights of up to 350 mm and fill weights (additional loads) of up to 600 kg/m.

- Corrosion free and UV resistant
- Strong and maintenance free
- Easy to install and long service life

 www.igus.eu/e-chain



e-chainsystems®

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Cables acc. to “DNV-GL” and mud resistant acc. to NEK 606

The certification of 348 chainflex® cable types with the DNV-GL seal of approval provides further evidence of their high quality for the offshore and cargo ship sectors. With 3,942 certified cable types, we offer more approvals and certificates for e-chain® cables than any other provider. Our chainflex® cables are now also CTP and EAC-certified for the Russian, Belarusian and Kazakh markets! These certificates replace the former GOST certificates.

- Resistant against dirt, mud, oil, sea water and UV
- Highly flexible even at low temperatures (-40°C)
- For the highest demands inside energy chains®

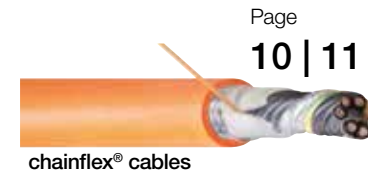
 www.igus.eu/chainflex

Dirt resistant and corrosion-free polymer bearings

Dry running polymer bearings and linear bearings for high loads of up to 150 MPa and use in dirty environments.

- Lubrication-free and dirt resistant
- Low wear even with high loads
- Maintenance free and cost effective
- Also available as a stainless-steel version (drylin® linear bearings)

 www.igus.eu/iglidur



chainflex® cables



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iglidur® polymer bearings drylin® linear technology

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chainflex® cables ...



A world first: chainflex® cables with DNV-GL certificate

New test standard for dynamic cables in moving applications guarantees reliability in maritime equipment.

A total of 348 chainflex® cables have received DNV-GL certification, making them the world's first cables especially designed for energy chains® on ships and in offshore applications. This new test standard for the certificate has been jointly developed by igus® GmbH and the classification association DNV-GL (Det Norske Veritas and Germanische Lloyd). chainflex® cables certified with this certificate can be used on ships and for offshore applications without special certification or concession.

The increase in automation of maritime applications in recent years has also increased the demand for energy chain systems® in this sector. The expertise offered by igus® GmbH, which has almost 25 years experience of design, manufacture and testing in this area, has been used to help develop a testing procedure for guaranteeing the reliability of chainflex® cables on ships and in offshore applications. In creating this procedure,

the two partners used igus® internal standards as a basis for guaranteeing the service life of the cables in moving applications. Consideration was also given to the standard type approval tests used by DNV-GL, which are based on international tests and standards.



DNV-GL certificate

Certified according to DNV-GL classification



NEK 606 – MUD resistance

NEK 606 is a norwegian standard for all cables which are in use in offshore applications. Our PUR outer jackets of 14 selected cables according to the requirements of the MUD oil-test of NEK 606.

... with DNV-GL approval

chainflex® cables

The igus chainflex® range has been and continues to be specially developed, manufactured and tested for e-chains® with a guaranteed service life. More than 1,040 types are available from stock.

- DNV-GL approval
- Mud resistant acc. to NEK 606
- For outdoor applications
- Special design to combat cable breakage
- Perfect for use with e-chains®

 www.chainflex.eu



Tested!

In the largest lab of its kind, igus® Cologne

**1,750 m² lab ... more than 700 cable tests ...
2 billion test cycles ... reliability through practical experience ...**

By conducting over 2 billion test cycles per year in igus®'s own test lab (1,750 m²) we have gained a unique level of knowledge of cables in the area of e-chains®.

For example: cold test

Objective: To determine the maximum service life of igus® chainflex® TPE cables at temperatures of -40 °C.

Test setup: An igus® CF35 TPE cable was moved in an e-chain® in the igus® climate container at a travel of 7 m and a speed of 1.5 m/s at -40°C.

Results: The test was ended after 3.7 million double strokes. The cable exhibits little/or no wear and is fully functional.



In the field



348 chainflex® cables ...

The certification of 348 chainflex® cable types with the Germanischer Lloyd seal of approval provides further evidence of their high quality – including in the offshore and ship sectors.



chainflex® CF77.UL.D – PUR control cable for heavy duty use, oil and coolant-resistant, flame-retardant, notch-resistant, PVC/halogen-free, min. bending radius 6.8-7.5 x cable-Ø www.igus.eu/CF77ULD



chainflex® CF78.UL – PUR control cable for heavy duty use, shielded, oil and coolant-resistant, flame-retardant, notch-resistant, PVC/halogen-free, min. bending radius 6.8-7.5 x cable-Ø www.igus.eu/CF78UL



chainflex® CF9.UL – TPE control cable for extremely heavy duty use, oil and biooil-resistant, PVC/halogen-free, low temperature flexible, min. bending radius 5 x cable-Ø www.igus.eu/CF9UL



chainflex® CF10.UL – TPE control cable for extremely heavy duty use, shielded, oil and biooil-resistant, PVC/halogen-free, low temperature flexible, min. bending radius 5 x cable-Ø www.igus.eu/CF10UL



chainflex® CF240.PUR – PUR data cable for heavy duty use, overall shielded, oil and coolant-resistant, flame-retardant, PVC/halogen-free, min. bending radius 10-12 x cable-Ø www.igus.eu/CF240PUR



chainflex® CFBUS.PUR – PUR Profibus cable heavy duty use, overall shielded, oil and biooil-resistant, flame-retardant, min. bending radius 10-12.5 x cable-Ø www.igus.eu/CFBUSPUR



chainflex® CFBUS – TPE bus cable for extremely heavy-duty use, overall shielded, oil and biooil-resistant, flame-retardant, min. bending radius 10-12.5 x cable-Ø www.igus.eu/CFBUS

... with GL approval



chainflex® CF111.D – PUR system cable for medium heavy duty use, shielded, oil and coolant-resistant, cut-resistant, flame-retardant, min. bending radius 10 x cable-Ø www.igus.eu/CF111D



chainflex® CF113.D – PUR measuring system cable for heavy duty use, shielded, oil and coolant-resistant, flame retardant, PVC/halogen-free, min. bending radius 10 x cable-Ø www.igus.eu/CF113D



chainflex® CF27.D – PUR servo cable for heavy duty use, shielded, oil and coolant-resistant, flame-retardant, PVC/halogen-free, min. bending radius 7.5 x cable-Ø www.igus.eu/CF27D



chainflex® CF34.UL.D – TPE motor cable for extremely heavy duty use, oil and biooil-resistant, flame-retardant, UV-resistant, min. bending radius 7.5 x cable-Ø www.igus.eu/CF34ULD



chainflex® CF35.UL – TPE motor cable for extremely heavy duty use, shielded, oil and biooil-resistant, flame-retardant, UV-resistant, min. bending radius 7.5 x cable-Ø www.igus.eu/CF35UL



chainflex® CF300.UL.D – TPE motor cable for extremely heavy duty use, oil and biooil-resistant, flame-retardant, UV-resistant, min. bending radius 7.5 x cable-Ø www.igus.eu/CF300ULD

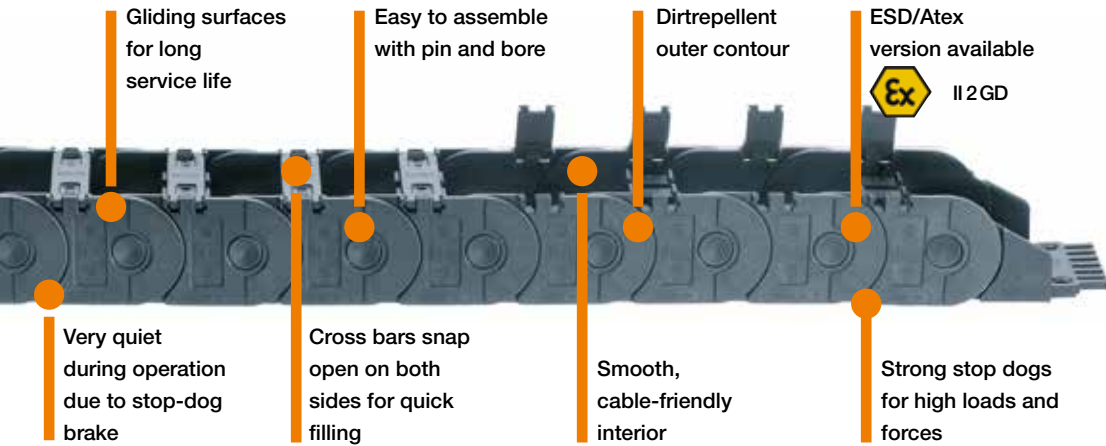


chainflex® CFPE – TPE motor cable for extremely heavy duty use, oil and biooil-resistant, flame-retardant, UV-resistant, min. bending radius 7.5 x cable-Ø www.igus.eu/CFPE



chainflex® CF310.UL – TPE motor cable for extremely heavy duty use, oil and biooil-resistant, flame-retardant, UV-resistant, min. bending radius 7.5 x cable-Ø www.igus.eu/CF310UL

e-chains® for any application ...



igus® e-chains® are versatile, available from stock and simple to use.



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 on this range.



The cost-effective and easy-to-fill - easychain®

easychains® are available in two versions. In the "E" version the cable is simply routed from the outside, and in the "Z" version the shortened installation time is one of the main features of the easychain® e-chains®. Their elastic and rugged material igumid NB offers yet more reasons for application: optimum elasticity, UL94-V2 classification and excellent suitability for clean rooms. Their one-piece design makes the easychain® very cost effective.



The small, stable all-round-chain – System E2.1

Small e-chain® with rugged stop dog system and large bolts for up to 25% longer unsupported length and 100% higher additional loads (compared to identical igus® types). A built-in "brake" minimises impact noise and very smooth contours ensure optimum cable protection. A chain opener (included) saves significant time when opening e-chains®.

www.igus.eu/E2000

www.igus.eu/easychain

www.igus.eu/E2.1

... and installation methods

igus® e-chains® and e-chainsystems® are suitable for universal applications:

- Various types of motion
- To carry sensitive bus, data cables and fibre optics cables as well as energy sources such as electricity, gas, air and liquids
- For high dynamic loads and tough service life requirements
- For all environments
- Compact installation
- High acceleration and speeds can be achieved
- Simple modular assembly on site, as well as quick retrofitting of cables

www.igus.eu/e-chain

Save time and money by using e-chains® and e-chainsystems®!

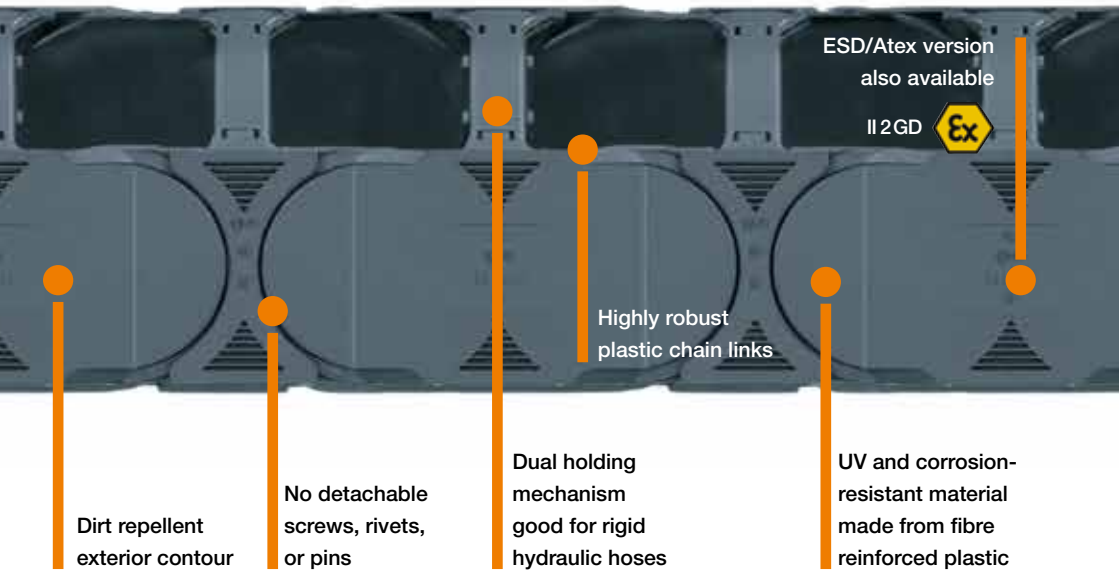
- Innovative products that can be assembled quickly
- Delivered straight from stock – reducing your storage costs
- Large range of products – find the right solution immediately
- Supply of entire systems, including assembly and turn-key installation
- Swift project planning and consulting with an ever-growing network of local sales engineers in Germany and worldwide



In the field



... Robust, low maintenance ...



igus® e-chains®: robust, modular, corrosion free and easy to install.



The Allrounder – System E4.1

The E4.1 system is the toughest igus® e-chain® range. With the igus® E4.1 system, the service life of your application can be extended and costs lowered.



Heavy duty – System E4/4

igus® “heavy duty” e-chains® are especially developed for the highest demands and harshest environments.



High speed and long travel – System P4

igus® P4 rol e-chains® for long travels of up to 600 m and speeds of up to 10 m/s. By “rolling” instead of “gliding” the drive output can be reduced by up to 57%.

www.igus.eu/E41

www.igus.eu/5050HD

www.igus.eu/P4

... assembly-friendly

e-chains® – designed to guide and protect.

e-chainsystems® – the “umbilical cord” of modern machines. They reduce downtime and increase the service lives of cables and hoses. Plastic energy chains® have been developed, produced and tested by igus® since 1971. e-chainsystems® carry sensitive bus, data and fiber optic cables, as well as energy forms such as electricity, gas, air and hydraulics.

- Up to 350 mm inner height / 200-1000 mm inner width
- Fill weights up to 600 kg/m
- Travel speeds up to 600 m/min.
- Maintenance free – no grease or oil needed to lubricate the joints
- Modular design reduces the assembly time
- Highly resistant to wear, corrosion and sea water
- Easy to lengthen and shorten
- Plastic material reduces noise
- Electrically insulating

www.igus.eu/e-chain

Tested!

In the largest lab of its kind, igus® Cologne



Vibration test

Objective: To test the service life of an e-chain® subject to strong vibrations, as the existing became unstable due to screws coming loose

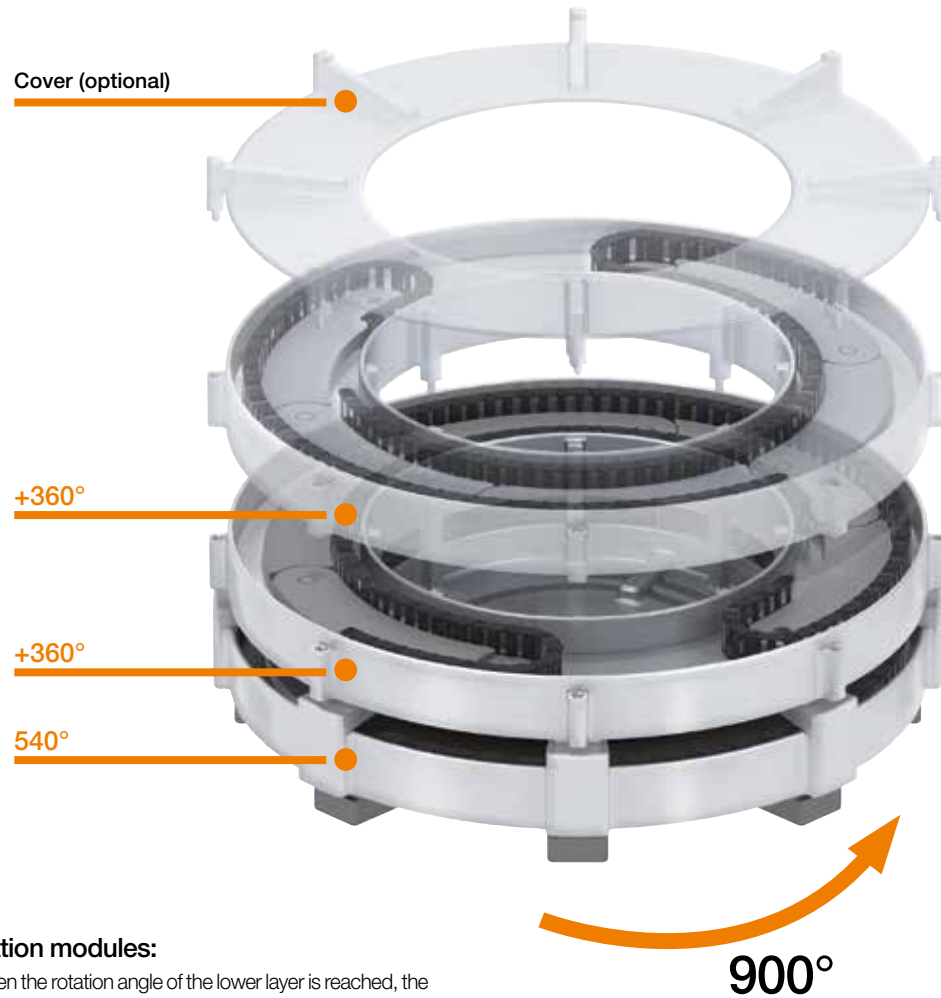
Test setup: An upright igus® E4 e-chain® was exposed to direct vibration (comparable to a rock drilling machine).

Result: No damage to the connections on the e-chain® links. No individual parts were lost.

In the field



... High stacking ...



Rotation modules:

- When the rotation angle of the lower layer is reached, the next upper module is carried along automatically due to an integrated anchorage system.
- The construction minimizes potential interferences. The Multi Rotation Module system is ideal for rotary applications, heavy loads and for tough environments.
- The e-chain® can also guide hoses for air, gas or fluids, as well as bus and fibre optic cables.
- Even for harsh environmental conditions.

... large rotation

Realize circular motions up to 900° and more, even for high loads, using igus® rotation modules

With the rotation module you can implement larger angles of rotation of 900° and more. Thanks to add-on modules the angles of rotation can be extended virtually indefinitely. The rotation and add-on modules are ideally suited for rotary motions with high fill weights and limited space

- Several individual systems are stacked on each other and thus are combined to a complete system.
- The maximum rotation of the individual levels can be easily added, thereby enabling rotary motions up to 900 degrees and more
- Compact design enables the application even in limited space
- Extendable as required
- High fill weights possible
- Chains can be freely assembled
- Peripheral speeds up to 1 m/s

 www.igus.eu/RBR

Tested!

In the largest lab of its kind, igus® Cologne

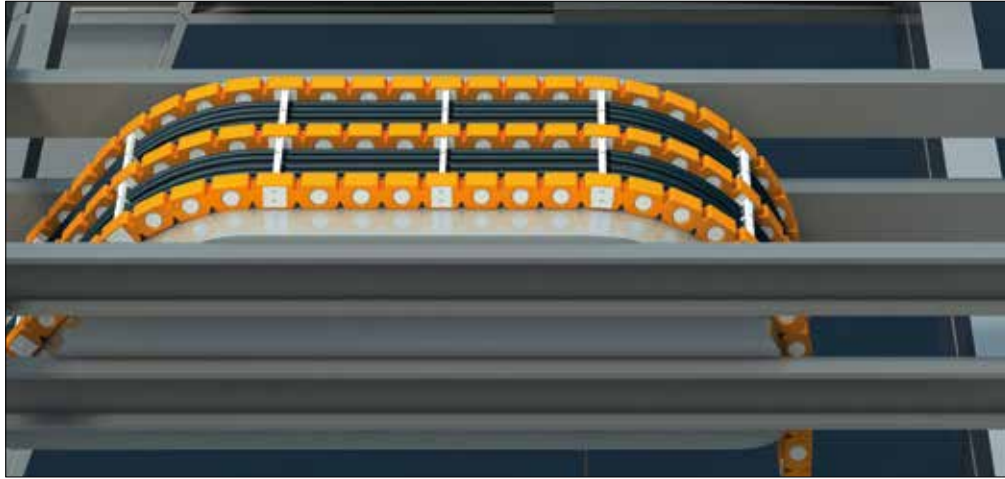


igus® RBR rotation modules tested in the igus® lab.

In the field



Supply energy ...



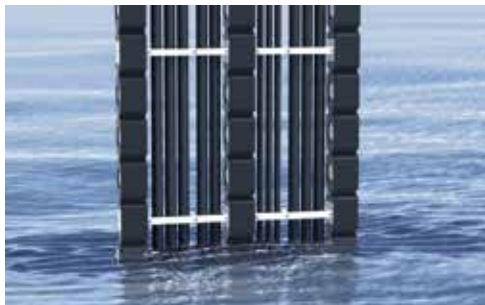
... to sea bed



Supply energy to the sea bed

Heavy duty energy feed to the sea bed. e-chain® for enormously high loads under hanging use up to 200m long. Very flexible and adaptable, so that even large hoses and cables can be reliably guided.

- For very high tensile forces
- Hanging applications up to 200 m length
- Very resistant against dirt, mud and sea water
- Very flexible and adaptable
- For underwater applications



 **Tested!**
In the large igus® lab in Cologne

Study: Under water energy supply

Offshore wind farms pose particular challenges with regard to cable management. Drilling work has to be carried out under water for the pylons on wind turbines. Heavy duty energy supply systems are necessary to withstand the difficult environmental conditions and the huge tensile forces when freely suspended over long lengths. The specially developed, environmentally-resistant and flexible offshore e-chain® from igus® guides even cables with large diameters safely. The heavy duty



wire holds the weight of the system. Intensive tests in the igus® laboratory have proven the extraordinary load capacity of the offshore chain.

 www.igus.eu/offshore-chain

Corrosion-free ... high loads ...

From a wide range of lubrication-free **dry-tech®** solutions a selection for the offshore industry.

iglidur® bearings are corrosion, maintenance and lubrication-free.

- More than 45 materials available from stock
- Online lifetime calculator and product finder to find the right solution for every application
- Types: bearing with flange or thrust washers
- Dimensions from Ø 3 - 195 mm

igus® has developed a combination of stainless steel and lubrication-free tribo-polymers especially for the offshore industry.

- All steel components are entirely corrosion-free
- Use of 1.4571 and 1.4301 stainless steel
- Resistant to sea water and chemicals
- Ready-to-fit solutions from stock
- iglidur® J bearings for under water use

 www.igus.eu/iglidur

 www.igus.eu/drylin



iglidur® H370 – for underwater use.



iglidur® J – low wear.

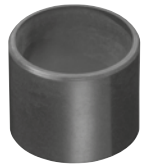


drylin® R round linear guidance systems.



drylin® W linear guidance systems.

drylin® SHT linear tables



iglidur® H – highly environmentally resistant.



iglidur® X – for high temperatures.



iglidur® TX1 – high loads, seawater resistant.

... maintenance free

dry-tech®: Improve technology without lubrication

igus® **dry-tech®** bearings are an alternative to plain and roller bearings with lubrication. igus® develops tribopolymers for dry-running bearings. By avoiding lubrication, **dry-tech®** polymer technology attains superior service life: from -100°C up to +250°C at continuous exposure – from cleanroom environments to extreme dirt exposure, from vacuums to extreme humidity. **dry-tech®** bearing technology for:

- Lubricant-free applications for a long service life
- Extreme environmental conditions
- Lowest possible friction and wear values in continuous and intermittent operation.

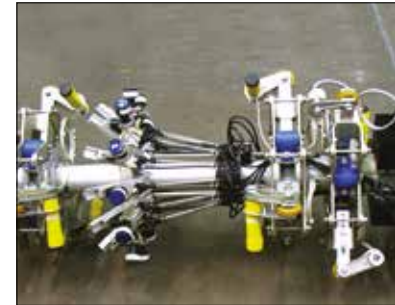
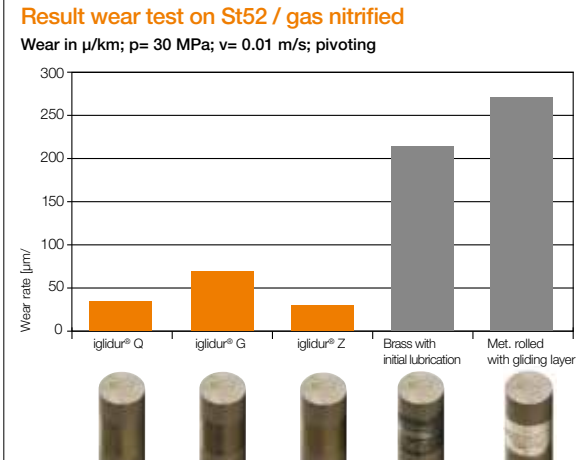
In the field



 www.igus.eu/drytech

Tested!

In the largest lab of its kind, igus® Cologne



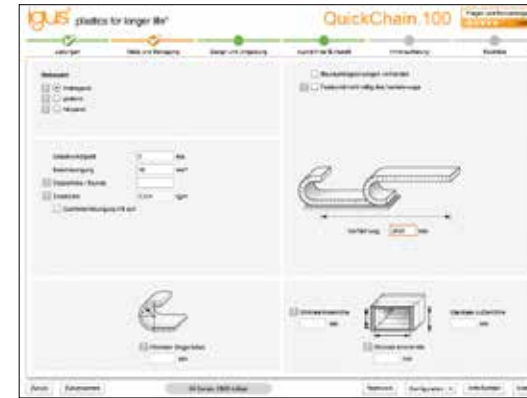
Test: "swivel test"

Objective: To test the wear of iglidur® plastic plain bearings compared to metallic plain bearings

Test setup: Swivel test on a shaft with a weight of 1,200 kg.

The figure to the right illustrates the concept
Result: All tested iglidur® materials exhibit significantly lower wear than the metal plain bearings. The shafts of the metal plain bearings exhibit significant wear and are therefore unsuitable for further use.



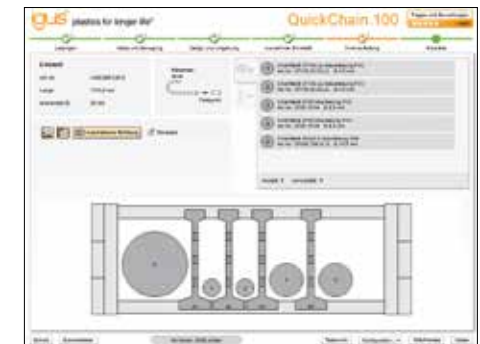


www.igus.eu/quickchain100

Expert for designing and calculating systems for travels of up to 100 m

Simply enter your application's parameters into the e-chain® expert and this will propose a suitable solution.

A wide range of other online tools, such as configurators, service life calculators, and product finders, can be found at www.igus.eu/online



i For all tasks – and all batch sizes

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

www.igus.eu/industries

www.igus.eu/maritime

Visit our maritime website for far more information, products and application examples as well as online tools.

Research and development

15,000 tests per year



Better products for less – a key element is the industry's largest test lab. 1,750 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 – with intensive research and testing can this be achieved.

The industry's largest test lab conducts more than two billion test cycles per year on a total of 107 test rigs.

 www.igus.eu/test



Tribological tests in the plain bearings laboratory, igus® Cologne.



igus® quality assurance

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

Better for the environment

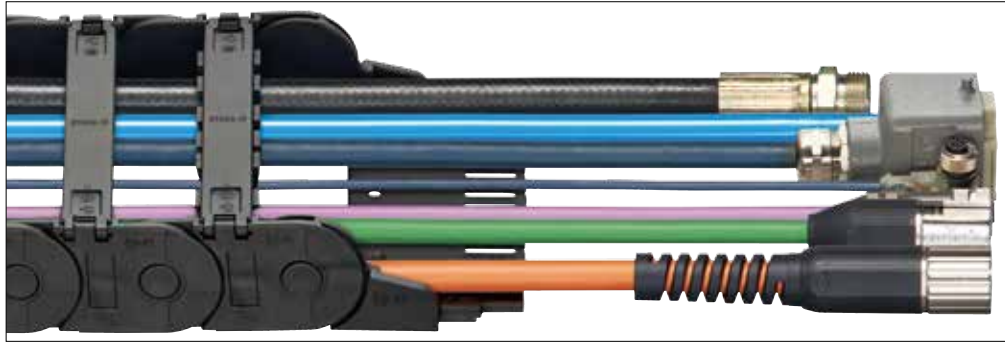
Because iglidur® does not require lubricants, no contaminants are released into the environment. Even the low weight of iglidur polymer plain bearings make them ecologically valuable.



Extensive test database

What is probably the world's largest database was created from more than 15,000 tests. This database gives us the ability to select the right product for your specific application.

Assembled energy supply systems and cables with connectors



readychain®

Fully assembled systems in 3-10 days, 700 systems per week in 11 readychain® factories world-wide – optimised assembly time and better 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 machine downtime
- System guarantee – depending on the application

 www.readychain.eu

readycable®

igus® provides more than 2,830 harnessed cables for drive technology pursuant to 20 different manufacturer standards. Professionally produced, 100% tested.

- Servo, motor and signal/encoder cables
- No cutting charges, no surcharges for small quantities and packaging
- Cable length accurate to the centimetre per customer specifications
- Smallest bending radii from 7.5 x d
- Reduce storage costs and increase cashflow
- Ex stock in 24-48 hrs

 www.igus.eu/readycable

The igus® assembly service

Ensure error-free installation and avoid downtime and additional costs – with the igus® e-chainsystem® assembly service

- Products and services from a single source – with low logistics costs for you
- igus® system guarantee, customised for each application

 www.igus.eu/montageservice



igus® delivery service - quick & reliable



From 24 hrs or same day*

All catalogue parts and individual components
for example: one e-chain® link, 6 metre e-chain®, 3 strain reliefs, one iglidur® Q2 plain bearing, one drylin® linear plain bearing

24 - 48 hrs*

Customised systems

for example: 11.46 m e-chain® with interior separation, guide rails, mounting brackets; 2.46 m drylin® profile rail with 2 carriages

3-5 business days

Simple prefabricated systems

for example: simple, harnessed e-chainsystems® with filled cables without connectors, lead screw unit based on specific needs

10 business days

Complex systems and machined components

for example: harnessed e-chainsystem® with cables of all types and connectors, interfaces, protrusions, machined shafts according to drawing, or mechanically shortened plain bearings, or tool-based injection-moulded parts

* Products leave our facility within the indicated time.

The indicated delivery time specifies the time until the product ships.

motion plastics®

For 50 years, we have been driven by a single vision – motion plastics®: innovations from plastics that move machinery.

Our core technology is tribo-polymers – high-performance plastics, that we optimise for friction and wear. This technology has made us into the world-wide leader for developing and manufacturing energy supply systems and plain bearings.



/9001:2008 /16949:2009

igus® is certified for energy chains, cables, and harnessing, as well as plastic plain bearings in acc. with ISO 9001:2008 and ISO/TS 16949:2009.

igus®

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