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Research & Innovation @ FESTO

Dr. Elias Knubben Festo SE & Co. KG

Incredible Machine

Celebrate 100 Years of Festo

- Company Portrait
- Large Gesture
- Presentable Worldwide

Playful Proof of Core Competence: Motion

- Show a variety of motion types
- Realized as a real-world exhibit

Display of the Festo Spirit

- From the beginnings to the future
- Butterfly Effect as narrative

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Film Festo incedible machine:

https://youtu.be/pUcspVfzBxM?si=mnKudYKgTFmfPdkN

We Move, Handle and Weigh Without Contact with **SupraMotion**

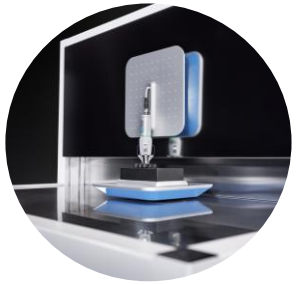
Superconductor-based **magnetic levitation**

For demanding **cleanroom applications**:

- in semiconductor &battery
- in biotechnology & lab-automation
- In pharmaceutical &medical industries

History

First application example

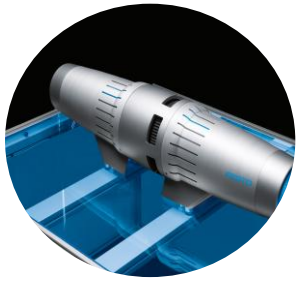


Festo SupraModule

Pilot Applications

2010 | 2015 | 2020 | 2025 | 2026

First Festo Cryostate



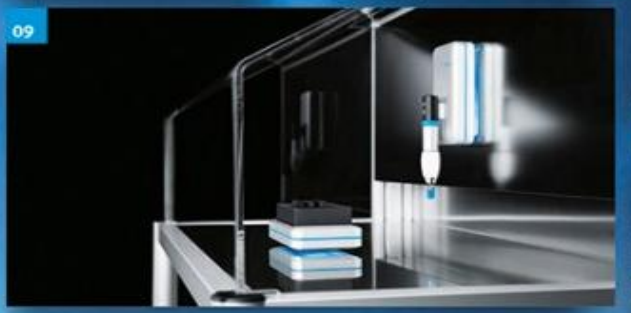
Festo superconductive motor

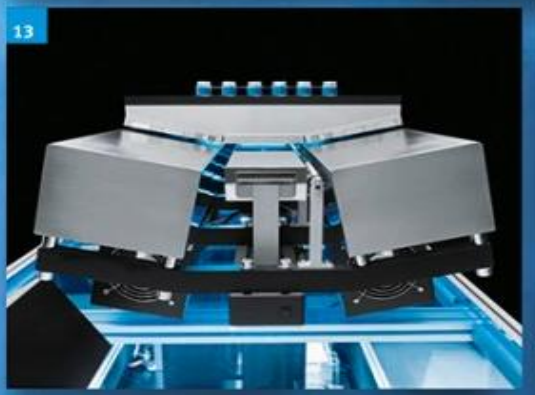
Festo SupraCube

BioPrint Demonstrator

SupraMotion

Applications and Motion Concepts with Superconductivity





01 SupraTube
02 SupraTransport
03 SupraLinearMotion
04 SupraGripper
05 SupraHelix
06 SupraMultitool
07 SupraDrive
08 SupraSensor
09 SupraModule
10 SupraLoop
11 SupraHandling 2.0
12 SupraPicker
13 SupraDrive 2.0
14 SupraJunction
15 SupraShaker
16 SupraHandling
17 SupraCycle
18 SupraCarrier
19 SupraChanger
20 SupraShuttle

Competition

Comparison with alternative levitation technologies shows clear USP:

- Large levitation gap
- Minimal heat emission
- High energy efficiency
- Relatively simple handling
- Suitable building block in the Festo motion portfolio

Cryostats Development

- Improving Insulation & Efficiency
- Cost reduction
- Improvement in service life
- Easier handling

- Floating heights up to 10mm
- Load capacity from 0.5kg to 20kg
- Power requirement 8-35 watts
- Digitally operable and monitorable

Superconductivity allows new options

- **Alternative concept** based on ice packs
- Significant **cost reduction** due to several cryostats for only **one cooling unit**
- **Significantly smaller** in installation space
- Charging time: 30 min
- Useful life: 2 hours

Contactless motion of goods

Application Moduls for Life Siences

- Fully automated **contact-free transport** and handling of vials inside a clean or sterile environment.
- **No abrasion generated** or lubricant required for highest demands on cleanliness.
- **Motion** is realized by mounting the cryostats on e.g. a linear axis or the end of a robotic arm.

Film Festo SupraModule:

https://youtu.be/AJAFpyDSusU?si=izEHEFqTns1LQuiA

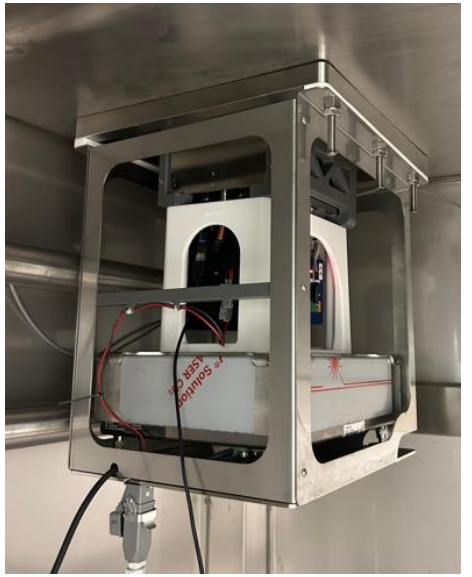
SupraSensor

Contactless weighing in pilot applications

- A leading pharmaceutical manufacturer is **weighing a toxic powder** inside an isolator.
- In fact, of the toxic powder the isolator has to be **cleaned at great expense**
- The **scale inside the isolator breaks** after a few cleaning cycles (every 6 weeks: 10.000€)

SupraSensor

A SupraSensor allows the scale to remain outside the isolator.



Organs-on-Chips | BioPrinter

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Film Festo Organs on a Chip:

https://youtu.be/V4PW7vV9VHQ?si=ehqlftkRGFLafoIF

Thank you for your attention!

We are convinced: Levitation will be part of future automation