construction machinery

igus® solutions for construction machinery

plastics for longer life®... igus

industry...

... www.igus.eu/constructionmachinery ...
Reduce costs ...

Extremely tough against vibration, cold and dirt – igus® plastic solutions for the construction equipment industry.

At present in this industry, components of machines and installations are exposed to high loads. In order for the machines to run reliably without downtime, all components must be designed for maximum availability.

igus® offers plastic solutions for cable protection and guiding, cables for highly dynamic continuous motion and bearing systems for your industry. We test all the products under practical conditions in the largest test lab of its kind in Cologne. More than 200,000 customers rely on plastics solutions from igus® worldwide.

Some advantages of the igus® products for the construction equipment industry

e-chains®:
- Resistant to shocks and vibrations
- Resistant to many construction materials and so on, for example, bentonite
- Highest loads up to 600 kg/m
- Corrosion and UV resistant
- No easily lost parts such as screws, bolts or rivets
- Know-how from igus® specialists, e.g. for sloping travel paths

chainflex® cables:
- Flexible down to -40 °C, UV-resistant, oil resistant
- Specifically designed for highly dynamic movements in energy chains®
- Numerous approvals, e.g. in accordance with UL, EAC, CTP, DNV-GL
- 36 months guarantee for chainflex® cables (according to igus® specifications)

iglidur® plain bearings:
- Dry-running, lubrication-free and dirt resistant
- High edge loads and surface pressures up to 250 MPa

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

www.igus.eu/constructionmachinery

I look forward to speaking to you.
igus® in construction machinery

... in drilling equipment

- e.g. in horizontal drilling machine HDD
- e.g. in earth drill, pile drivers
- e.g. in earth drill, pile drivers
- e.g. in a tunnel drill

... in the excavator

- e.g. in shovel joints
- e.g. in cabin
- e.g. in a tunnel drill

... in telescopic extensions

- e.g. concrete pump
- e.g. in a telescoping hoist platform
- e.g. in a telescopic forklift

... in utility vehicles

- e.g. in a telescopic semitrailer
- e.g. loading side board
- e.g. partition wall, loading side board
Exploration project in southern Argentina, under extremely challenging conditions, the company has now equipped two drilling systems with custom modified igus® Atex e-chains®.

The erector is supplied with energy by two counter-running e-chains®.
Three E4 series e-chains® supply energy to this drilling equipment working 4,000 m under the sea. Special igus® plain bearings for underwater applications ensure a lubrication-free operation in seawater.

World’s largest polymer energy chain® - enormously lighter than comparable steel chains, it effortlessly moves more than 100 kg filling weight per metre.
igus® E4 in moveable cabin on an industrial excavator

Telescopic forklift

igus® series 2400 in a telescopic forklift

Anchoring drill in operation with igus® E4 e-chain® with dirt and vibration

Telescopic forklift

igus® E4 in moveable cabin on an industrial excavator

... No easily lost parts ...

Earth boring device

... Cost effective ... unsupported

igus® H4 series guides hydraulic hoses reliably in an anchoring drill

igus® E4 series guides pulsating hydraulic hoses to this pile driver

igus® E4 in moveable cabin on an industrial excavator

Anchoring drill in operation with igus® E4 e-chain® with dirt and vibration

Telescopic forklift
igus® products in cabins

Bearings and linear bearings – lubrication- and maintenance-free ...

1. Mirror adjustment
   iglidur® J plastic plain bearings
   ● Low coefficients of friction, low wear
   www.igus.eu/J

2. Monitor adjustment
   drylin® W profile guide carriages
   ● Flexible and easy to position
   www.igus.eu/drylinW

3. Head rest back adjustment
   drylin® W profile guide
   ● Lubrication-free and modular
   ● Low assembly cost
   www.igus.eu/drylinW

4. Steering column bearing
   drylin® polymer linear bearing
   ● Quick clip-on mounting
   ● No axial securing required
   www.igus.eu/jucm

5. Steering column bearing
   iglidur® G plastic plain bearings
   ● High wear resistance
   ● Resistant to dirt
   www.igus.eu/G

6. Operating element
   triflex® 3D e-chain®
   ● Moving along all axes
   www.igus.eu/triflexR

7. Connection hydraulic valve
   igubal® double joint bearing
   ● Compensation of misalignments
   ● Modular construction kit
   www.igus.eu/igubal

8. Armrest adjustment
   drylin® N low profile guide
   ● Light, low profile dry running
   www.igus.eu/drylinN

9. Seat back adjustment
   drylin® W profile guide
   ● Lubrication-free and modular
   www.igus.eu/drylinW

10. Seat bearing adjustment
    e-chain® E2 micro, chainflex® cables
    ● Stable, quiet and quick to assemble
    www.igus.eu/E2micro
    www.igus.eu/chainflex

www.igus.eu
the-chain – moving energy ...

Solutions from the igus® e-chains® construction kit

e-chains® – designed to guide and protect.
e-chains systems® - 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.

- Up to 350 mm inner height / 200-1,000 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

- The plastic material reduces noise development and has a vibration dampening effect
- Electrically isolating
- Resistant to dirt, sea water, chemicals, extreme temperature
- Diverse modular interior separations
- Lightweight AND high stability

Very robust plastic chain links

Stable design, interlocking chain links, vibration-resistant due to "tongue and groove"

ESD/Atex version also available

Dirt-repellant outer contour: no setting of construction materials

Resistant to shocks and vibrations: No easily lost screws, rivets or bolts

Dual holding mechanism, especially for stiff hydraulic hoses

UV and corrosion resistant material made from fibre reinforced plastic

Tested for your industry, for example:

igus® test

Goal: resistance of e-chains® material against bentonite and measurement of the force to move the e-chain®

Test set-up: four e-chains® are immersed in different bentonite mixtures for 100,000 cycles and allowed to dry out

Result: the igus® e-chain® has no recognizable wear. It is still easy to move despite bentonite

igus® vibration test

Goal: service life test under high vibration to simulate the use in construction and drilling equipment

Test set-up: standing E4 e-chains® are exposed to a vibration of 30 - 60 Hz on a specially developed test stand

Result: after 2,000 hours no wear of the plastic e-chain® could be measured. The steel chain already shows massive wear in the region of the bolts.

Special solutions for your industry, for example:

Locking separator

Holds securely even with hydraulic hoses under high pressures.

Roller separator

Protects hydraulic hoses against wear in strong movement.

Attenuated e-chain®

Tribo-optimised polyamide bolts to absorb and compensate for any vibration.

Explore examples and products at www.igus.eu/constructionmachinery

www.igus.eu/e-chains
chainflex® work ... guaranteed!

More than 1,040 chainflex® cable types from stock

25 years of chainflex® – cables with the special structure for a very long service life in energy chains® and the unique 36-month guarantee*. Flexible cables in energy chains® need special characteristics to last through many cycles, high speeds and accelerations, as well as demanding environmental conditions. Electromagnetic compatibility and compliance with standards and guidelines such as NFPA 79, UL, CSA, VDE, Inter- and Profibus are also taken for granted today. The igus® chainflex® product range extends from energy chain® compatible control cables, servo cables, motor cables, as well as robot cables to bus cables, data cables, encoder cables and fibre optic cables.

- Temperatures -40 °C to +90 °C
- For highly dynamic applications in energy chains®
- Special design prevents cable failure and "corkscrewing"
- Highly abrasion-resistant jacket materials (PVC, PUR, TPE)
- 36 months guarantee for chainflex® cables
- Germanischer Lloyd seal of approval (DNV-GL)
- Mud resistant acc. to NEK 606
- For outdoor applications

www.chainflex.eu

Tested for your industry, for example:

**igus® resistance test**

Objective: Service life and durability tests on various igus® chainflex® cables

Test setup: igus® chainflex® cables moving in e-chains®, in a selection of oils.

Result: no impairment of the tested chainflex® cables in a variety of oils and lubricants

**igus® cold chamber test**

Objective: to determine the maximum service life at temperatures of -40 °C.

Test set-up: 7 m travel, speed of 1.5 m/s at -40°C, igus® CF35 TPE cables in an e-chain®

Result: the test was ended after 3.7 million double strokes. The cable exhibits little wear and is fully functional.

Special solutions for your industry, for example:

**Single core motor cable**

Shielded and unshielded single core motor cables for demanding requirements

**Data cables**

For all throughput data systems in e-chains® applications. Even with large cross sections.

**Control cables**

PVC, PUR, TPE – for all application areas Shielded and unshielded cables.

Explore examples and products at www.igus.eu/constructionmachinery

* 36 months or up to 10 million double strokes (5 million for cables of the chainflex® M family); whichever is first.
Lubricant and maintenance free plain bearings made from high-performance plastics – iglidur®.

No lubrication or maintenance required, while cutting costs and increasing service life, everything from stock and delivered promptly – that is the central idea of all igus® products. iglidur® plastics have been extensively tested with respect to wear and friction values including other relevant material properties. iglidur® polymer plain bearings from igus® signifies the step from the plastic bearing to the tested and therefore predictable machine component.

- Absolutely lubrication-free
- Very lightweight
- Maintenance-free
- High static loads
- No corrosion

The base polymer is crucial for the wear resistance

Fibres and filling materials reinforce the bearing to absorb high forces or edge loads

Finally, the solid lubricants automatically lubricate the bearings and reduce the friction in the system

www.igus.eu/iglidur

Structure of iglidur® plain bearings:

The base polymer is crucial for the wear resistance

Fibres and filling materials reinforce the bearing to absorb high forces or edge loads

Finally, the solid lubricants automatically lubricate the bearings and reduce the friction in the system

www.igus.eu/iglidur

Tested for your industry, for example:

**igus® Heavy Duty test**

Goal: comparison of typical, lubricated metallic bearing systems with lubricant-free iglidur® plain bearings

Test set-up: original front loader, driven by a stationary hydraulic unit (11kW, 70 litre flow rate/minute)

Result: due to the control the most diverse collective motion can be programmed, with similarly variable forces

**igus® "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.

Result: all tested iglidur® materials show considerably less wear than the metallic plain bearings. The shafts of the metallic bearings are very strongly shrunk and thus not fit for further use.

Other solutions for your industry, for example:

**iglidur® Q290 plain bearings**
- Long life even on soft shafts
- Insensitive to edge loads

**iglidur® TX1 plain bearings**
- Lubrication- & maintenance-free
- Up to 200 MPa static and 140 MPa dynamic

**iglidur® PRT slewing ring bearing**
- Lightweight due to the use of plastics and aluminium
- Very quiet rotary motion
- For high loads, robust
- Extensive accessories

**drylin® W profile guide**
- Simple installation, maintenance-free
- Curved rails
- Low weight and quiet operation
- Special profile solutions

Explore examples and products at www.igus.eu/constructionmachinery
Ready to fit from a single source

**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 downtime
- System guarantee – depending on the application

www.readychain.eu

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

Assembled igus® readychain® systems: individual or serial production

**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 and maintenance

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.

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*

www.igus.eu/assemblyservice

- **New installation**
- **Upgrades / Replacement**
- **Repairs**
- **Chain monitoring**
Tested! Service life ...

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.

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

... predicted accurately.

Tested, tested, tested ... For example:

Heavy duty test: typical, lubricated metallic bearing systems compared with lubricant-free iglidur® plain bearings

Pivot wear test rig for testing the pivoting wear rate for medium loads.

Determination of the maximum e-chain® sag, as a “chain-in-chain” solution in this example

Service life test under high vibration to simulate the use in construction and drilling equipment

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

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/constructionmachinery

... 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/24

The igus® lab
The industry’s largest test lab (2,750m²) conducts more than two billion test cycles per year on a total of 107 test rigs.
● Extensive test databases
● Customised tests on request

www.igus.eu/test

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-wide leader for developing and manufacturing energy supply systems and plain bearings.

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

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 in many industries.

www.igus.eu/industry
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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Publisher is the igus® GmbH, Germany
MAT0072207.20 As of 03/2016
Subject to technical alterations.