robots @ igus®.de

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igus® newsletter dedicated to the robotics sector

Editorial

The fascinating and innovative nature of robotics engineering was demonstrated a few weeks ago at the Automatica trade fair, where igus® energy supply systems could be seen in use on a number of robots.

Jochen Weber

igus® solutions are used to transmit energy, data and pulses to the grippers and axes of robots and handling systems. These solutions are cost-effective, efficient, extremely durable and highly reliable, characteristics which make our E-ChainSystems® the nerve tracts of automated facilities.

As suppliers, we also need to be constantly inventive: Keenly pursuing this objective, igus® at the Automatica presented some interesting new products which are described in this newsletter, together with reports on robot applications. We hope you will find the information here useful. If necessary, you can request further details on individual topics and products, or simply ask us to pay you a visit. We like to exercise our motto to „stay on the ball“. I'm already looking forward to a meeting with you.

Sincerely,

Jochen Weber
igus® robotics manager

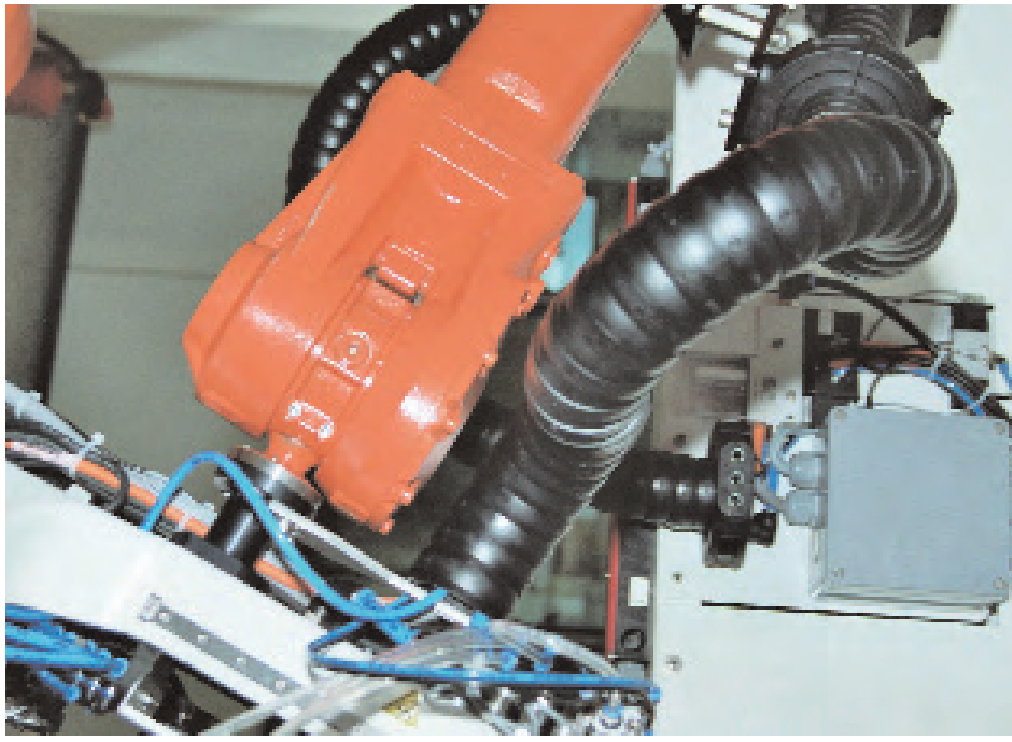
Title story

Complicated handling tasks

To handle printed circuit boards during production of electronic components, Schmid Technology Systems now employs a new technology: A six-axis robot has been added to the linear systems already in use. A Triflex® R energy chain transmits energy and signals to the robot's grippers.

Headquartered in Freudenstadt, the Schmid Group specializes in the development and production of photovoltaic and PCB manufacturing facilities. The product spectrum of this international group includes equipment which picks out circuit boards arranged on cassettes and transports them individually on a belt to a processing station.

The linear units used previously are now supplemented for the first time by a six-axis robot operating at cycles of less than seven seconds. According to Rainer Greber, head of construction at Schmid Technology Systems, system flexibility is even more important than speed. The freely programmable robot is capable of a



The handling system's complex gripper receives its energy and control signals via a Triflex® R energy chain capable of multi-dimensional movement.

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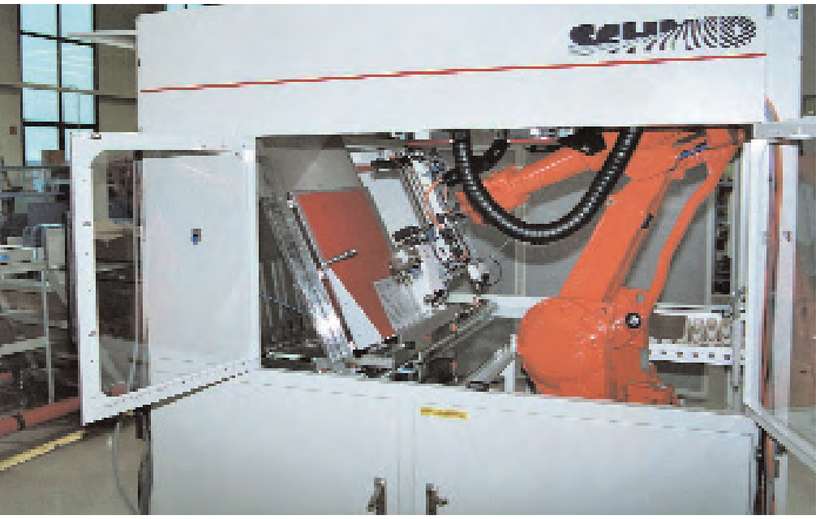


The Triflex® R energy supply system permits complex movements along all six axes.

variety of movements without necessitating readjustment or conversion of the hardware.

Able to unload cassettes at seven-second intervals, the first facilities of this kind have already been shipped. The equipment is fully contained in order to meet the stringent cleanliness standards imposed on PCB handling. Appearing confined in its machine housing, the robot is nevertheless able to move freely between the three handling stations.

Ready to install

On their search for an ideal means of transmitting energy, control signals and compressed air to the gripper, the constructors at Schmid opted for the Triflex® R from igus®, able to adapt to all types of movement even while the robot performs complex handling tasks along the sixth axis. Small bending radii permit compact installation. The E-Chain®, made of highly wear-resistant material, and the igus® ReadyChain® system, delivered ready-to-install with all necessary cables, also meet the standards applicable to clean-room technology.

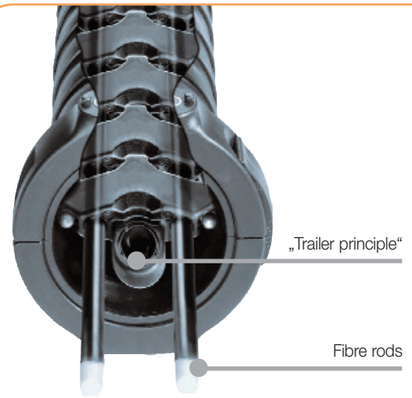
Rainer Greber states that robots have not only become much more economical in recent years, but also achieve a notably higher degree of availability compared with linear units. The costs of energy supply are also reduced by lowering the required number of energy chains from previously six to just one.

Triflex® R „Light“ connection

For its Triflex® R „Light“ energy chain, igus® now presents a special mounting bracket which is smaller, lighter and more economical than those previously available.

The element consists of two half-shells which are easy to open and allow fast mounting of E-Chains®. If necessary, the elements can be furnished with teeth providing the cable with strain relief. Compatible with all Triflex® R types.

A new „light“ connection fits all Triflex® R types.



Multi-axis E-Chain®: How it works

The individual chain links of Triflex® R are connected according to the trailer principle, similar to the tow-coupling on a road vehicle. This ensures smooth movement in all directions, even at high tensile forces. The need for continuous support elements such as steel cables etc. is eliminated.

In practice

Longer life cycles thanks to Triflex® R

Roof tile production plants are not exactly an ideal environment for robots: The dust generated here is bad for all machines and equipment. At Jungmeier's roof tile plant in Straubing, robots nevertheless achieve long-term operation at very short cycle times. The Triflex® R plays an important role here.

The tiles are palleted by two robots. One robot arm picks up each tile from the belt, turns 180 ° and stacks the tile to form a group of 8 or 10. This is done at a speed of 2 m/s over a travel of approximately 60 cm in an atmosphere full of tile dust. This influences the availability of the energy supply system. According to Andreas Wals, a technician at Jungmeier's roof tile plant, the company tried out a number of energy chains and hose packages, none of which proved successful though. Extreme movements, short cycle times and adverse operating

Once the palleting robot was converted to a multi-dimensional energy supply system, its life cycle in the soiled environment increased notably.

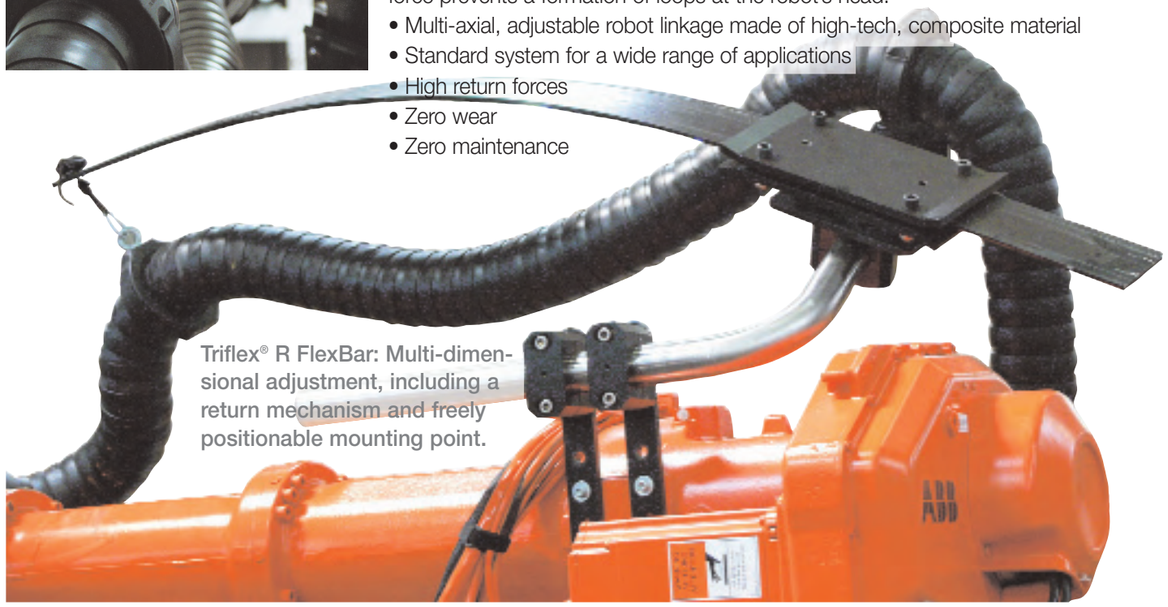
Innovation

New: A universal spring module

Extreme robot applications involving diverse types of movement can now be realized with a new, universal assembly kit – Triflex® R FlexBar. Ideal for stand-alone applications and special designs.

FlexBar spring elements can be freely installed. At the same time, the high return force prevents a formation of loops at the robot's head.

- Multi-axial, adjustable robot linkage made of high-tech, composite material
- Standard system for a wide range of applications
- High return forces
- Zero wear
- Zero maintenance



Triflex® R FlexBar: Multi-dimensional adjustment, including a return mechanism and freely positionable mounting point.

conditions caused the chains and hoses to tear very soon in most cases. In many cases, the cables were damaged too, necessitating elaborate repairs.

After that, the company decided to try out Triflex® R – it worked. Installation of Triflex® has lengthened the service lives of both robots fourfold already by now, thus proving a worthwhile investment both technically and financially.

Football

Autonomous, mobile robots

The robot soccer world championship ends in Bremen on 20th June. Several hundred teams from about 50 countries are participating. igus® as a partner of the robot manufacturers and operators is an official sponsor of this high-tech highlight. Information, tips, film sequences showing robot soccer players in action, the team captain's online journal and many more interesting items can be found at

www.igus.de/robocup

Soccer and artificial intelligence: igus® is sponsoring the robot football world championship.

Infomation

Need more details? No problem!

To receive more information, check the required items on the reply form below and fax it to us.

Robotics fax to igus®: 0 22 03/96 49-222

Name: _____ Company: _____

Street: _____ Zip code / City: _____

Phone: _____ eMail: _____

My application type: _____

Robot type: _____

- ☐ Send me the **CommuniCard CD** on energy supply systems for robots.
- ☐ Send me the **Triflex® R flyer**.
- ☐ Send me an **overview of all new igus® products** in 2006.
- ☐ Send me a **2-metre long Triflex®-R** with a diameter of _____ mm.
- ☐ Send over an **igus® robotics expert** – call me for an appointment.

In future, I want to receive the **robots@igus newsletter**:
☐ via postal service ☐ via e-mail

„I look forward to meeting you on location"
Jochen Weber, robotics manager