

SupraModule: Modulare Lösung für die Laborautomation

New SupraMotion concept enables applications with wireless control

In future-oriented fields such as laboratory automation or biotechnology the requirements placed on the cleaning of production facilities and their purity are very high. With superconductor technology, objects can be moved and handled without contact, which is ideal for such applications. At the Hannover Messe 2020 trade fair, Festo will be presenting the SupraModule concept, which enables wireless control of functions on a magnetic, floating carrier with an autonomous energy supply.

Medical technology, laboratory automation, biotechnology and food production are decisive future fields of automation that have great growth potential for the coming decades. Contact-free, frictionless handling beyond walls and in any spatial orientation, which will become possible thanks to superconductor technology, will yield entirely new solutions – especially in highly pure environments. Reliable cleaning is essential for hygienically safe production in these applications.

Contact-free production of the future

The spatial separation of a product from its handling equipment in a vacuum, in a clean room, in gases or liquids ensures protected transport to meet the highest demands. The special characteristics of superconductors open great potential wherever contact-free bearing or handling is required. Automation can thus make inroads into areas of application that until now have been regarded as not or only hardly accessible to automation.

SupraModule – wireless control for variable functions

With the SupraModule, different applications can be carried out with the same system in a floating position and controlled wirelessly. The basis is a magnetic carrier with integrated control electronics and power supply. This floats at a distance of up to ten millimetres above a cryostat with superconductors. Depending on requirements, different systems can be attached to the carrier, for example a compact gripper or a pipettor for laboratory applications. Thus, applications can be carried out in closed rooms with the SupraModule, which is particularly advantageous in laboratory automation and medical technology.

What are superconductors?

Superconductors are materials which below a certain temperature can store the field of a permanent magnet at a predefined distance. This effect enables objects to be held in position and manoeuvred without contact. The levitation gap remains stable even beyond walls. Thanks to their restoring forces, the superconductive magnetic bearing components autonomously return to their memorised position even after one of them is temporarily removed – entirely without external control engineering.

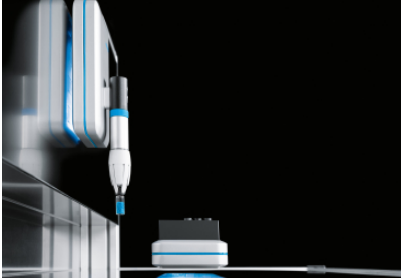
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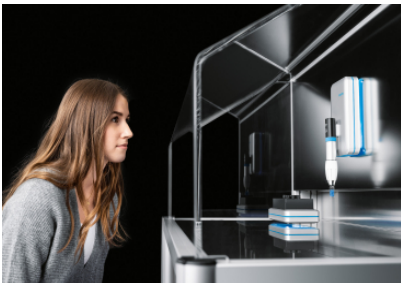
SupraModule 1

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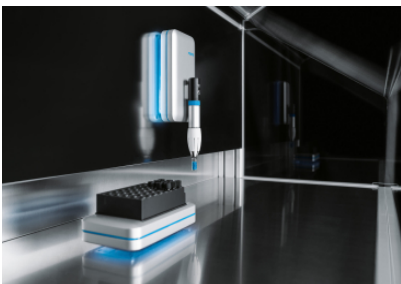
SupraModule_2

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SupraModule_3

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SupraModule_4

With the SupraModule, different applications can be carried out with the same system in a floating position and controlled wirelessly. Depending on requirements, different systems can be attached to the carrier, for example a compact ...