

igus e-chain stays at the highest cleanroom class even after 60 million double cycles

e-skin flat energy chain: igus proves abrasion resistance with the first industry test of its kind

STAMFORD, CONNECTICUT, UNITED STATES, December 6, 2022 /EINPresswire.com/ -- igus®, the world leader in motion plastics and moving cable management systems, announced that its [e-skin® flat](#) cleanroom-compatible e-chain® systems still qualify for the highest cleanroom class even after 1.5 years of continuous use and 60 million double cycles. A test unprecedented in the industry led to this result. The test was carried out in a cleanroom laboratory set up by igus in cooperation with the Fraunhofer Institute for Manufacturing Engineering and Automation (IPA).

In a cleanroom environment, the tiniest particles, even those invisible to the naked eye, can damage electronic components. Therefore, the strictest cleanroom class - ISO Class 1 according to DIN 14644-1 - must contain no more than ten 0.1-micrometer (0.0001-millimeter) particles per cubic meter of ambient air. To achieve this purity level, all cleanroom component suppliers must meet the strictest requirements.

To this end, igus has developed the e-skin flat. The e-skin flat is a cable management system



A unique industry test shows that the modular igus e-skin flat remains at the highest cleanroom class even after 1.5 years of continuous use and 60 million double cycles. (Source: igus GmbH)

made of abrasion-optimized high-performance plastic. The e-skin flat ensures reliable, particle-free power and data cable guidance in moving production systems and is thus suitable for ISO Class 1.

Unique test setup: e-chain runs for 1.5 years in a dirty and dusty environment

"The e-skin flat cleanroom e-chain is ideal for robots and other automation systems in electronics production in such areas as semiconductors and display production," says Andreas Hermey, Development Manager for e-chain systems at igus. "It is so abrasion-resistant that contamination by airborne particles is no longer an issue."

However, until now cleanroom performance of the cable carrier after prolonged intensive use has been unclear. So igus launched a test setup, unique in the industry, to determine its details. Part one of the experiment was conducted in igus' test laboratory. The energy chain moved in an environment with normal levels of dust and dirt for around 1.5 years, during which it performed 60 million double strokes.

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Part two of the experiment took place in the cleanroom laboratory in Cologne, conducted by igus in cooperation with the Fraunhofer Institute for Manufacturing Engineering and Automation (IPA), igus' development and certification partner, for more than 17 years. The heart of the setup was three so-called laminar flow boxes equipped with high-performance filters that enable tests in uncontaminated air. The worn-out e-chain was in motion there for over 100 minutes. Sensors detected particle concentration in the surrounding air.

"Even after 60 million double cycles, our e-skin flat e-chain still qualified for the highest cleanroom class," says Hermey. "This finding offers cleanroom production facility operators additional confidence."

Modular concept for flexible filling

The e-skin flat features extreme abrasion resistance and a modular design. If a profile into which cables have been fitted is defective, the user can change that module. Many other solutions available on the market would require the entire system to be replaced. The module connection also allows individual profiles to be interlinked. The cable guidance system thus grows in line with requirements and ensures investment security. In combination with the specially harmonized [chainflex® CFCLEAN](#) stranded structure, the complete system offers an exceptionally high level of reliability.

The complete system also has globally recognized certification from the well-known US Underwriters Laboratories (UL) organization. Finally, the cable guidance systems are 9dB(A) quieter and cost 20% less than standard ribbon cables.

Learn more about the advantages of cleanroom solutions from igus here:

<https://www.igus.com/info/industries-cleanroom>

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ABOUT IGUS:

igus GmbH develops and produces motion plastics. These self-lubricating, high-performance polymers improve technology and reduce costs wherever things move. In energy supplies, highly flexible cables, plain and linear bearings, and lead screw technology made of tribo-polymers, igus is the worldwide market leader. The family-run company based in Cologne, Germany, is represented in 35 countries and employs 4,900 people across the globe. In 2021, igus generated a turnover of €961 million. Research in the industry's largest test laboratories constantly yields innovations and more user security. Two hundred thirty-four thousand articles are available from stock, and service life can be calculated online. In recent years, the company has expanded by creating internal startups, for example, ball bearings, robot drives, 3D printing, the RBTX platform for Lean Robotics, and intelligent "smart plastics" for Industry 4.0. Among the most significant environmental investments are the "chainge" program – recycling used e-chains and participating in an enterprise that produces oil from plastic waste.

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