MODULAR ROBOT CELL COMBINES HIGH RIGIDITY WITH RECONFIGURABLE DESIGN

Mitsubishi Electric, Taktomat and Akribis integrate active vibration suppression for overhead robot applications

Mitsubishi Electric, Taktomat and Akribis have developed the TAKTOCUBE, a modular aluminium robot cell with active vibration suppression. Designed for machine builders, including those using overhead-mounted robots, the cell combines the precision of a conventional welded structure with a reconfigurable design. Proof-of-concept testing demonstrated rigidity close to that of a welded frame.

For machine builders, the concept addresses a familiar trade-off: achieving structural rigidity while retaining the flexibility to adapt a cell to new applications. The reconfigurable structure supports cost-effective machine designs over a long service life.

Coordinated robot and linear-axis motion reduces vibration

The solution combines Mitsubishi Electric MELFA industrial robots with Akribis linear axes using coordinated interpolation. Active vibration suppression coordinates the motion of the robot and the additional axis to compensate for vibration, rather than relying on mechanical measures alone.

This stabilises dynamic motion and reduces settling times, enabling faster positioning. Lower vibration also supports high repeatability.

In proof-of-concept tests, the **time to reach the in-position signal was reduced by 14%**. Results also included improvements of **up to 80% in path accuracy** and **up to 70% in the stability of speed or accuracy**, together with **cycle time reductions of up to 30%**.

Greater design freedom for overhead robot installations

High rigidity, low structural weight and active vibration suppression give machine builders greater freedom to configure overhead-mounted robots with an integrated seventh axis.

Overhead mounting increases the usable working space while maintaining accuracy during demanding motion sequences.

MELFA RV-7FR combines precise path control with internal cabling

The cell uses a Mitsubishi Electric MELFA RV-7FR six-axis industrial robot, combining high dynamic performance with precise path control. Coordinated interpolation with the Akribis linear axis provides the basis for active vibration suppression. The SH design routes cables entirely inside the robot arm, avoiding interference from external cabling, simplifying overhead installation and improving process reliability. ESD-certified versions are also available. Electric grippers can be integrated without additional pneumatics.

Reconfiguration supports long-term equipment reuse

Conventional welded-frame cells are often designed for a single application. Changes to the machine concept may require additional engineering or a replacement cell.

The TaktoCube's modular structure allows the cell to be adapted to new tasks without rebuilding the entire installation. This supports equipment reuse across projects and helps protect the original investment.

A scalable platform for machine builders and OEMs

For machine builders and original equipment manufacturers (OEMs), a standardised platform simplifies scaling and adaptation to different customer requirements. It also provides a basis for implementing international machine standards.

The TAKTOCUBE offers a reconfigurable alternative for applications where rigidity and precision have traditionally favoured a welded-frame cell.

To see at SPS in Nuremberg, Germany, 24–26 November 2026

Mitsubishi Electric, Hall 6 stand 348

Further information:

https://de-fa.mitsubishielectric.com/fa/de_en/lp/modulare-

roboterzelle

Images:



Image 1: The modular robot cell requires no welded joints. Active vibration suppression supports low-vibration operation, including overhead-mounted robot configurations with an integrated seventh axis.

(Source: Mitsubishi Electric)

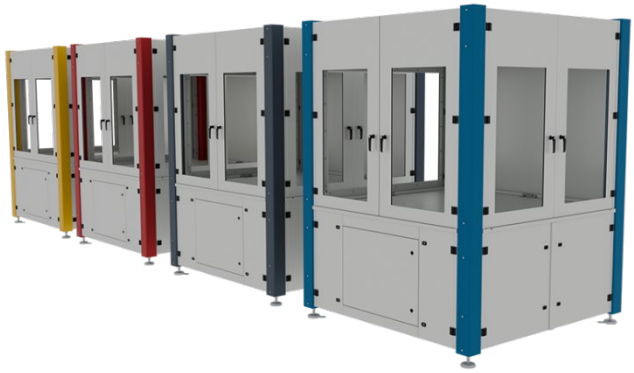

Image 2: The TACTOCUBE is a modular, scalable cell for high-speed assembly systems.

(Source: Taktomat)

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Mitsubishi Electric has maintained a branch in Germany since 1978. Mitsubishi Electric Europe B.V. is a wholly owned subsidiary of Mitsubishi Electric Corporation, headquartered in Tokyo, Japan.

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**US dollar amounts are converted from yen at ¥160 = US$1, the approximate exchange rate on the Tokyo foreign exchange market on 31 March 2026.*

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www.MitsubishiElectric.com/fa/about-us/automating-the-world

Mitsubishi Electric Industrial Automation

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