

What is a gripper module?

To solve this problem and realize fully automatic assembly, a novel gripper module was designed and corresponding locking method was proposed. Thanks to the functional integration, the gripper module is capable of manipulating and locking the part. This module is integrated into the assembly system and plays a crucial role in automatic assembly.

Can a gripper module be integrated in a modular assembly system?

A novel gripper module was integrated in a modular assembly system to achieve fully automatic assembly task. The effectiveness of the gripper module and the proposed locking method was verified by experiments. The main conclusions are summarized as follows.

Does a novel gripper module solve the automatic locking problem of miniature parts?

The effectiveness of the gripper module and method was verified by experiments. In summary, a novel gripper module for automated assembly of miniature parts was presented in the paper. It solves the automatic locking problem of miniature parts in assembly process. The remainder of this paper is organized as follows.

What is a gripper module & the proposed locking method?

The gripper module and the proposed locking method fulfill the specific application requirement. The tool on the locking unit is mainly suitable for manipulating the flat type of miniature parts. Besides, it is impossible to assemble other miniature parts after the part is locked.

Why should a gripper module be used for non-rigid locking?

During the locking process, excessive contact force easily damages miniature parts. Therefore, rigid locking should be avoided. Based on the above considerations, the gripper module and method presented in this paper convert the spring force into a locking force, which ensures non-rigid locking and small locking force.

Can a modular assembly system meet the needs of mass production?

The improvement of automation level enables assembly systems to meet the needs of mass production of miniature devices. A novel gripper module was integrated in a modular assembly system to achieve fully automatic assembly task. The effectiveness of the gripper module and the proposed locking method was verified by experiments.

Prismatic Aluminum Battery Module Assembly Line is engineered for high-precision, high-output manufacturing of energy storage battery packs. With a scalable architecture and fully ...

SAARBRUCKEN, Germany--Engineers at Saarland University recently used lightweight, shape-memory materials to create a non-pneumatic robotic gripper that can safely ...

Energy storage module assembly gripper method

Assem Autom 40 (3):531-540 4. Wang XD, Chen Y, Luo Y et al (2011) Adjustment of vision system parameters and image processing algorithms for measurement of miniature parts in ...

The Energy in Modular (EMOD) method is our approach to designing, producing, and delivering affordable, net-zero energy, low-carbon, and healthier buildings at scale. ... smart controls, and ...

We offer modular and flexible solutions to cover many fields, such as energy storage systems of research and development machines, as well as complete assembly lines for module and ...

Piab's Custom Line Solutions are engineered to meet the precise demands of battery cell and module manufacturing. Designed for production environments handling prismatic, cylindrical, ...

Among the applicable gripper configurations, we further minimize the required number of grippers for performing the assembly task, by exploring the gripper that is able to handle ...

Member companies supply machines, plants, machine components, tools and services in the entire process chain of battery production: From raw material preparation, electrode production ...

Discover how a battery module assembly line works, from cell sorting and welding to housing, testing, and automation. Learn how modern manufacturing powers EVs ...

Facing three challenges of the multi-stable flexible gripper, which are the design methodology of the gripper with adjustable curled motion, the energy-saving actuation ...

The Electrification of Civil Aircraft and the Evolution of Energy Storage, edited by Michael Waller, presents 10 seminal SAE technical papers which address multiple aspects of specific design, ...

A cell module assembly includes a top frame, a bottom frame, multiple lithium-ion battery cells, a top collector plate, a bottom collector plate, and a curable adhesive. The top frame includes ...

The battery production department focuses on battery production technology. Member companies supply machines, plants, machine components, tools and services in the entire process chain ...

Each review study discovered partially specific aspects of compliant grippers. It helps to address various questions, including criteria for evaluating compliant grippers, basic ...

This paper is dedicated to soft grippers, robot tools with a wide application area in various activities where an accurate and delicate grabbing movement is required such as ...

Energy storage module assembly gripper method

The robot is equipped with a flexible cell gripper designed using the method described in Section 3.2. The application of the methodology is explained in Section 4.2.

Third, with advanced trigger structure designed by nested assembly of bistable states substructure, multi-stability property is obtained, which realizes not only bilaterally energy-free ...

Ever wondered how those massive energy storage modules stay intact during extreme weather or rough transportation? The secret sauce? The steel belt bundling process. ...

This article introduces a novel gripper module and locking method for automatic assembly, which can manipulate and lock miniature parts by converting spring force into locking force. The ...

Festo Rotary gripper module EHMD The rotary gripper module EHMD is ideal for gripping and rotating/aligning small objects in laboratory automation or the electronics industry.

The Energy Storage Module is a block that can store 2.5 Mega Joules (MJ) of energy [in Galacticaft 3: 500,000 gJ] for later use. It was added in Galacticaft 2 and replaced the Battery ...

The effectiveness of the gripper module and proposed method was verified by experiment. Experimental results indicated that the modular system integrated with the gripper module ...

The equipment has the advantages of automatic intelligent assembly and production from prismatic aluminum shell cell to module and then to PACK box, improving product quality ...

The gripper has to avoid collision with the subassemblies during the assembly, the example illustrated by Fig. 10 shows that the gripper will collide with the subassembly if segment 2 is ...

To solve this problem and realize fully automatic assembly, a novel gripper module was designed and corresponding locking method was proposed. Thanks to the functional integration, the ...

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