robots @ igus®.de

Editorial

The Hanover Fair and the „Automatica" will both be taking place shortly, where we will be presenting special innovations in the energy chains sector to you.

The multi-axis energy chain system Triflex® R – a product family especially for robot manufacturers and users – already comprises a comprehensive modular system made up of more than 100 components. This allows the safe realization of all applications from major welding robots to small handling robots.

Jochen Weber

The latest development is the universal module Triflex® RS which is used to guide the energy chain close and parallel to the robot arm. There have been new developments in the field of spring rod modules, too, as well as in the protective sheaths which protect the Triflex® from liquid metal splashes or sealing pastes, for example.

You will find igus® in Hall 17, Booth J14 at the Hanover Fair! Right next to the new, all-year special show „Robotics Academy".

Yours

Jochen Weber
Robotics Branch Manager

Title story

Triflex® RS for compact chain guiding

The new universal module „Triflex® RS" has been developed especially for robot applications in cramped conditions. With this, the energy chain is always guided parallel and close to the robot arm.


Triflex® RS can be mounted directly to all existing fastening points on the robot. Advance project planning is not necessary: The corresponding unfixed length of energy chain is added to the front area of the robot and fastened to the sixth axis by means of a connection element.
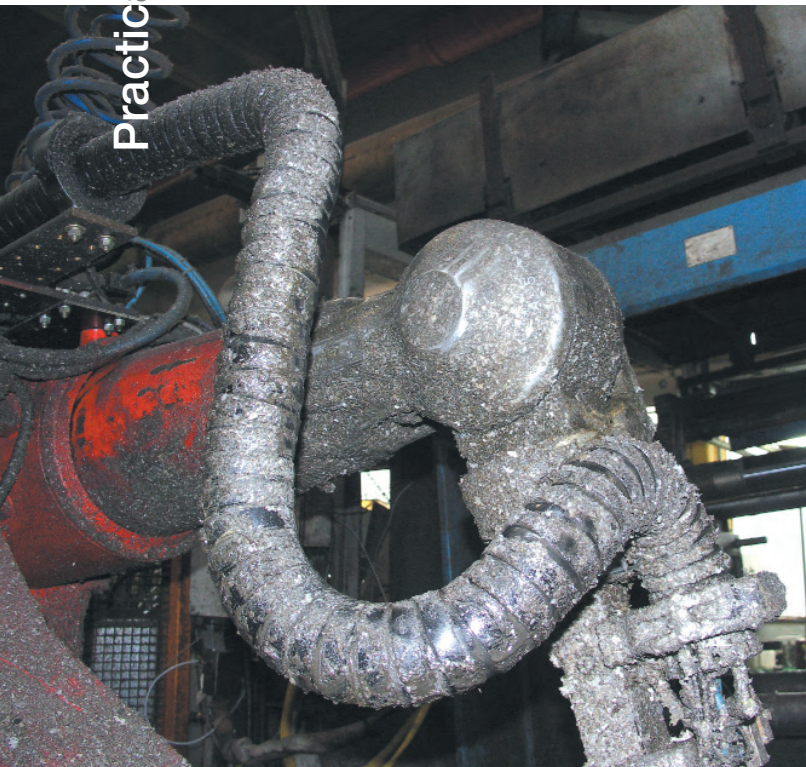
The lubricant-free Triflex®-R energy chain has an integrated reset spring. Thanks to the use of spring rods inserted in the spring rod modules, directed pre-tension is generated automatically. Which means no loops and no cable stress at the robot head. Last but not least, the universal movement of the Triflex® R overall system makes quick teaching possible.

Triflex® RS guides the energy chain close to the robot arm.
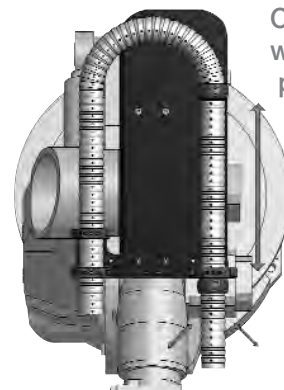
Can be installed without project planning.

Practical experience 1

Twelve times longer tool life

The conditions for robots in casting cells are extremely demanding. Heavy chip accumulation may occur in addition to the complex movements. TMG Zitzmann GmbH in Stockheim, specialist for zinc and diecasting parts for the automotive industry, has now replaced conventional cable assemblies available on site by Triflex® R energy chains from igus®. This increases tool life from a maximum of one month to a minimum of one year!

The robots work in three-shift operation six days a week. They remove parts up to 60 kg in weight and set them down for further processing. Since the conditions in the casting cells are sometimes extremely cramped, the energy chains do not only need to be very flexible, they also have to be able to cope with high loads at different accelerations.

Directed pre-tension

The Triflex® R specially developed by igus® for jointed-arm robots completely surrounds the cables routed at the robot head and can move in all three planes at the same time. Impact-resistant, dirt-repellent, sturdy, abrasion-proof and resistant to chips, they can be used in the roughest of environmental conditions. In the foundry, spring rod modules and one universal assembly set from the modular system, which is made up of more than 100 parts, are also in use. The spring rods compensate transverse accelerations so that the complete energy supply does not start to oscillate, get caught up or strike the robot. In addition, they can be used to generate directed pre-tension. They automatically return the energy chain to the initial position.

„Today, expensive downtimes are a thing of the past. The investment in the igus® energy chains has been worth it in every respect for us," concludes Marc Hofmann, responsible for maintenance. The tool life of the 16 robots have multiplied significantly.

Sturdy energy supply with spring rod modules in magnesium foundry.

Removal robot with Triflex® R in the casting cell.

Moves in more than one dimension: Triflex® R, size 40.

Special cable

Torsion-resistant

Sooner or later, torsion leads to cable failure. Not with the „Chainflex CF Robot" from igus®. With the 3D cable, the shielded individual wires can withstand even large torsion movements. Thanks to a tin-plated copper shield braiding, all the forces resulting from the torsion movement are absorbed and premature failure of the shield avoided. In addition, the TPE outer sheath is especially abrasion-proof.

Special cable Chainflex® CF Robot for torsion applications in the energy chain
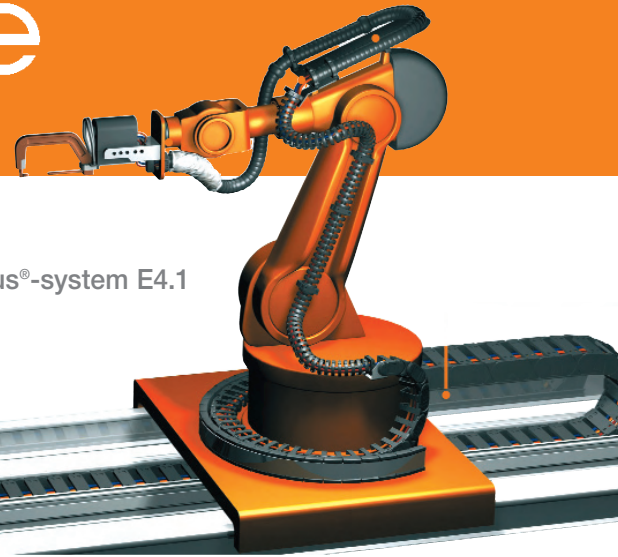
Sealing

Protection from paste

Hot environmental conditions in the foundry, dripping paste during sealing applications or the use in coating lines place a great strain on energy chains over time, or restrict their flexibility. For this reason, there are now different protective sheaths available for the Triflex® R which have been adapted to the respective requirements in terms of material composition. Pulled over the energy chain with a Velcro fastener or elastic band, they ensure a long service life.

Triflex® R protective sheath

E-Chain®, insufficiently protected

Linear guide

Automation and handling

The sturdy, completely lubrication and maintenance-free DryLin® T-linear guides reveal their strength in extreme environmental conditions, e.g. during welding. Electrically insulating linear guides are often required for such applications. Welding splashes and dust must not stick. The linear guides are extremely insensitive to dirt and guarantee a high service life at low costs.

robots@igus®.de

Robust igus®-system E4.1

## Multi-axis speed

System availability requirements are increasing in the glass industry, too. Pre-harnessed energy chains guarantee competitive advantages, as the example of the company Pennekamp GmbH & Co. OHG shows.

When glass products heated to around 500°C are slid into a leer, the time for this four-axis slider has come, which can carry out flowing, superimposed movements like a robot. Triflex® R from igus® is used for the energy supply. The multi-axis energy chain protects the cables routed from axis to axis accordingly and can cope with every movement. But all the chain-capable cables in the comprehensive Chainflex® range as well as all the plugs and connecting elements incl. distributor box are delivered as a ready-to-install system. Today, the glassworks can manage seven additional cycles per minute, the output per year has increased by several million bottles.

Triflex® R for
energy transfer
to the axes
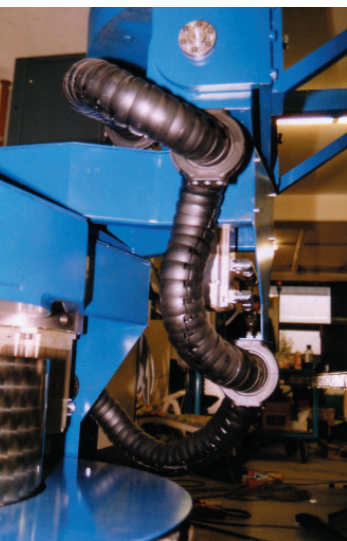
Energy supply in the 7th axis

The design advantages of the energy chain series E4.1 are shown off particularly well in robot applications. Whether long travel, high acceleration or in a soiled environment: The sturdy igus® system E4.1 ensures safe energy supply even in the 7th axis and ensures flexibility in all process environments. Assembly times can be reduced by up to 80% thanks to the improved opening and separating bridge. A quick-locking feature ensures little force is needed for opening and closing even very full chains. Special fittings and the „rear handle" improve the self-supporting length by more than 20%. The „rear handle" also ensures very high rigidity even with strong lateral forces.
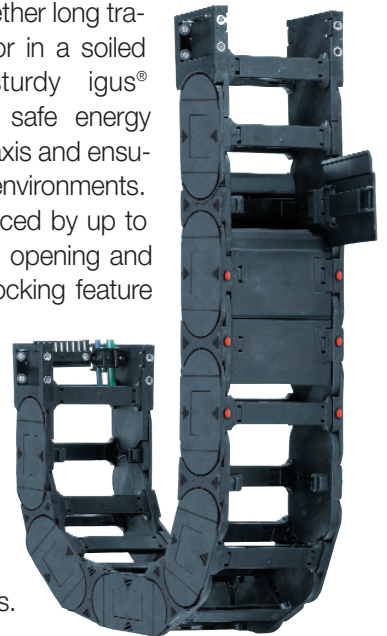
Trip to Phantasialand to the „Black Mamba"

If you answer our two questions correctly, you could win a trip to Phantasialand (2 adults, with children). You will stay a the Ling Bao Hotel. We also invite you to enjoy an Asian dinner. The next day, you can ride the „Black Mamba" roller-coaster and many other attractions. Just answer the following questions correctly and send your answers by e-mail to **robots@igus.de**. Closing date for entries is 5th May 2008. Don't forget to include your sender details!

Good luck!

Question 1: Where will igus® be on show at the Hanover Fair (hall/booth)?
Question 2: What is the name of the new universal module for tight guidance of the Triflex® R?