

Micro-module construction interface



Overview

A concept for a construction kit for process modules is presented in this paper. The principle and the basic elements were described. Aim is to reduce the effort for design and set-up of process modules. The approach is to provide as many pre-defined elements as possible and to provide standard interfaces. However, it turned out that room for individualization is still needed. The approach of modular micro assembly machines has been compared to state-of-the-art micro assembly machinery in previous work. For qualitative analysis a SWOT analysis was presented and for quantitative analysis a net present value analysis was performed. The quantitative analysis showed potential for risk management by the application of. Also proposed within previous work, was the 'Complex Interface'. It consists of three concepts: The 'mechanical interface', the 'supply interface' and the 'control interface'. The 'mechanical interface' comprises the definition of a generic, blank module. Spaces for process, feeding and control equipment as well as working spaces are defined.



Article Content

Jan 11, 2026

(PDF) A Design Methodology for Module Interfaces

Interfaces are essential to guarantee a proper exchange of materials, energies and information among modules also playing an important role in

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A flexible back-contact perovskite solar micro-module

a) Simple schematic demonstrating how multiple grooves form a micro-module. (b) A focussed ion beam-scanning electron microscopy image of a

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Mechanical Behaviors of Inter-Module Connections and

Modular steel buildings offer the advantages of time-saving construction, reduced on-site work, and less resource waste. The mechanical

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Enhanced breakdown strength of epoxy composites by constructing

However, this will inevitably degrade their breakdown strength. In this work, the example of constructing dual-interface charge barriers by optimizing molecular structure at micron filler/epoxy

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Interface management, the hidden secret within Modular

The ability to develop complex machines by combining interchangeable modules offers flexibility, customization, and accelerated

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Process Module Construction Kit for Modular Micro Assembly Systems

A First Step towards Cross-Platform Integration in Modular Micro-assembly Systems–Concept for a Process Module Construction Kit. In: Enabling Manufacturing Competitiveness and Economic

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Construction and Implementation of Microcircuit Module Smart Factory ...

The microcircuit module is composed of several kinds of modules and other kits. In recent years, microcircuit module technology has been developing towards lightweight and

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Modular Construction: A Comprehensive Review

Modular construction has the potential to transform the construction industry, as most (80–95%) of the modules, which are considered prefabricated buildings, are

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Mechanical Behaviors of Inter-Module Connections and

The aim of this paper is to offer an overview of the methods for creating inter-module connections. First, we discuss the existing inter-module

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Micro and Modular Data Center Construction

Micro and modular data centers offer businesses and organizations an agile, scalable, and cost-effective solution to meet growing IT demands. Whether you

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Multi Chip Module on PCB: Design, Types, Inspections,

Multi chip module aka microchip module is an electronic assembly that contains a series of components, integrated circuits, traces, and dies all together.

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Building design using modules

In this form of construction, modules are manufactured with four closed sides to create cellular-type spaces. The maximum width of the module that is suitable for transportation and installation limits the

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Recent advancements of inter-module connections for modular

Recently, researchers and designers have proposed various IMCs to enhance the safety and efficiency of modular construction. This study explores the recent advancements and future

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Construction teams will ultimately maximize value with integration-ready construction modules that include multi-trade assemblies, generative variants and standardized interfaces.

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Interface construction of micro/nano hierarchical structure to enhance ...

Moreover, TiO₂ nanorod bundles could promote the formation of a uniform transfer film to decrease friction and wear. This work implies that interface construction of micro/nano hierarchical

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Problematic Interfaces and Prevention Strategies in Modular ...

However, interfaces between modules and site-based works are complex, and often cause problems that hinder the wide application of the modular approach. This paper investigated

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A review of flow field characteristics in submerged hollow fiber ...

Therefore, in this paper, we review the flow field characteristics of the HFM module separation process and its application in the optimal design of HFM modules from 2009 to 2023,

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Inter-module connections in modular construction: A

The study identifies distinct features that influence connection selection based on project-specific requirements, thereby contributing to the systematic

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Modular construction

Modular construction is a construction technique which involves the prefabrication of 2D panels or 3D volumetric structures in off-site factories and transportation to construction sites for assembly.

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Standardized Interface Matrix (SIM) Enhancing Multi-Contractor ...

ABSTRACT This white paper introduces the Standardized Interface Matrix (SIM), an innovative tool designed to address the challenges of multi-contractor coordination in large-scale projects. The

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Here's why a growing number of network operators are

Several features of micro-module fiber cables make them perfect for challenging deployments. These cables have smaller diameters than traditional cables, which

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Design and construction of interface engineering in short carbon fiber ...

Design and construction of interface engineering in short carbon fiber composites for excellent mechanical properties and efficient electromagnetic interference shielding

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To support the development and set-up of process modules, a construction kit is proposed. Within this paper, the basic concept of a construction kit for process modules is described. Furthermore

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Buried interface regulation for efficient and stable perovskite ...

Buried interface in perovskite solar cells (PSCs) is currently a highly focused study area due to their impact on device performance and stability. However, it remains a major challenge to

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Microfactories serve integration-ready, multi-trade modules for ...

Construction teams will ultimately maximize value with integration-ready construction modules that include multi-trade assemblies, generative variants and standardized interfaces. The

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What is Modular Construction | Modular Building System

Modular construction is a process in which a building is constructed off-site, under controlled plant conditions, using the same materials and designing to the same

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