

## **IPA test passed! e-skin flat energy chain with three layers receives cleanroom Class 1**

**The award-winning, modular alternative to ribbon cable proves its particle-free qualities in Fraunhofer cleanroom test.**

In clean room environments such as laboratories, energy chains required to manage cables and hoses safely must be particle-free. igus has developed the e-skin flat, an economical alternative to ribbon cables due to its modular design. Proof that the energy supply is particle-free according to ISO Class 1, not only as a single layer but also as a triple-layer ready-to-connect energy chain, was provided by the Fraunhofer cleanroom test.

Cleanrooms, in which LEDs, microchips and semiconductors are manufactured, must be particle-free and typically occupy limited space. igus has developed a product called the e-skin flat to safely guide cables within compact installation spaces in cleanrooms. Cables and hoses can be quickly inserted into the flat profiles and can even be replaced for maintenance.

igus relies on a special high-performance plastic that has been exhaustively tested throughout the entire development process in its in-house cleanroom laboratory. For example, the e-skin flat is wear- and abrasion-resistant in motion and, as a single-layer variant, has been classified to cleanroom ISO Class 1 since its introduction in 2019. The e-skin flat cable guide also convinced the jury at the Fraunhofer's REINER! Awards 2021 to award it second place. "However, since the e-skin flat is rarely only installed in one layer and often with up to three layers, our aim was to achieve the highest cleanroom class here as well," says Justin Leonard, e-chain director at igus UK.

To achieve this a three-layer e-skin flat energy supply system with four chambers, each including support chains, cables and hoses, was tested at the Fraunhofer Institute IPA. The inspectors determined the particle emission at three separate points during the operation. In the test, the e-skin flat was the only energy chain for cleanrooms to pass ISO Class 1, according to ISO

14644-1, with a bending radius of 70mm – keeping the operational area small. "The e-skin flat is characterized as a particle-free and, above all, compact energy supply for cleanrooms, where the user can save space and costs," says Leonard.

### **Ready-to-connect system with CFCLEAN**

The e-skin flat energy supply is freely configurable depending on the application. It may consist of up to six chambers per layer. With a three-layer structure, the support chain is positioned in the lowest layer to ensure the stability of the system. igus has also developed the CFCLEAN cable series especially for use in the e-skin flat. The cables can transmit energy, motor control, bus and Ethernet signals. On request, the user can receive a ready-to-connect and certified complete system for their cleanroom.

Learn more about igus's ISO Class 1 cleanroom products here:

[www.igus.co.uk/info/industries-cleanroom](http://www.igus.co.uk/info/industries-cleanroom)

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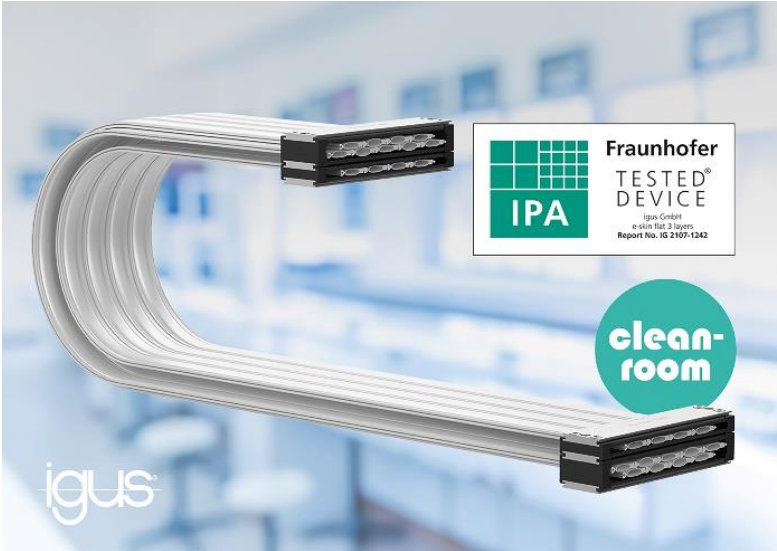
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**Caption:**

The e-skin flat has a three-layer design with a compact bending radius of 70 millimetres, and the highest cleanroom class of the Fraunhofer Institute (Source: igus).