

e.chainsystems® and chainflex® cables for

offshore

Special igus® solutions for offshore industry



...05.2011...plastics for longer life® ...

igus®.eu...

...www.igus.eu/offshore...

...oil-resistant igus® polymers...

You can find maintenance-free igus® products made from tribo-polymers in many offshore applications



Strong, modular, corrosion resistant and easy to install: igus® e.chains® for heavy fill weights in harsh offshore environment

igus® is a specialist in the area of polymer research, with more than 40 years of experience. Special high performance polymers allow the use of igus® e.chains® and bearings in almost all environments. Heat, cold, corrosion, humidity, dirt – we have a solution.

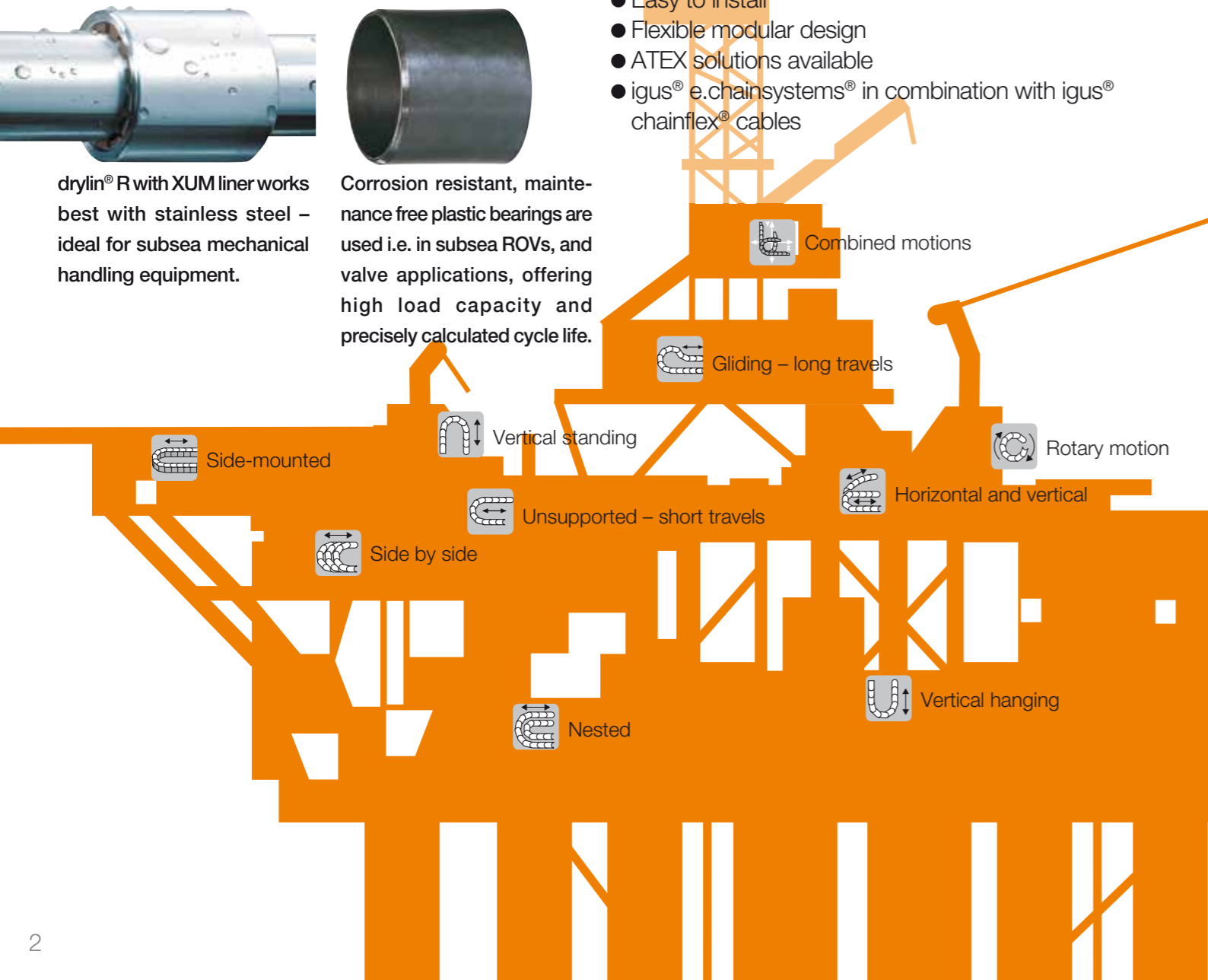
In more and more heavy duty applications, steel systems are successfully replaced with igus® plastic e.chains®, because of their extraordinary capabilities:

- Corrosion free, UV- and sea water resistant
- Light weight AND high stability
- Low maintenance and long service life
- Resistant to dirt, sea water, chemicals, extreme temperature
- Easy to install
- Flexible modular design
- ATEX solutions available
- igus® e.chainsystems® in combination with igus® chainflex® cables



drylin® R with XUM liner works best with stainless steel – ideal for subsea mechanical handling equipment.

Corrosion resistant, maintenance free plastic bearings are used i.e. in subsea ROVs, and valve applications, offering high load capacity and precisely calculated cycle life.



Corrosion free, UV- and sea water resistant: Fully harnessed e.chain® series 600 in a hanging application with high fill weights and sea water resistant. (North Sea)



e.chain® with reverse bend radius guides cable and hose package on A-frame onboard anchor handler



Horizontal Trolley, National Oilwell Varco AS, Norway



Light weight AND high stability: Polymer e.chain® tames stiff hydraulic hoses.



E4 Series 600 extension link – long travel application onboard West Navigator (Norway)

...oil-resistant igus® polymers...

You can find maintenance-free igus® products made from tribo-polymers in many offshore applications



Light weight AND high stability: Short/cross travel application. Series E4/4 guided in a stainless steel guide trough.



Rig skidding application on the Claymore, North Sea



igus® e.chain® series 600 and igus® drylin® linear slides on a roughneck "V-Tech UniRough"



Vertical boom on a riser handling crane for AKMH (West E Drill)



Low maintenance and long service life: igus® e.chain® series 5050 with reverse bend radius on port crane equipment



Series 600 with extension link in an igus® designed special guiding channel. (Caspian Sea)



Pipehandling application supplied by igus® e.chain®



Horizontal Trolley for National Oilwell Varco AS, Norway



ATEX tested conductive igus® material prevents electrostatic build-up. Delivered as fully harnessed readychain®.



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

ATEX-Material


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

- igumid ESD with PTB certificate
- All standard e.chains® available in igumid ESD
- Tested and successfully proven in explosion-protection areas for many years
- Color: Slate gray (similar to RAL 7015) for easy differentiation

ATEX Products – your benefits

- Tested with over 100 million cycles for most demanding requirements, also for long travels
- Snap-open e.chains®, snap-open e.tubes, three-dimensional e.chains® with mounting brackets and interior separation available in ESD/Atex version
- Short lead times
- Ordering and shipping from 7 am to 8 pm plus Saturdays from 8 am to 12 pm (in Germany)

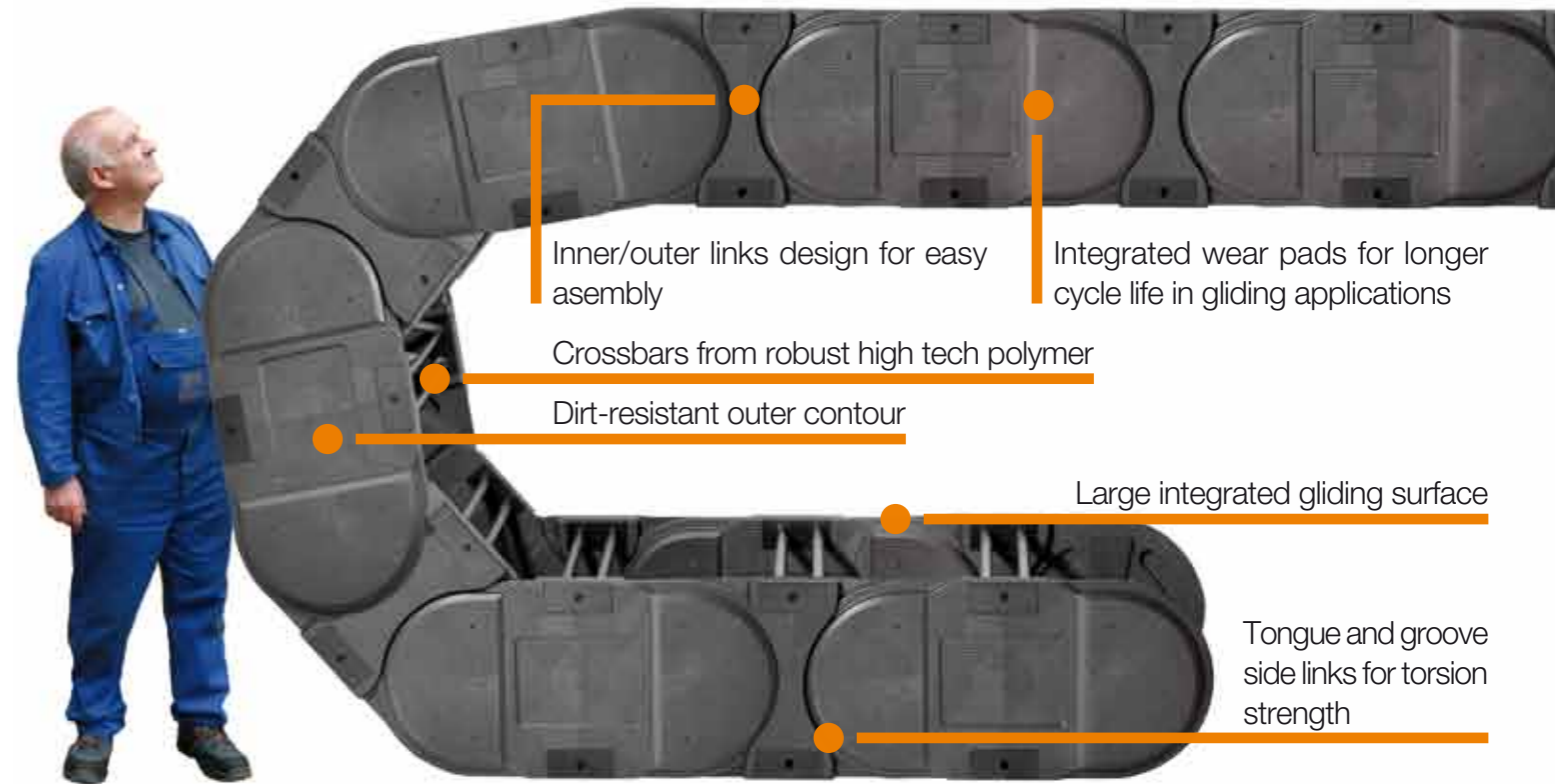
Marking:  II 2 GD – Special color of the ESD e.chain® color: gray (similar to RAL 7015)

Investigations required after classification  II 2 GD in accordance with the standards and regulations listed below were conducted and verified by the PTB: Cenelec TR 50404:2003 previously: DIN 53482/VDE0303/Part 3, verified by the PTB), BGR 132:2003 and ZH1/200

...one for all...universal...largest...

system E4.1: One e.chain® for all

E4.350: World largest polymer e.chain®*



E4.1 - long travels, large unsupported lengths, simple installation and quiet operation

E4.1 combines all design features of the systems E4/00 and E4/4 and is the best igus® e.chain®, which is available with standard range.

- 4-piece, openable e.chain® for long travels
- Large unsupported lengths possible
- Solid and quiet, for high speeds and fill weights
- Inner heights 21 - 112 mm, also available as e.tube



plus 20% compared to E4/00



E4.1 light: Allround e.chain® for high dynamics

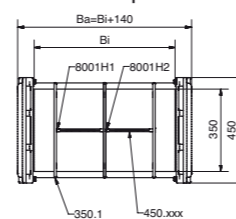
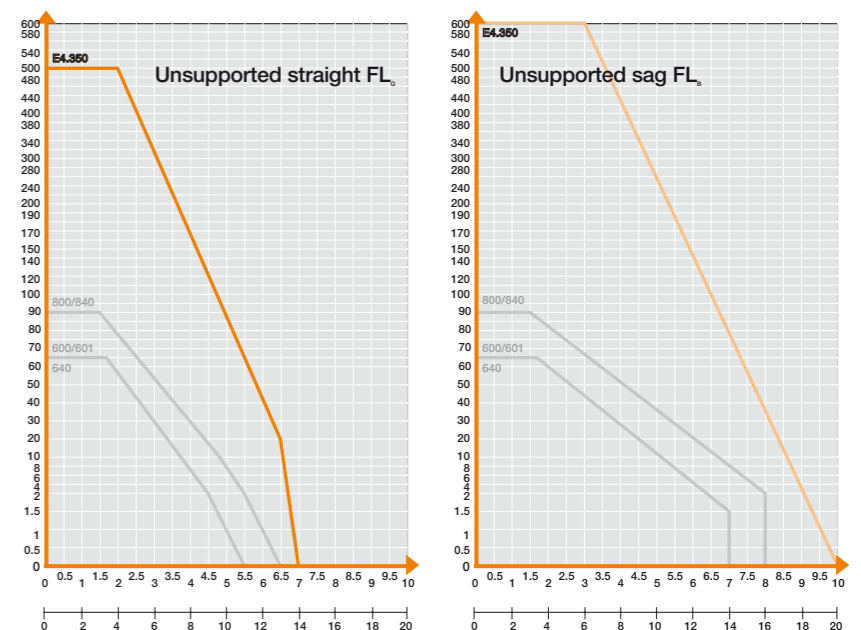
The new E4.1 e.chains® are perfect for solving problems, when easy handling and high dynamics must be combined with high stability.

- Crossbars are swivelable on both sides
- Openable in inner- and outer radius
- Inner height 48 mm

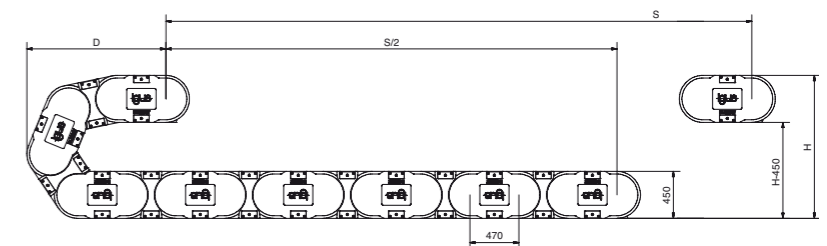
Carrying plastic e.chains® to the extremes

The world's largest* all-plastic e.chain® yet is predestined to carry thick, heavy and stiff cables and hoses. It is ideal for rough use on oil platforms, in steel plants, or in heavy duty machinery.

- 350 mm inner height / 200-1000 mm inner width
- Fill weights >100 kg/m
- Maintenance-free – no grease or oil needed to lubricate the joints
- Modular design saves assembly time
- Highly resistant to wear, corrosion and sea water
- Easy lengthening and shortening
- Plastic material reduces noise
- Electrically insulating
- Interior separation available



Interior separation



www.igus.eu/ecs-news

Shipping after: 24-48 h

www.igus.eu/eu/e4-1

...accessories...self-guiding...

Construction kit and accessories

Interior separations



- Aluminum "Super Trough" – Basic
- Aluminum "Super Trough" – Heavy-Duty
- Fixed end module, aluminum "Super Trough"
- Steel guide troughs
- Fixed end module, steel guide trough
- For support of the lower run - Support Tray tool kit

Mounting brackets



- KMA with attachment capability on all sides
- Mounting brackets with strain relief
- Mounting brackets with C-profile
- KMA pivoting
- KMA, locking
- Mounting bracket made of steel

Chainfix strain relief elements



- Improved housing foot clamp for easy fit into C-profile
- Integration with igus® KMA mounting brackets possible
- Clip-on tiwrap plates for opening crossbars
- Tiwrap plates with clip-on connection for the C-profile
- Chainfix clip - Modular snap-on for the C-profile
- Chainfix Nugget

Guide troughs



- Aluminum "Super Trough" – Basic
- Aluminum "Super Trough" – Heavy-Duty
- Fixed end module, aluminum "Super Trough"
- Steel guide troughs
- Fixed end module, steel guide trough
- For support of the lower run - Support Tray tool kit

Solutions for long travels without guiding troughs



www.igus.eu/eu/autoglide

System autoglide: Saving at long travels

autoglide is a self-aligning e.chain®, which can dispense with guide troughs for up to 50 m travel. You save acquisition and installation costs and can keep pathways in your warehouse free for lifts or industrial trucks.



www.igus.eu/AG_Movie

System autoglide for e.chainsystem® E4.1 up to 80 mm inner height

- Crossbars in the interior radius of the e.chain® are fitted with molded-on glide shoes
- Large gliding surfaces and good sliding behavior
- Of one piece, no additional parts required



www.igus.eu/troughsaving

System autoglide for E2/000 e.chains®: Gliding and snap-open in the inner radius

- Travels up to 50 m without guide trough
- Speeds up to 1.5 m/s
- Very compact, no trough in the working area
- Fast installation times for long distances

...cables from stock...tested...

More than 950 types of cables available from stock

Control cables	Measuring system cables
CF130.UL PVC	CF211 PVC
CF140.UL PVC	CF113.D PUR
CF5 PVC	CF111.D TPE
CF6 PVC	CF11.D TPE
CF170.D PUR	
CF180 PUR	Servo cables
CF77.UL.D PUR	CF210.UL PVC
CF78.UL PUR	CF21.UL PVC
CF2 PUR	CF270.UL.D PUR
CF9 TPE	CF27.D PUR
CF10 TPE	
CF9.UL TPE	Power cables
CF10.UL TPE	CF30 PVC
CF98 TPE	CF31 PVC
CF99 TPE	CF34.UL.D TPE
Data cable – braiding in layers	CF35.UL TPE
CF240 PVC	CF37.D TPE
Neu* CF240.PUR PUR	CF38 TPE
Data cable – Twisted pair	CF300.UL.D TPE
CF211 PVC	CFPE TPE
CF113 PUR	CF310.UL TPE
CF11 TPE	CF330.D TPE
Data cable – Twisted pair	CF340 TPE
CF112 PUR	CF FLAT TPE
CF12 TPE	CF BRAID TPE
Data cable – Thermo	CF BRAID.C TPE
Neu* CFTHERMO PUR	CF CRANE igupren
Data cable – Koax	
CF Koax 1 TPE	Pneumatic hose
Bus cables	CFAIR PU
CFBUS.PVC PVC	CF Clean AIR PE
CFBUS.PUR PUR	
CFBUS TPE	Twistable cables
CF11.LC TPE	CF ROBOT9 PUR
CF11.LC.D TPE	CF77.UL.D PUR
CF14.CAT5 TPE	CF ROBOT8 PUR
Fibre optic cable	CF ROBOT4 PUR
CFLK PUR	CF ROBOT5 TPE
CFLG.2H PUR	CF ROBOT6 PUR
CFLG.LB TPE	CF ROBOT7 PUR
CFLG.G TPE	CF ROBOT TPE



More than 950 chainflex® cables developed especially for the use in e.chainsystems®

- Wear resistant TPE, PUR and oil-resistant PVC outer jackets
- Halogen-free and/or flame-retardant materials
- Different certificates: UL, CSA, CE, DESINA, CEI
- Smallest radii from 4 x d



Large igus® cable stock with more than 950 cables

Certificates and approvals for chainflex® cables



from stock

www.chainflex.eu

Selected chainflex® cables for offshore industry

CF77.UL.D & CF78.UL chainflex® PUR control cables



PUR control cables for high load requirements, PUR-outer jacket (CF78.UL shielded), oil- and coolant-resistant, flame-retardant, notch-resistant, PVC- and halogen-free, bending radius 6,8 - 7,5 x d

CF112 & CF113 chainflex® PUR data cables



PUR data cables for high load requirements, PUR-outer jacket, double-shielded, twisted-pair, oil- and coolant-resistant, flame-retardant, notch-resistant, PVC- and halogen-free, hydrolysis- and microbe-resistant, bending radius 10 x d

CF113.D chainflex® PUR measuring system cables



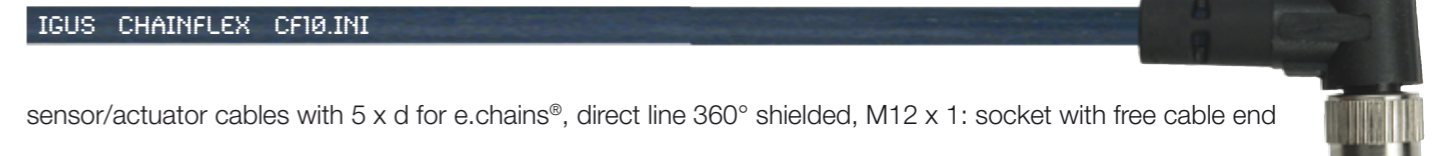
PUR measuring system cables for maximum load requirements, PUR-outer jacket, shielded, oil- and coolant-resistant, flame-retardant, notch-resistant, PVC- and halogen-free, hydrolysis- and microbe-resistant, bending radius 10 x d

CF27.D chainflex® PUR servo cables



PUR servo cables for maximum load requirements, PUR-outer jacket, shielded, oil- and coolant-resistant, flame-retardant, notch-resistant, PVC- and halogen-free, hydrolysis- and microbe-resistant, bending radius 7,5 x d

CF10.INI chainflex® shielded initiators



sensor/actuator cables with 5 x d for e.chains®, direct line 360° shielded, M12 x 1: socket with free cable end

...ready to use...pre-harnessed...

readycable® - harnessed drive technology

readycable® - in 24-48h or today

igus® offers more than 1300 harnessed cables for drive systems according to 16 different manufacturers. Professional manufactured, 100% tested.

- Servo, Power and Signal-/encoder cables
- No cutting costs, no minimum order quantity, no costs for packaging
- Cable length according to customer requirements
- Smallest bending radii from 7,5 x d
- Reduce stockcosts and increase cashflow
- Flexible response to order fluctuations



Harnessed cables after the specifications of following manufacturers: Allen Bradley, B&R, Baumüller, Beckhoff, Berger Lahr, Control Techniques, Danaher Motion, ELAU, Fagor, Fanuc, Heidenhain, Jetter, Lenze, LTi DRIVES, NUM, Omron, Rexroth, SEW, Siemens, Stöber... and many more on request.



Quickpin 2.0
Connector-Cable-Configurator

► www.igus.eu/quickpin

- Creating a new configuration
- Opening of existing configurations
- Verification of cable configurations
- Acquisition of existing configurations via the download manager for cable macros

readychain®: Pre-harnessed e.chainsystems® in 3-10 days

readychain®:

Assembly-optimized e.chainsystems®

700 systems per week in 11 readychain® factories worldwide.

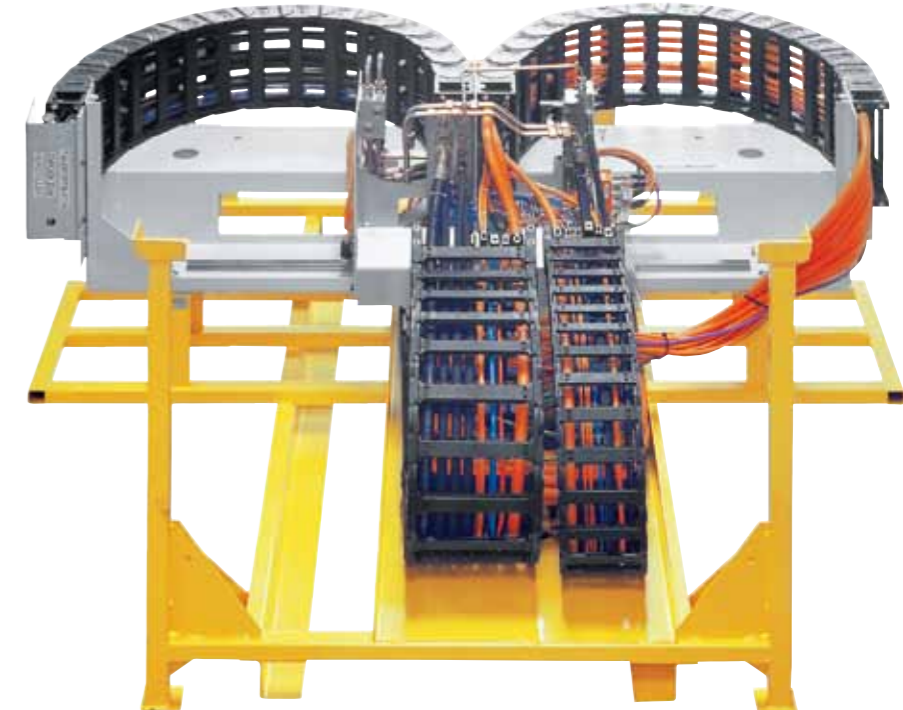
- From single piece
- Easing your capacities
- Minimized assembly time
- 100% tested
- Eliminate storage costs for cables, e.chains® and connectors
- Shorten turnaround times by half
- Flexible response to order fluctuations
- Reduce the number of subcontractors and related orders by 75%
- Minimize your machine downtimes
- Transport racks in your color and design
- Assembled and runs
- System guarantee – depending on application



100 readychain®-specialists care for your project



Assembly-optimized delivery



from stock

www.igus.eu/readycable

Shipping after: 3-10 days

www.readychain.eu

www.igus.eu/RC_Movie




...100% lubrication-free...

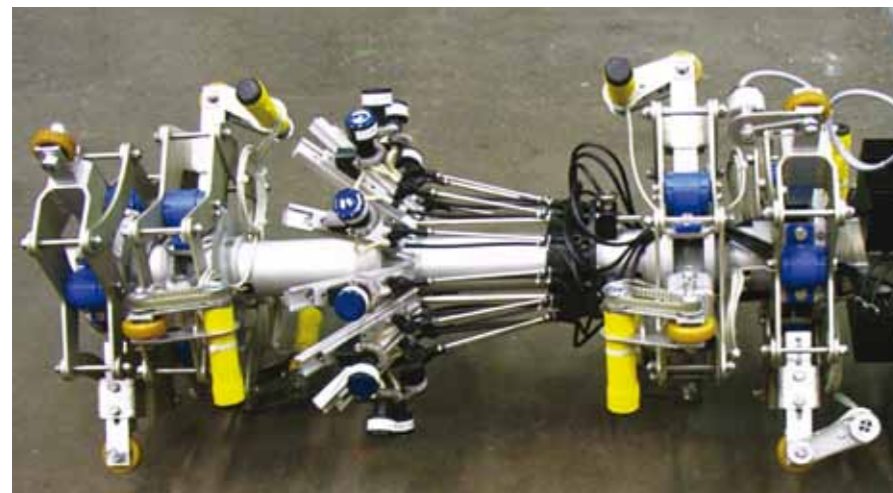
Maintenance-free iglidur® plain bearings, iglidur® PRT slewing ring bearings, and drylin® linear technology



igidur®: Maintenance- and lubrication-free Bearings, made from high-tec polymers – Lifetime predictable

- 40 different materials
- Corrosion-resistance
- High dirt resistance
- High vibration dampening
- Low coefficient of friction
- High wear-resistance

 Shipping after: 24 – 48h
  www.igidur.eu
 www.igus.eu/igidur-lubricationfree



Inspection equipment for offshore drilling riserplant



Linear guides and tie bars

Application with igus® Polymer Bearings

“On the drilling platforms in search of new oil and gas wells in the offshore industry, so-called “drilling risers” are used as connecting elements between drill platform and the ground of the sea. The use of these risers in aggressive media and under extreme mechanical stress (corrosion, abrasion, erosion, deformations) requires a regular inspection of the riser for safety and environmental reasons. [...]

The bolts of the articulations are equipped with polymer bearings GFM-0810-05. The bearings support the transmission the enormous forces with low friction free of stick-slip. The heart of the sensor adjustment are linear guides and tie bars. Every single sensor is mounted onto a miniature-guide drylin® NK-02-17. [...] All in all, a high efficiency and economy are achieved.”

Reinhold Kammann / Manfred Worms, Tuboscope Vetco (Germany) GmbH, Celle



igidur® PRT - Slewing Ring Bearing

igidur® PRT is an economical, maintenance-free slewing ring table with tribo-optimized iglidur® polymer sliding parts.



- Ready to install
- Robust, corrosion-resistant bearing for high loads
- For extreme torques
- For the use in changing environments
- Maintenance- and lubrication-free
- For low to medium gliding speeds
- New with toothed outer ring

 Shipping after: 24 – 48h
  www.igidur.eu/eu/prt
 www.igus.eu/PRT_Movie



drylin® T – Heavy Duty: For the most extreme environmental conditions

- Linear guide carriage for extreme conditions (dirt, glue resins, chips, mud, etc.)
- Polymer sliding elements of iglidur® J are fixed by the metal end caps and cannot be lost
- Dimensions equivalent to standard recirculating ball bearings

 Shipping after: 24 – 48h
  www.drylin.eu

...igus®.tests...

Quality from the igus® laboratory



Noise level test inside an igus® acoustic cell



Torsion test-set for chainflex® cables and triflex® R



Push Pull forces speed up to 10 m/s, acceleration up to 200 m/s² are tested

igus® test laboratory

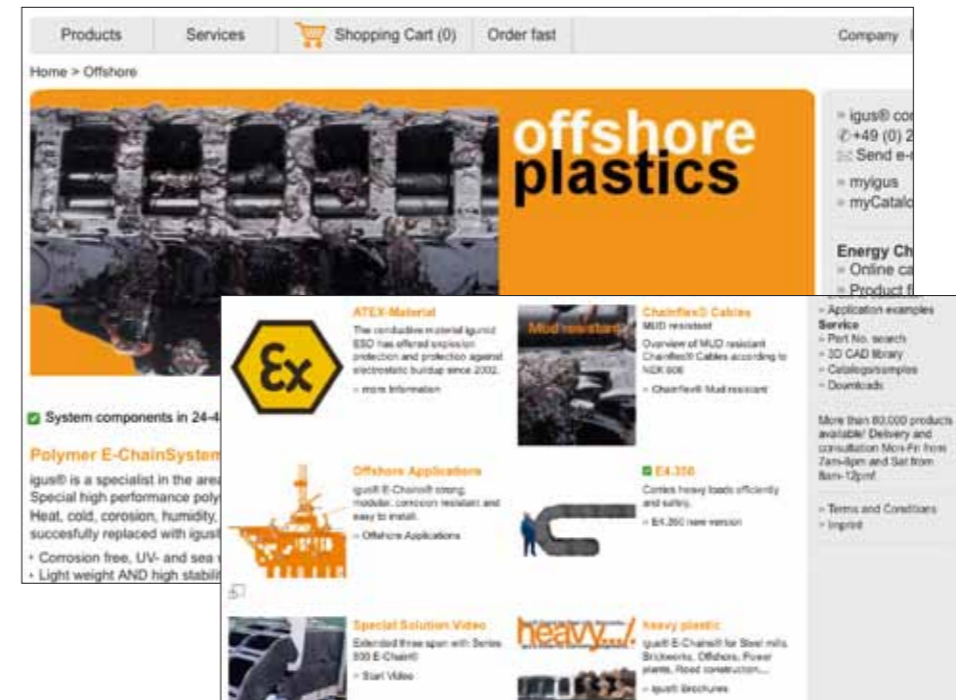
Applications involving high cycle counts, speeds and accelerations or demanding environmental conditions require proven systems especially when it comes to e.chains®, cables, polymer slide bearings and linear systems. igus® regularly conducts tests at its own laboratory under realistic conditions. Every year, we conduct more than 2,000 tests on e.chains® and cables, and over 5,000 tests on plain bearings.



Video: www.igus.de/labor

...igus®.online...

26 Online tools, special websites and Online Shop



Special website for offshore industry
You can find information, applications, videos and product details for machine tools on www.igus.eu/offshore

A selection of important Online-Tools for offshore industry



QuickChain.100
Calculation & layout of e.chains®

► www.igus.eu/ecs-expert



QuickChain.13
product finder up to 13 m

► www.igus.eu/quickchain13



QuickLife
Service life e.chains®

► www.igus.eu/ecs-lifetime



QuickFind
Product finder

► www.igus.eu/ecs-finder



QuickFill
e.chain® filling expert

► www.igus.eu/filling-configurator



QuickCad offline
e.chains® with circular motion

► www.igus.eu/quickcad-download



QuickCable
Produktfinder Leitungen
Product finder cables

► www.igus.eu/quickcable



QuickLife
Service life calculation

► www.igus.eu/cf-lifetime



QuickPin 2.0
Connector-cable configurator

► www.igus.eu/quickpin



QuickBearing
iglidur® product finder

► www.igus.eu/iglidur-productfinder



QuickLife
Service life calculation for linear units

► www.igus.eu/drylin-expert



QuickFind
product finder drive technology

► www.igus.eu/sht-productfinder

igus®.delivery...

Quick and reliable: igus® delivery service

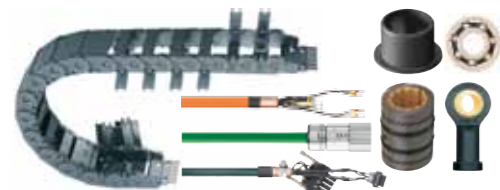
No warehousing at your site and yet all parts quickly available

No minimum order value, no surcharges. More than 80,000 products from stock. Order from 1 piece without surcharges for small quantities. Invoices and acknowledgements available by post, fax or e-mail. 1,900 employees in Germany and 28 international subsidiaries and offices, plus bases in another 33 countries to guarantee a rapid delivery worldwide.

- Delivery and consultation daily from 7am till 8pm and Saturdays from 8am till 8pm
- Order tracking online possible
- No fuss return
- Round-the-clock emergency service

Our current delivery times

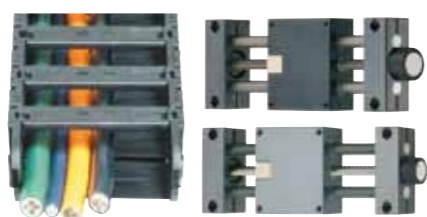
24-48 h



All catalog items except for harnessing: 24 - 48 h

if available. New production in 2-3 days. Delivery time "today" on request (with a present availability of 97% of all products!)

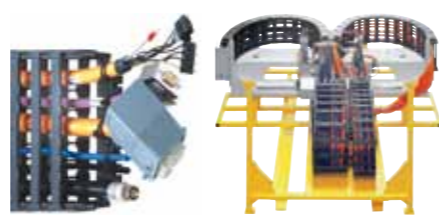
3-5 days



Harnessing orders and linear axes: 3-5 days

for assembled cables (readycable®), simple chain systems (readychain® Basic) and linear axis products (drylin® SHT, SLW, ZLW etc.).

10 work days



Elaborate harnessing orders: 10 working days

10 working days* for elaborate harnessing orders (readychain® standard and premium)

...igus®...

plastics for longer life®: All igus® products at a glance



e.chains® and accessories

e.chainsystems® – cable carriers and energy chains for modern machines. Pre-assembled.



www.igus.eu/echains



twisterband

Turn 3000°. Compact, modular, economical – rotary movements in minimum space.



www.igus.eu/twisterband



igidur® Plain and Slewing Ring Bearings

Longer service life, reduce costs and no lubrication. 7,000 types.



www.igidur.eu | www.igus.eu/eu/prt



igubal® Spherical Bearings

A complete program of self-adjusting, maintenance-free bearings made from polymers. More than 800 types available from stock.



www.igubal.eu



xiros® Polymer Ball Bearings

Deep-Groove Ball Bearings, Axial, Multi-axis, Slewing Ring Bearings and Shields – lubrication-free up to +150 °C from stock!



www.igus.eu/xiros



drylin® linear slide and drive systems

Lubrication-free, light, quiet, modular, durable, economical. Tailor-made from stock. More than 1,800 types.



www.drylin.eu



pickchain conveyor chain

The intelligent conveyor chain for Pick & Place solutions.



www.igus.eu/pickchain



robolink

Joint modules for robots
Integration of different movement mechanisms in one single part



www.igus.eu/robolink

Configured in minutes...
...delivered in hours...
...made for years!

www.igus.eu/e-chains

www.igus.eu/24h

www.igus.eu/lifetime

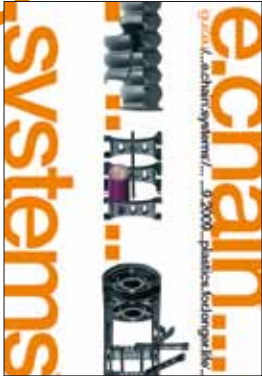
8.00pm

Ordering and deliveries weekdays from 7.00 am to 8.00 pm, Saturday from 8.00 am to 12.00 pm. No minimum order quantities, no surcharges. 80,000 products available ex-stock. Quick delivery.

www.igus.eu

igus.eu/24

Online shopping –24h!
More brochures and catalogs online.



www.igus.eu/offshore

9001.2008

Certified according to DIN ISO 9001:2008

igus.eu

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