Energy/data: new products with and without cables

Igus presents product family for inductive energy transmission – one Energy Chain than can do everything – optical waveguide for -40°C in the Arctic – many new online tools

Easy to assemble and easy to fill compact components that are even faster, more silent and more wear-resistant are just some of the trends from igus involving the supply of moving energy, data and media. "The challenge, however," says Frank Blase, CEO at igus in Cologne, "is to develop customised solutions for many different applications, where the user can sit back and say: it’s installed and now I can forget about it. My system is one hundred percent problem-free". As the worldwide leading manufacturer of Energy Chain Systems, including cables and special blend polymer bearings, igus presented numerous product innovations and extensions at the Hanover Industrial exhibition. The company revealed it had kept step with rapid developments in the area of cable-bound chain systems, but also with inductive energy and wireless data transmission: "For over a year, we have been working devotedly on chain-free solutions. These solutions open up new options in many fields. "However, the deeper we research this," reports Blase, "the more certain we are that Energy Chains plus special cables – available pre-harnessed and ready-to-connect – still have a long future." According to the company’s motto to ‘make things simple’, permanent simplifications are an important factor at the moment, as igus continues to offer new or upgraded Internet tools such as, online catalogues, product configurations and service life calculations for 31 countries in 17 languages on its website.

New: "T3 Band Chain" is fast, silent and cleanroom-compatible

Igus has now developed the "T3 Band Chain" for applications with very high speeds and accelerations. This lightweight energy supply system for short strokes runs extremely smoothly with minimum vibrations and virtually no noise: 33 dB(A) with 26.5 dB(A) of background noise. The side section bands are 120 mm long and injection-moulded as one piece. This reduces production and assembly manufacturing costs and means the T3 Band Chain is affordable for the user. Available immediately ex-stock, the new Energy Chain was developed for applications in the electronics production industry; for measuring machines, high-speed handling systems, graphic machines or linear motor shafts. The igus “E6” Energy Chain series, now available in a new intermediate size with an inner height of 35 mm, can also be used. Both chains, the "E6" and the new "T3 Band", are suitable for cleanrooms, because they are virtually abrasion-free. The same applies to the "floating" magnetic Energy Chain "LeviChain", another option that has now been certified as cleanroom-compatible by the Fraunhofer IPA Institute. One year after the product launch, initial field tests are already being carried out in the electronics industry.
Series "E4.1" extended – all applications possible with just one Energy Chain

"Simplification from a large range of design options ", says CEO Blase was also the guiding principle for the concept behind the Energy Chain series "E4.1". The "E4.1" has kept igus design engineers busy for many years and "was certainly one of the most ambitious projects in the history of Energy Chains at igus," explains Blase. With the "E4.1", a family of Energy Chains that can open from both sides is now available as a universal solution combining all the design ideas developed in the past few years for the series "E4", "E4/4", and "E4.100" in a single family. These design concepts include, for example, a base grip for considerable lateral stability, high accelerations over long travels and for long unsupported lengths. Other examples are the silent "brakes" and rubber nubs, which act as additional noise-reducing options, or external and internal straps for fast assembly, with or without pretension. Every E4 series is dirt-repellent and has a smooth, wear-resistant surface. An additional new development in line with the E4.1 range is a new crossbar with a "Quicklock" mechanism. This rapid locking device means the opening links of the chain can be effortlessly opened and closed with a screwdriver. This design innovation is ideal for very full chains which need to be repaired or when fast retrofitting work needs to be carried out. Like the new interior interior separator options also available, these new ideas highlight the trend towards simplifying processes even further and providing users with flexibility in every situation.

New system "Guidelok", no deviations at great heights

Another new product from igus presented in Hanover continues the "compact and easy assembly" theme: "Guidelok", a system for vertical applications where hanging chains are kept in place even when there are massive transverse accelerations. Thanks to a new design trick, applications of this system in aisle stackers, lifts, hoists or material conveying equipment no longer require expensive casings. The Energy Chain is held in place in the trough by two tilting levers automatically activated by the radius. This means that the Energy Chain cannot swing out or deviate to the side, even on masts 40 metres high. The "Guidelok" system captures and contains the Energy Chain.

Assembly simplification is also the key to another innovation. igus has now developed a new fixed point screw-on plate for its aluminium trough system, so that no drilling work is required and connecting elements can be fastened directly inside the trough.

No more dirt: new roller Energy Chain "5050RHDAX"

Even for very long distance travels with extremely high loads - whether that's 150 metres while being exposed to the dirt involved in open-pit mining or cement plants, or over 500 metres while being exposed to wind and saltwater on ship-to-shore cranes - "all-polymer Energy Chains are today an in demand solution," says Harald Nehring, Energy Chain Systems Manager. Here, too, it was a question of how to make further simplifications alongside safety considerations and very harsh conditions. One example available ex-stock now is the "P4" profile roller chain, which was awarded the industry design award "iF Award 2007" and features rollers divided onto the upper and lower runs. The rollers on the upper run move very silently at speeds of up to 10m/s, instead of over the rollers of the lower run. igus has also developed a new heavy-duty roller Energy Chain "5050RHDAX". Here, the limit stops are on the outside, while the gaps between the moving surfaces are very large in order to prevent dust and dirt deposits clinging and affecting how efficiently the system works. Harald Nehring: "Condition monitoring for preventive maintenance against mechanical damage has also become an increasingly important part of large-scale Energy Chain Systems." As one of several versions, igus is now offering "PPDS easy", a slimmed-down solution, which includes an automatic emergency shutdown in case of overload.

New: "Triflex R" for welding robots, mini-robots, 3-D cable "CF Robot"

According to igus, trends in cable management over the past few years have finally incorporated robotics, too, from heavy production robots to small palletising robots. Multi-dimensional Energy Chains are now available to protect highly stressed cables. At the Hanover Industrial Fair, the company presented two new sizes in its "Triflex R" product range. In accordance with customer demands, the "TRC/TRE.85" is available in a closed or open design and is ideal for welding applicati-
ons. Also new is the "TRC/TRE.30", a version for narrow bending radii for 6-axis mini-robots. Frank Blase: "As we do for all Energy Chain solutions, we have developed the most functionally efficient cable for each robotics application, in addition to the chain itself." For 3-D applications, the company now has new "Chainflex CF Robot". According to Blase, this shielded single-core cable has already been tested in +/- 270 degrees and through more than three million torsional movements. Another new cable product, this time for the crane engineering and materials handling industry, is the TPE fibre optical cable "CFLG.6G.TC". Tested at the igus in-house technical centre down to temperatures of -40°C, this cable can supply cranes with data even in the Arctic regions.

**New: transmitting energy inductively – "invis power" wear-free over hundreds of metres**

As a leading supplier of components and systems to dynamically supply energy and data, igus is also researching new opportunities in the field of contactless technology. With "invis power", the company has now unveiled, according to Blase, "a well-developed complete product family for inductive energy transmission" for lengths up to 400 metres. Here, too, just as with its cable-bound systems, igus relies on a modular design principle. Instead of expensive, tedious projects, the customer receives a simple selection of components in order to implement one or several 'built-on sockets'. Contactless - and therefore without friction or wear - "invis power" offers maintenance-free outputs with a net efficiency of 92 to 94 percent that range from 5 to 40 kVA depending on the requirements of the customer. "Inductive transmission paths can be useful," explains Frank Blase, "in extremely aggressive environments such as compost plants or cleanrooms, where no abrasion whatsoever is permitted."

**"invis data": industry-compatible radio system, new modular IP67 housing**

For wireless data transmission, igus has also now developed a robust family for use outside the switch cabinet: "invis data". Solution number one: a high-frequency signal (e.g. USB 2.0 or FireWire 1394a/b) is converted into a light signal in a coupler, transmitted via glass OWG, and then the light is converted back into an electric signal and transported further via copper cable. This is the best way to transport large data quantities quickly, safely and inexpensively without any disturbance by electromagnetic fields. According to Blase, this makes sense in the case of long distances, where OWGs are superior to copper, and in extremely EMC-stressed environments. Solution number two refers to radio engineering products for transmission links up to 1,000 metres, a proprietary system, and for distances up to 20 metres, both with clear visibility. "As polymer developers, we have developed industry-compatible versions in which the printed circuit board is protected inside a sturdy, dirt-repellent housing," says Blase. "However, it is still only possible to transmit smaller data quantities by the wireless system than by cable, and the radio-typical limitations, caused by the transmission medium air, still remain."
New system "Guidelok" for vertical applications: even in the event of massive transverse accelerations, the Energy Chain is prevented from swinging out to the side: suitable for use in aisle stackers, lifts or material conveying equipment.

Robot Energy Chain "Triflex R" with new sizes: 85-series version for welding robots (picture on the left) and 30-series version (on the right) for narrow bending radii for 6-axis mini-robots.

New product family "invis power" from igus for contactless energy transmission with outputs between 5 and 40 kVA.

"invis data": new modular IP67 housing for wireless/coupler data transmission from igus, the expert for dynamic energy and data supply.

New system "Guidelok" for vertical applications: even in the event of massive transverse accelerations, the Energy Chain is prevented from swinging out to the side: suitable for use in aisle stackers, lifts or material conveying equipment.

New TPE fibre optical cable from igus: in the deep-freeze test at -40 °C in the igus laboratory.