

# Waitkus360° Scales AMR Flexibility with Lightweight, Modular HP Additive Manufacturing Parts



Data courtesy of Waitkus360°

## Industry

Industrial

## Sector

Robotics

## Objective

To produce parts that are both functional and have design freedom with flexibility and effectiveness

## Approach

Waitkus360° adopted HP Multi Jet Fusion technology to design, validate, test and finally produce efficient parts

## Technology and Solutions

HP Multi Jet Fusion technology, HP Multi Jet Fusion 5600 and 4200 Series 3D Printing Solutions

## Material

HP 3D High Reusability (HR) PA 11, HP 3D High Reusability (HR) PA 12 GB, HP 3D High Reusability (HR) PA 12, enabled by Evonik, ESD Print Mode with HP 3D HR PA 12, enabled by Evonik

## Introduction

Waitkus360° is a limited liability company, founded in 2007 and based in Germany. As technology specialist, they offer a wide range of future-oriented services, as well as comprehensive strategic advice.

*“Consistent and solution-oriented, as well as customer-centric and at the same time human, down-to-earth, with integrity”.*



Data courtesy of Waitkus360°

## Problem

Autonomous mobile robots (AMRs) are transforming warehouse automation by streamlining material handling, reducing manual labour and adapting dynamically to complex environments. Unlike fixed-path AGVs, AMRs use sensors and AI for flexible navigation, making them ideal for transporting containers, managing conveyor transfers, or integrating robotic arms for tasks like machine loading.

As demand for scalable, customizable solutions grows, advantages such as modularity, speed of development and design freedom are key for OEMs to have a competitive advantage in engineering and finally manufacturing AMRs.

Waitkus faced the challenge of developing adaptable tops for autonomous mobile robots, tailored to accommodate various transport tasks. These AMRs tendentially need to handle distinct applications, such as transporting differently shaped containers (e.g. KLTs, boxes, trays...) while integrating lifting axes or conveyor technology for seamless integration into the bigger warehousing structures or transfer processes.

Additionally, some AMRs must support collaborative robots (or co-bots), capable of handling machine loading or inspection tasks, increasing the complexity of the design.

One of the main hurdles was reducing the weight of the AMR structures without compromising its strength and stability: a lighter structure would maximize payload capacity, making the robots more efficient. At the same time, mass customization was essential, as each AMR configuration needs to be tailored to meet specific customer requirements. All these challenges had to be addressed while maintaining high-quality standards, which is a number one priority for Waitkus360°.

## Solution

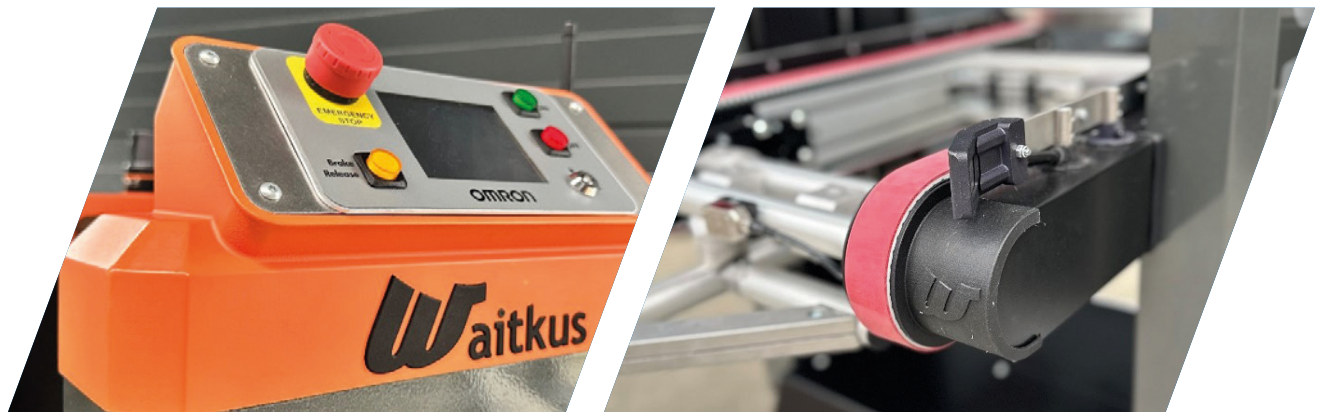
Traditional manufacturing processes such as machining or injection moulding posed limitations, given the requirements of the solution to be provided, both in terms of design freedom and production speed, creating a need for a more agile approach.

To tackle these challenges, Waitkus360° once again leveraged HP Multi Jet Fusion technology to manufacture a wide range of AMR components. By alternating among materials such as HP 3D HR PA 11, PA 12 GB, and the newest ESD Print Mode with the HP 3D HR PA 12, enabled by Evonik to suit different use cases, they were able to optimize the mechanical properties of their parts while taking full advantage of additive manufacturing's design flexibility. The use of ESD-safe PA 12 parts in particular offers opportunities in the electrical sector.

One key development was the creation of modular AMR tops designed for different transport tasks. For example the WeMove model, built for KLT containers, incorporates a double belt conveyor and a lifting mechanism that can be customized in height based on customer needs and compatibility to the rest of the warehouse structure. This modular approach made it easier to tailor solutions for various industries, particularly in automotive and electronics manufacturing.

Weight optimization was another major improvement: Waitkus significantly reduced the structural weight of AMR components, which resulted in notable weight reductions, up to 50 kgs for some models. This weight reduction not only improved energy efficiency but also enabled the AMRs to carry heavier payloads. In addition, the ability to quickly iterate and produce custom components using HP's Multi Jet Fusion technology allowed for rapid manufacturing of the final parts, eliminating all lead times associated with traditional manufacturing.

The integration of branding was also streamlined. Instead of adding separate branding elements after production, Waitkus360° could incorporate their logo or the customer's logo directly into the 3D-printed parts, ensuring a seamless and professional look with no additional manufacturing costs.



## Result

By recurring to HP Multi Jet Fusion technology, Waitkus360° transformed the way they design and manufacture AMR components. The weight reduction achieved through additive led to greater efficiency, allowing the robots to handle larger loads with improved energy consumption. Shorter production times enabled faster response to customer needs, while eliminating unnecessary assembly steps reduced complexity and increased overall reliability.

Cost efficiency was another major benefit, as opting for 3D Printing instead of machined and injection-moulded alternative parts significantly lowered manufacturing costs without compromising on quality.

Finally, additive manufacturing supported scalability for mass production: these AMR tops are not just prototypes, but fully viable final products ready for large-scale deployment in harsh industrial and warehouse environments, proving once again how Multi Jet Fusion can be a powerful tool for producing high performance robotic components at scale.



Want to learn more about Waitkus360° and their comprehensive solutions. Visit:  
<https://3dprint-360.com/#Startseite>

To learn more about HP Multi Jet Fusion 3D printing technology, and how it helps manufacturing companies deliver state-of-the-art industrial equipment, visit us at  
<https://www.hp.com/go/3DPrint>

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