

Oil & gas

Solutions for the oil and gas industry, tried
and tested under extreme conditions



• plastics for longer life®

igus®.eu...

www.igus.eu/oilgas



motion plastics® – moving energy supply systems for extreme condi- tions

Your technical innovator and cost reducer,
Tim Schneebeck

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www.igus.eu/oilgas



With its own sector business unit for “oil & gas”, igus® is clear that this demanding area for energy chain systems is and will continue to be an important focus of the company's engineering work. The areas in which individually configured and harnessed systems are most often used include oil rigs and on-shore drilling equipment.

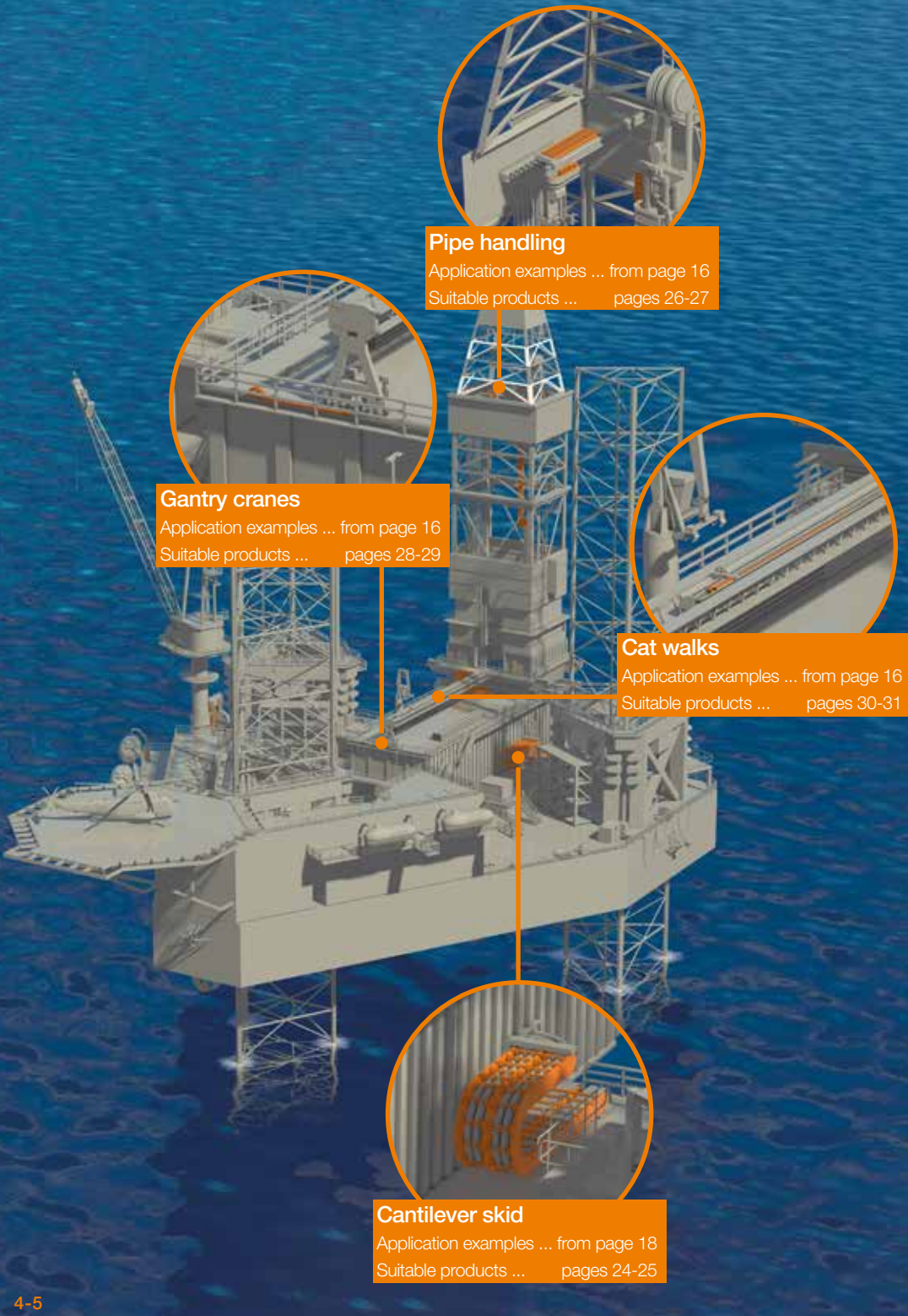
Motion plastics® from igus® are proving their worth under really extreme conditions, and this is clearly demonstrated by the fact that the company has had its own sector business unit for “oil & gas” applications since the beginning of 2017. This was not established in order to open up this branch of industry but evolved from the existing “Maritime” area of business and become so successful that it has now become a separate business unit in its own right.

This makes sense because these branches of industry have their own specific sets of requirements. The first thing that the words “oil & gas” bring to mind are offshore drilling rigs. But there is also on-shore exploration, for which stationary or mobile drilling equipment is used. In this area, we also have a very strong presence.

Take a look at this brochure and get an insight into what igus® motion plastics® can do in the oil and gas industries to lower costs and improve technical performance.



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Pipe handling

Application examples ... from page 16

Suitable products ... pages 26-27

Gantry cranes

Application examples ... from page 16

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Cat walks

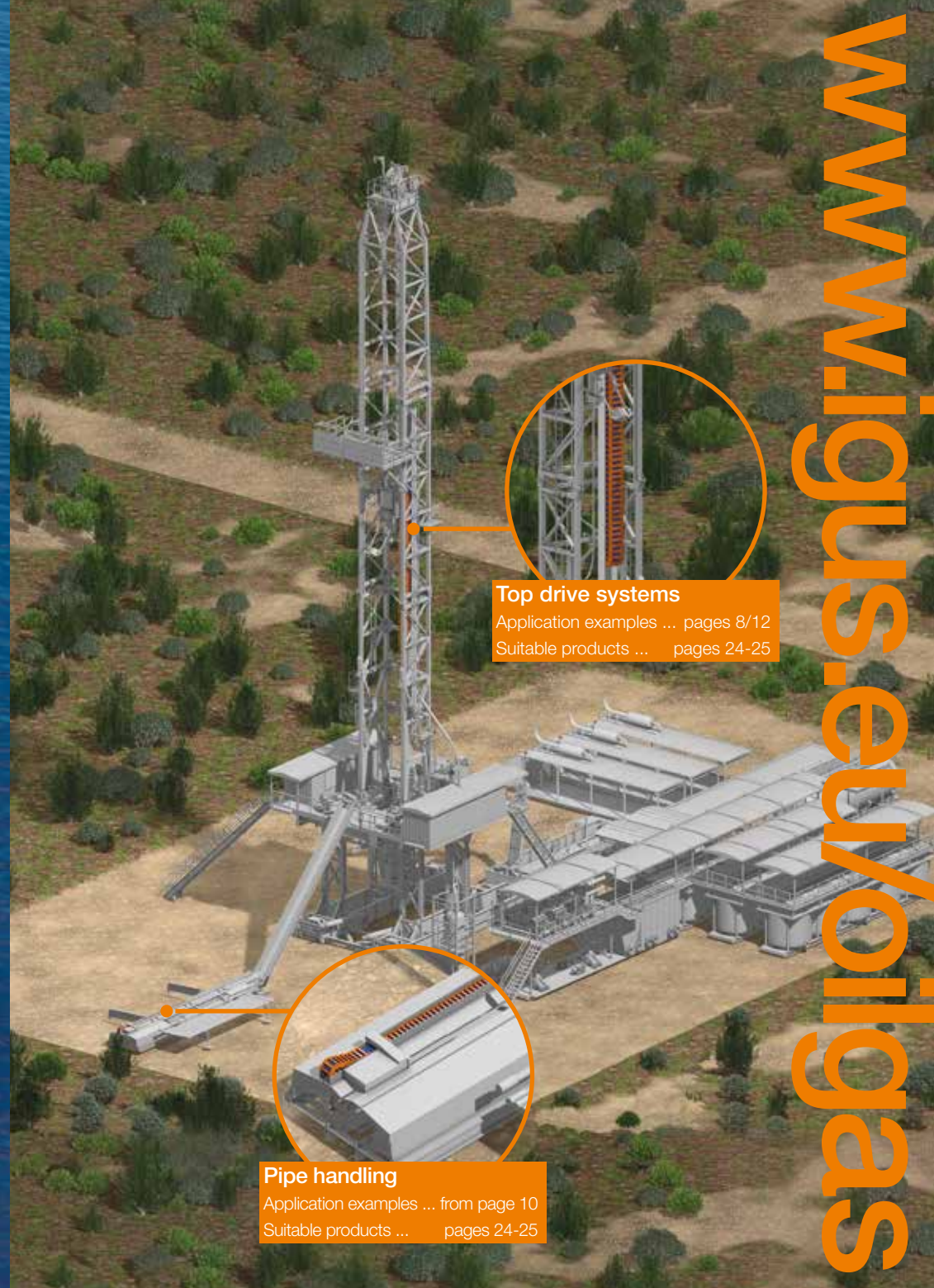
Application examples ... from page 16

Suitable products ... pages 30-31

Cantilever skid

Application examples ... from page 18

Suitable products ... pages 24-25



Top drive systems

Application examples ... pages 8/12

Suitable products ... pages 24-25

Pipe handling

Application examples ... from page 10

Suitable products ... pages 24-25

Always the right solution for the oil and gas industry

Withstanding high temperatures and pressures, and offering outstanding mechanical strength combined with resistance to chemicals: this is igus® motion plastics®

Dirt, salt water, vibration, extreme temperatures, high levels of mechanical stress and the explosive environments are just some of the difficult conditions to which energy chain systems are exposed in oil and gas exploration. Often these ambient conditions occur together at the same time.

Advantages of igus® products in the oil and gas industry

- Suitable for offshore applications and heavy loads
- Ready-to-connect complete systems consisting of e-chain®, cables, connectors, guide troughs or installation kits
- Weight-saving of up to 70% compared with steel chains
- Cable- and hose-friendly due to plastic interior separation system, no cable or hose damage
- 100% corrosion-free and seawater-resistant
- chainflex® cables with DNV/GL and NEK 606 certificate
- Modular and easily adapted to the application
- Tested under realistic conditions plus a service life that can be calculated
- Easy assembly and maintenance
- Cost-effective and economical solutions



Largest igus® E4.1 chain with a fill weight of up to 650 kg/m on the cantilever of a jack-up ship.

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Land drilling: Everything from a single source – Plug & play ener- gy supply sys- tems for auto- mated land rigs

igus® readychain® systems have been used for energy supply on land rigs since the beginning of 2000.

Ready-to-connect E4.1 readychain® systems – consisting of e-chain®, cables, installation kits and guide troughs – especially for pipe handling systems, catwalks and, for some time now, for top drive systems as well. readychain® systems are also increasingly in demand as they help to save time during installation on site. Plastic bearing components for moving parts used on top drives or pipe handling equipment.

Advantages: ready-to-connect complete systems, corrosion-resistant, light and with guarantee.

Electrically operated, highly efficient drill rigs with readychain® systems for pipe handling and top drives

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From the modular kit. All movements and requirements are possible with the E4.1 system. Also as a complete system with cables and industry-specific connectors.



Light and cost-effective – E4.1 e-chain® for pipe handling systems

Ready-to-connect E4.1 e-chainsystems® for extreme applications – weather-resistant and corrosion-free. Very robust e-chain®, also suitable for hydraulic equipment, with special internal separation system to avoid “loose article” problems under vibration. Harnessed systems with industry-specific connectors and cables as ready-to-connect alternatives to steel chains.

Horizontal and vertical pipe handling system on a fully automated land rig.



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Increase the service life of cables and hoses used for top drives



800 series for hydraulic hoses and motor cables used for top drives. Key advantage over festoons: individual cables can be easily replaced.



E4.112 for guiding motor and data cables as well as hoses, all in one system.

Individual cables can be replaced. Small installation space with clearly defined chain movement (now hanging unguided around within the mast). Also available as ESD material for ATEX areas. chainflex® cables with MUD-resistance are flame-retardant and halogen-free. Available as ready-to-connect complete systems for fast installation in masts or as a replacement for a festoon.



Retrofit of a festoon with an e-chain®. Here the cooling hose is guided too within the same system.

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Offshore drilling: Light, corrosion- free and tried- and-tested – E4.1 systems for offshore drilling rigs

Already in use in many offshore applications and proven to work: energy chain systems and bearings from igus® withstand the toughest environmental conditions. On drilling ships or oil rigs, they ensure a reliable energy supply. Whether in highly dynamic pipe handling applications or for the guidance of energy supply cables on cantilevers, igus® energy chains are a safe, lightweight and maintenance-free solution. Thanks to our engineering team and DNV-GL and NEK certified chainflex® cables, ready-to-connect complete systems can also be supplied, specially tailored to the needs of offshore applications and the oil & gas industry.



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Maintenance-free complete systems for pipe handling systems



Riser gantry crane with e-chainsystem® consisting of guide trough and e-chain® for the reliable and safe guidance of hydraulic hoses.



Multiband e-chains® for the heavy loads needed in horizontal pipe handling systems. Guiding hydraulic hoses and electric cables reliably and safely in a single system.



Long, horizontal and vertical travels for guidance of the drill pipe, for example from the fingerboard to the top drive, are common applications for energy chains in offshore pipe handling systems. The energy chains here are exposed to the tough conditions on the drilling rig. In such conditions, plastic energy chains demonstrate all their strengths and advantages over steel chains in terms of their low weight and corrosion-resistance, whilst their internal separation system offers long cable and hose life. Large fill weights in energy chains e.g. hydraulic hoses, can be handled without problem if chains with extensions link are used.



Vertical pipe handling systems on a multi-purpose tower on a drilling ship.

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Weight-saving solution for cantilever skids

Long travel applications for the cantilever skid.

Drill floor skid for a platform in the Caspian Sea

Fill weights of 230 kg/m in an E4.350 e-chain® with extension link on a cantilever skid for a jack-up ship.

In the case of the cantilever skid, the requirements are enormous. With large packages of hoses and cables, high fill weights must be carried and protected by energy chains. Also, the tough ambient conditions on offshore platforms and ships can have an adverse influence on the material and lead to corrosion, for example. In such extreme conditions, plastic energy chains from igus® show their benefits and, because of their corrosion-free nature and their low weight, they have considerable advantages over steel chains or festoon systems.

Special solutions for on-shore and offshore drilling rigs

Complete, fully harnessed ready-chain® systems for robots used on automated drilling rigs.

Revolutionary system for the automation of offshore oil exploration in the face of extreme conditions

Metre-high waves, storms with high wind speeds, as well as oil, sludge and heavy rain, snow etc.: living and working on an oil platform is not only unpleasant but also dangerous. Based on its research and development work over a period of many years, the Norwegian company Robotic Drilling Systems has developed a robot system for the automation of drilling on the platform. In this application, energy chains from igus® ensure the reliable supply of energy under extreme conditions.

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Special solutions for on-shore and offshore drilling rigs



Special materials for extremely low water absorption in deep-sea installations.



Customised rotation system for riser pull in systems with large diameters.

Special solutions specifically tailored for the industry.

Example: offshore chain – the e-chain® for especially tough applications.

The igus® Offshore chain can be used under the toughest conditions where safety, durability under very harsh environments are needed to ensure the installation functions. For example, on the top drive of an offshore drilling rig where the chain is exposed to high wind loads, for example.

Offshore chain – the e-chain® for especially tough applications.





E4.112 e-chain®: for top drive systems on land drilling rigs

- Complete systems, consisting of e-chain®, industry specific cables, connectors, as well as installation kits for fast and easy integration into the mast (even to replace existing festoons)
- Individual hoses and cables can be replaced
- Defined movement cycle of the system prevents collision within the mast
- Special design and internal separation to avoid "loose article" problems



www.igus.eu/e-chain

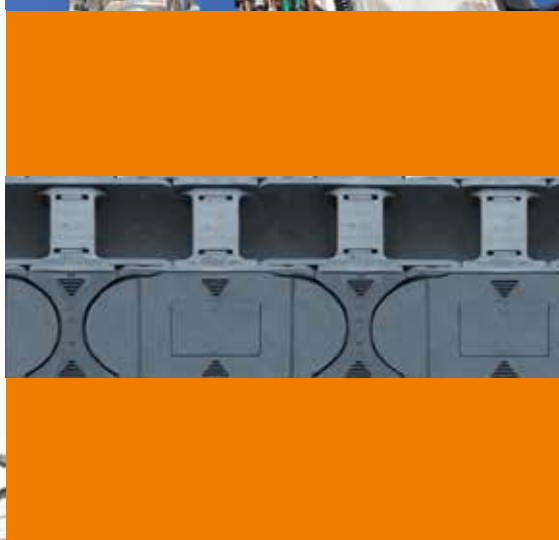


chainflex® cables: certified acc. to onshore, oil & gas regulations

- MUD-resistant in acc. with NEK 606
- Halogen-free and flame-retardant in acc. with IEC 60332-1-2
- Highly flexible for extremely high requirements in the e-chain®



www.igus.eu/chainflex



E4.56 e-chain®: for pipe handling systems

- Ready-to-connect readychain® systems available that save time during installation
- Modular design with easy assembly
- Up to 73% weight saving compared with steel chains



www.igus.eu/e-chain

www.igus.eu/oilgas

readychain® systems: pre-harnessed and ready-to-connect

- Pre-harnessed systems delivered on drums
- Time saving during installation
- From a single source, with system guarantee



www.igus.eu/readychain

E4.350 e-chain®: plastic chain for heavy-duty applications

- Tried and tested and resistant to corrosion, salt water and UV radiation
- Low weight, with a weight saving of up to 73%
- Reliable and safe guidance of all cable sizes (even small data cables)



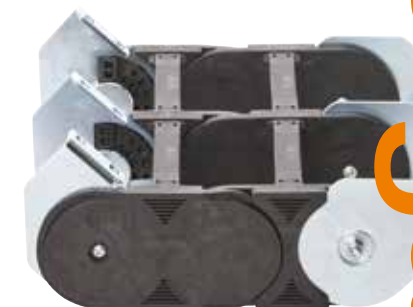
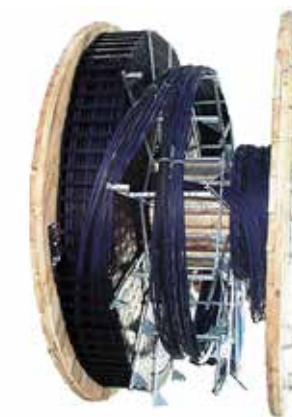
www.igus.eu/e-chain

e-chains® with extension link: for horizontal pipe handling systems

- Modular structure for heavy loads and long travels
- For guiding hydraulic hoses safely and without problems
- Can be quickly replaced, no threaded connections – Saves time during assembly



www.igus.eu/e-chain



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Rotation systems for pipe racking systems

- All media (hydraulic, data, power) in one system
- Maintenance-free complete systems
- Modular for extremely small installation space



www.igus.eu/e-chain

E4.1 e-chain® E4.1: complete systems for pipe gantry cranes

- Turnkey complete systems consisting of e-chain®, cables and guide trough
- Plug & play readychain® systems for fast installation
- Resistant to corrosion and UV radiation



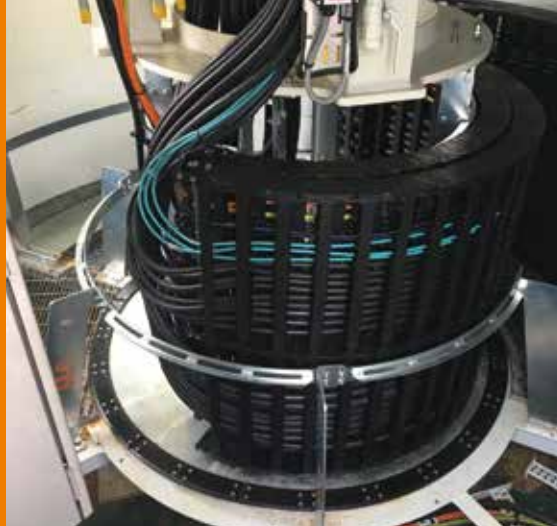
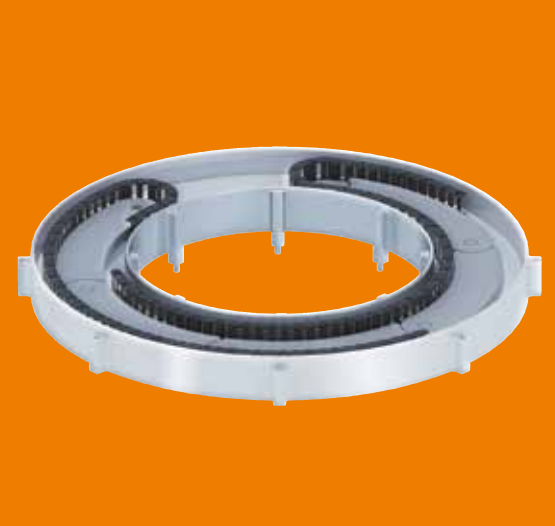
www.igus.eu/e-chain

chainflex® cables: certified for offshore use

- Type approval in acc. with DNV-GL
- Tested for up to 138 million double strokes
- Additionally with NEK 606 for MUD-resistance



www.igus.eu/chainflex



rol e-chain®: rolling chains for long travels in the case of catwalks or gantry cranes

- Roller e-chain® for very high fill weights and speeds
- Trough systems made of different grades of steel
- Modular and corrosion-free



www.igus.eu/rol-chain

E4.1.ESD e-chain®: with conductive material for ATEX areas

- Special material in acc. with EX II 2 GD, ATEX Directive 94/9/EC
- Standard- types from stock
- Weight saving up to 73% compared to steel chains



www.igus.eu/ESD

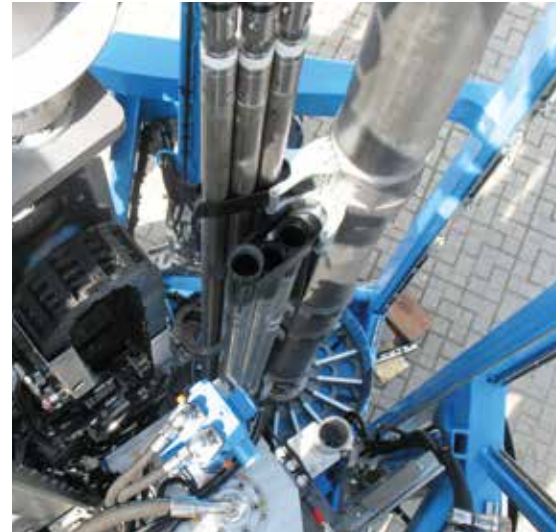
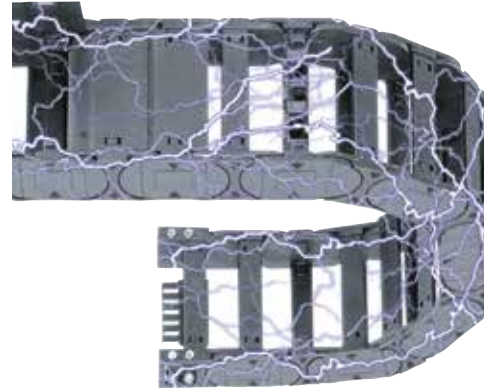
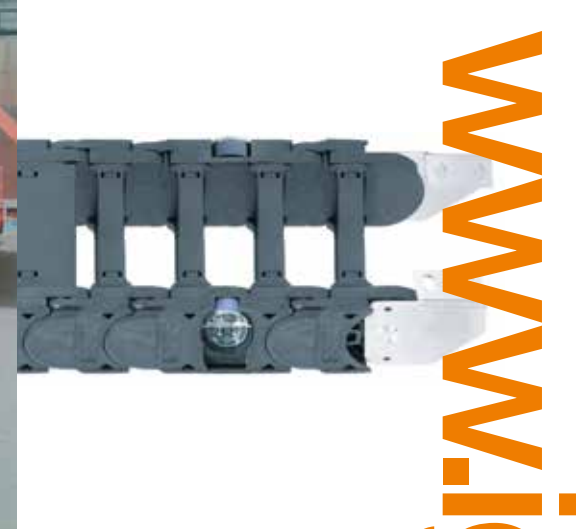


E4.1.EG e-chain®: for all under-water applications

- EG material with extremely low water absorption
- Corrosion-resistant in seawater
- Strong E4.1 system



www.igus.eu/e-chain



www.igus.eu/oilgas

Assembly



- Service for fast, error-free installation
- Specialised assembly personnel

www.igus.eu/assembly



Ready to install and industrially harnessed: www.igus.eu/readychain

Always the right harness for your application Ready-to-fit readychain® e-chainsystem® configured and delivered in 3-8 days.

Possible due to the large selection of energy chains for all kinds of motion, cables for e-chains® with 36 month guarantee plus the relevant connectors. Reduce the number of suppliers and orders by 75%. Minimise machine downtimes. System guarantee – depending on the application.

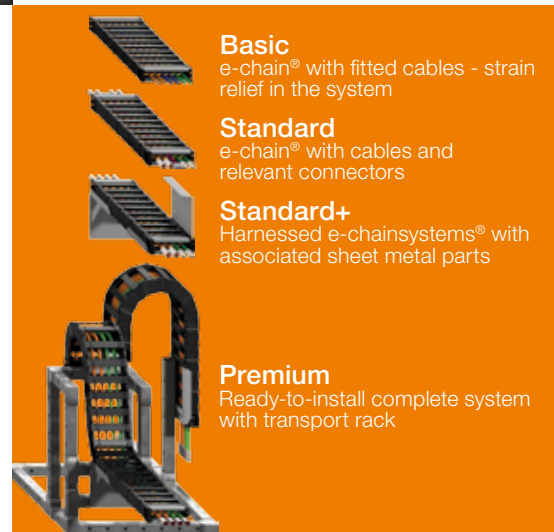


Sampling



- We can provide support in the construction phase of your machine

www.igus.eu/sampling



Basic
e-chain® with fitted cables - strain relief in the system

Standard
e-chain® with cables and relevant connectors

Standard+
Harnesses e-chainsystems® with associated sheet metal parts

Premium
Ready-to-install complete system with transport rack



Engineering



- Customised products
- Many solutions from the "modular construction kit"

www.igus.eu/engineering



The type of harnessing most frequently used in the oil and gas industry

Basic

Reelable for fast connection of the cables

www.igus.eu/RCbasic



www.igus.eu/oilgas



Tested ...



- Long service life in dirty environments and in sunlight
- Tested for more than 76 million strokes in e-chains®
- With a bend radius factor of $9.4 \times d$



Extensive
test data-
base

Tested ...



- Cable test in the climate chamber
- Tested in motion in energy chain down to -40°C
- More than 250 tests conducted in parallel in 58 test facilities



Tested ...



- No wear under tough conditions
- Insensitive to saltwater, no corrosion



Tested ...



- Service life test when subjected to severe vibration, e.g. installed upright as in a rock drill



From more than 15,000 tests per year we created probably the world's largest test database. This database gives us the ability to select always the right product for your specific application. Individual tests for your application are also possible.

www.igus.eu/test

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Buy online - 24hrs!

Visit our industry web pages for more information, products, application examples and useful online tools. Quickly find and configure products and calculate service life – all online. With the help of our product finders, you can quickly find the right article and obtain an exact prediction of service life. All online tools also enable you to reduce process costs. igus® delivers from stock in 24-48 hours!

The screenshot shows the igus website interface. At the top, there's a navigation bar with links like Products, Configurators, Industry Solutions, Service, and Company. Below this, a large banner features the text 'Turnkey solutions...strong...safe...light weight! The right e-chain system for the offshore industry' with images of offshore oil rigs. A sidebar on the right includes a 'Real contact' section with a photo of a man and contact details for 'The Salesperson' (+49 2203 9649 7200). The main content area is titled 'Solutions for the offshore, oil and gas industries' and describes 'Safe, light, saltwater-resistant and maintenance-free - Strong igus® plastics for the offshore, oil and gas industry'. It includes a video player showing an offshore rig and a list of 'Your benefits' such as 'Suitable for offshore applications and heavy loads' and 'Weight saving in up to 70% compared to steel chains'.

Always the right solution for the oil and gas industry.

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.

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