

3D printing robot

Prototyping of large-scale 3D models

Introduction

Robot-assisted 3D printing using the fused deposition method (FDM) has emerged as a revolutionary technology for utilizing bio-based materials in special product design and fabrication of large-scale products. Printing materials include various biocomposites, where added natural fibres reduce the need for fossil oil and at the same time improve the plastics strength, dimensional stability and recyclability.

Applications

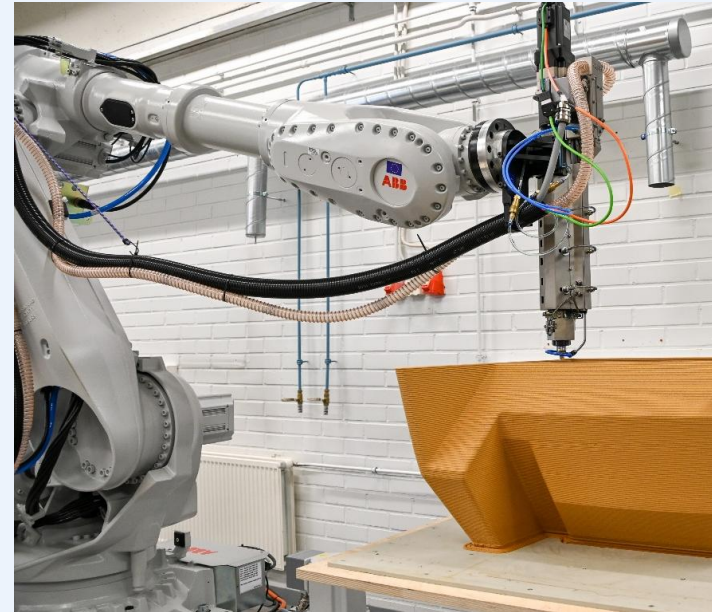
- Manufacturing of large-scale products.
- Custom biobased materials such as hemp, fibres, seaweed, birch bark and recycled fibres.
- Prototyping parts as design products, furnitures, boats, casting molds etc.

How Does it Work?

The nozzle controlled by a robotic arm extrudes a paste-like material layer by layer. The programmed toolpath transforms the digital model into a physical structure. The material is heated and melted before extrusion to ensure smooth flow through the nozzle. Each new layer bonds to the previous one, gradually forming a wall, an object, or even a building component.

Technical Specifications

- 175 kg / 3,05 m
- 6 x 1,5 m (1,5 m height)
- Throughput 5-12 kg/h
- Nozzle 2-18 mm
- 2-axis workpiece positioner
- Robot ABB IRB6700
- Cead E25 extruder (80-400 °C)



Robot assisted 3D printing



Saw dust



Plastic



Wood fibre based material



3D printed boat

