

Shanghai Venture

igus control cable: highly flexible thanks to special alloyed conductor

Chainflex CF98 control cables from igus (Cologne) are already proving advantageous for Energy Chain applications in confined installation spaces. Shanghai Novel Color Picture Tube Co. Ltd., a Chinese subsidiary of the electronics giant Novel, has been successfully using the cable for narrow bending radii, in its plant in the south-western district of Shanghai City, since October 2004. The Chainflex cable has conductors manufactured from a special alloy and hence remains intact in an energy chain, even at a bending radius of $4 \times d$ and less ($d = \text{cable diameter}$) over more than 30 million cycles. Chainflex CF98 consists of a highly abrasion-resistant, gusset-filled, extruded, TPE outer jacket and is specifically developed for very small cross-sections with extremely narrow radii. It is resistant to oil and UV rays and is PVC- and halogen-free.

Spotlight: People's Republic of China

In the booming People's Republic of China, Novel Color Picture is a highly modern, internationally oriented electronics company that develops and manufactures colour picture tubes, among other products. Together with Toshiba and Mitsui (both based in Japan), flat shadow masks for colour picture tubes are being produced. Colour monitors for gaming machines are also being manufactured in association with Shanghai Electric Co. Ltd. The company is certified in compliance with ISO 9002 and 2,200 employees work on a production area of approximately 150,000 m². Production targets per annum (with six different sizes of colour picture tubes) equate to 4.4 million units.

Novel plant, automated stacking system

In the past, the new, automated stacking system for phosphorous monitors had broken down several times at the Novel plant in Shanghai. Maintenance engineers then discovered that the control cable



Picture PM0605-01: igus GmbH, Cologne

Yang Rong, in charge of "lean production" at the Novel Color Picture plant in Shanghai: "The space is extremely confined here. That is why we need a highly flexible cable."

(cross-section: $3 \times 0.25 \text{ mm}^2$) being used next to two air pipes was defective. Yang Rong, in charge of 'lean production' at the plant, explains: "The distance of travel amounts to only one metre at 300,000 double strokes per month. The location of the system is quite small. The bending radius of the energy chain is just as narrow at 18 mm." The control cable, with its copper conductor, was not able to stand up to the mechanical loads in the energy chain under such confined space conditions. After operating for just one week, the system had to be shut down for more than 20 minutes in order to replace the cable. Yang Rong reveals: "We have eight stacking tables of the same type in our facility. The same problem came up everywhere - malfunctions in the power supply to monitors." He estimates the costs of operational

failures, due to system downtimes, come to 70,000 RMB (about 6,500 EUR) - "which are, even according to conservative calculations, 0.8 million RMB (about 75,000 EUR) per year."

Efficient and reliable in confined space

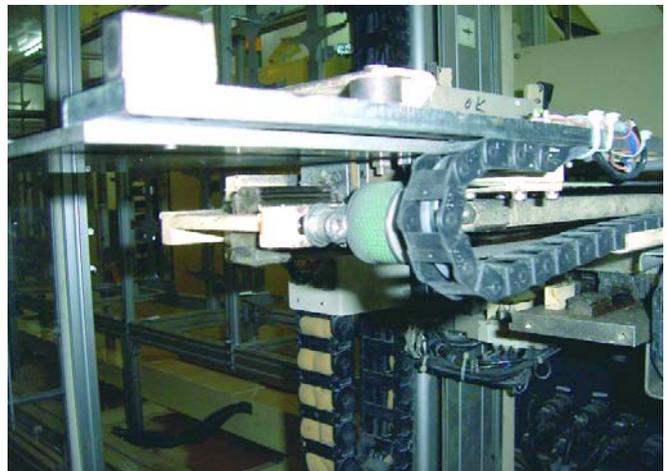
Since the installation of the Chainflex CF98.02.03 (diameter: 5 mm), which has been certified and tested to a bending radius of only $4 \times d$, there has never been another operational failure at the Shanghai plant. The special design differs to conventional cables due to the conductor material used. Copper in cables is typically used in the majority of conductor designs. However, the alloyed conductor of Chainflex CF98 is softer in terms of its molecular structure. It does not become brittle and fragile as quickly as copper conductors do in confined, rough environments. As a result, the new alloy achieves a longer service life.

In tests performed at the igus laboratory in Cologne, no damage to the conductors was detected - even at bending radii of $3.2 \times d$ after more than 30 million cycles. In more than 25 subsidiaries worldwide, Chainflex CF98 is available ex-stock, without extra cutting costs or surcharges for small quantities.



Picture PM0605-03: igus GmbH, Cologne

The Chainflex CF98 control cable brings operational efficiency and reliability into Chinese colour picture production.



Picture PM0605-04: igus GmbH, Cologne

Automated stacking system for phosphorous monitors: Small bending radius, 300,000 cycles per month.



Picture PM0605-02: igus GmbH, Cologne

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