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## Introducing the Auxivo OmniSuit: An Integrated Multitask Exoskeleton

The OmniSuit® is a first-of-its-kind lightweight, integrated multitask exoskeleton that provides unparalleled versatility and support for workers who conduct overhead, lifting, and forward-leaning activities.

As a combined back and shoulder exoskeleton, no one must choose between lifting and overhead support anymore when the work requires both. The OmniSuit provides both seamlessly and can assist users when handling loads all the way from floor level to the highest shelf.

This makes it the perfect solution for professionals across various industries, including logistics, maintenance, manufacturing, construction, cleaning, and agriculture. By providing exceptional support for the neck, shoulders, arms, back, and hips, the OmniSuit can help to reduce workload and fatigue and improve worker comfort.

“The needs of our customers are as versatile as it gets. So, our exoskeletons needed to reflect this.” said Volker Bartenbach, CEO of Auxivo AG. “With the addition of the OmniSuit to our occupational exoskeleton portfolio, we offer a wide range of solutions to our customers across many industries.”

The patent pending OmniSuit design features a wide range of Auxivo signature technologies to offer the best performance in a compact exoskeleton without compromising its weight (2.7 kg) and freedom of movement. Technologies used include a hybrid frame made from soft and rigid materials for an ergonomic fit, elastic energy storage elements for energy recuperation to maximize energy efficiency, and dynamic misalignment compensation to enable unconstrained movements.

By offsetting gravitational forces, the OmniSuit can reduce shoulder muscle load by over 40% during overhead assembly work and back muscle load by over 30% during forward leaning. Measurements have shown that this can reduce the rate of muscle fatigue by up to 75% in the shoulder and neck and by up to 45% in the back and hip.

The first public presentations are scheduled for October 17th – 19th at the Transport & Logistics fair in Antwerp, Belgium, and from October 24-27 at the A&A Fair in Düsseldorf, Germany.

Shipping is scheduled to begin in the second half of October at a list price of 2990 € / CHF. Starting today, presentations and demonstrations of the OmniSuit are available.

### **A New Dimension of Multitask Versatility**

As a first-of-its-kind integrated multitask exoskeleton, the OmniSuit's standout feature is its unique versatility.

As a combined back and shoulder exoskeleton, it not only supports isolated work such as overhead or lifting activities but can support both simultaneously over the entire vertical range of motion, handling loads all the way from floor level to the highest shelf.

This versatility makes it perfect for logistics, construction, or manufacturing applications, where many tasks and movements are frequently required.

## **A Design Focusing on User Experience**

The patent pending OmniSuit design features a wide range of Auxivo signature technologies to offer the best performance without compromising on lightweight, compactness, and freedom of movement.

Features include a hybrid exoskeleton frame that combines rigid and soft components seamlessly to offer strong support but ensures maximal freedom of movement and usability. The proven split vest allows for unconstrained spine movements during all activities while maximizing breathability. Dynamic misalignment compensation further maximizes the freedom of movement of the shoulders and arms.

A simple sizing system ensures high usability and an ergonomic fit. Auto size adjustment features simplify the use significantly and make the donning process fast and intuitive. The adjustable support allows the users to receive the right amount of assistance during a large variety of work activities.

Overall, the OmniSuit design demonstrates Auxivo's emphasis on simplicity and usability to enhance the overall user experience. Making sure even the most demanding and complex work can be supported without limitations.

## **Lightweight Materials and Energy Recuperation for Maximum Efficiency**

As a highly integrated multitask exoskeleton, the OmniSuit is engineered to maximize anatomical compatibility and energy efficiency while minimizing weight and size.

Advanced materials such as aerospace-grade aluminium, polymers, and technical textiles contribute to a lightweight and low-profile exoskeleton. At 2.7 kg of total weight for the smaller size and 3 kg for the larger size, the OmniSuit can be worn for many hours without effort.

To provide a good level of support to its users, the integrated Auxivo Elastic Energy Storage (EES) system utilizes gravity compensation and energy recuperation for the back and shoulders, resulting in a highly energy-efficient, passive exoskeleton.

The OmniSuit back support is provided by two EES arranged to work in parallel to the user's back and hip muscles. They stretch automatically and absorb part of the gravitational force during lifting. The stored mechanical energy is released again during upward movements to provide additional relief.

For the shoulder support, a special mechanism allows the support to adjust dynamically. When the users' arms remain lowered, the OmniSuit does not push them upwards. But once the arms are raised, the OmniSuit supports them progressively, supporting the arm's weight and any tools or loads that are handled.

## **Performance Without Compromises**

The OmniSuit is the first fully integrated exoskeleton to offer multitask support for overhead and lifting work. It can support both activities seamlessly without compromising on performance.

It joins its sister products, the LiftSuit® and DeltaSuit® exoskeletons, to complement an exoskeleton family focusing on maximum usability. As a result, the OmniSuit offers versatile support while maintaining the product family's core strengths of simplicity, high usability, small size, and maximum freedom of movement.

"The main challenge developing the OmniSuit was that overhead work and lifting activities require a large vertical range of motion for both the upper and the lower extremities. We needed to design an exoskeleton that supports both activities well without restricting their users. Our experienced team has utilized advanced technologies and designs and conducted intensive lab and field testing to solve this challenge and develop a high-performance exoskeleton." Said Dr. Rachel van Sluijs, Head of Research at Auxivo AG.

By offsetting gravitational forces, the OmniSuit can reduce shoulder muscle load by over 40% during overhead assembly work and back muscle load by over 30% during forward-leaning activities. Measurements have shown that this can reduce the rate of muscle fatigue by up to 75% in the shoulder and neck and by up to 45% in the back and hip. Its unique hybrid frame allows maximum spine and shoulder mobility, enabling the wearer to conduct all activities unconstrained and move freely in all environments.

Relying on an established Auxivo exoskeleton benchmarking framework, intense lab and field evaluations of the OmniSuit were conducted throughout the entire development process, ensuring the final product meets strict performance requirements.

### Availability

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### About Auxivo AG

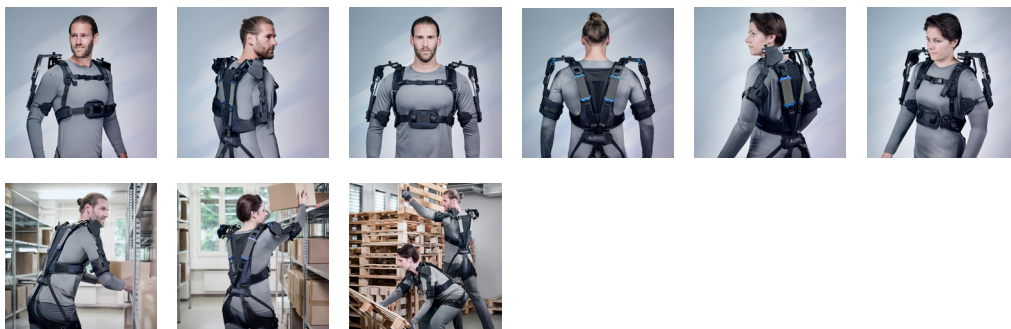
Auxivo AG is a leading developer and manufacturer of exoskeletons, founded in 2019 as an ETH Zurich spin-off. The company's mission is to enhance worker safety and well-being by providing innovative and accessible solutions that reduce physical workload and the risk of injury.

Auxivo AG's team of experts includes engineers, designers, and researchers with a wealth of experience in wearable exoskeleton development and biomechanics. By leveraging this expertise and combining cutting-edge technology with a commitment to research and innovation, the company ensures that its products meet the highest standards, ultimately enhancing worker well-being.

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### Related Images



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