

Cable-driven actuators: More flexibility for handling technology



Auf einen Blick

- Increased flexibility through additional mobility
- High dynamics and short cycle times through decoupled actuators
- Modularity for tailored adaption of existing assembly cells
- Modular design principle: Avoidance of long changeover times and expensive new acquisitions

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match | Existing assembly cells are often not flexible enough and difficult to adapt to new processes. match is presently developing a modular cable-driven actuator system, providing parallel robots with additional mobility and rapid changeover times.

Parallel robots are able to position objects with high precision and at high speed, thus allowing for short cycle times. The main disadvantage of parallel-kinematic structures: They can position objects, but fall short when it comes to orienting them, i.e. align them in space. This makes them inflexible.

Researchers at the Institute of Assembly Technology (match) of Leibniz Universität Hannover are currently developing a structural enhancement for existing parallel robots. The structural enhancement, a serial wrist axis structure, is actuated via Bowden control cables. The actuators are decoupled from the moving robot structure.

There are two advantages: Firstly, heavy actuators do not have to be moved along with the robot structure. In contrast to previous commercial solutions, mass is reduced considerably and dynamics is increased. Secondly, the prototype can be mounted to any robot structure. Thanks to the modular design concept, existing assembly cells can be enhanced easily.

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