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MATE

Muscular Aiding Tech Exoskeleton



Beyond the product: Comau HUMANufacturing

Comau, world leader in the design of advanced automation solutions, brings to this product its innovative vision, its propensity towards easy to use technologies, and its ability to create reliable solutions.

The goal is to improve manufacturing workplace scenarios through the use of collaborative technologies, capable of enhancing the social and environmental sustainability of the factory of the future: **human-machine collaboration for flexible and efficient production.**

Macro trends

We are in the midst of a new industrial revolution enabled by the progress of robotic technology, artificial intelligence and human-robot collaboration. **These, and other factors such as the importance of ergonomics and the aging of the population, are leading to the incorporation of the exoskeleton in factories.**



Continued evolution of automation

Automation technology continues to proliferate worldwide markets at a faster pace, with adoption expanding across an increasing number of industries.

Aging population

The increasing proportion of elderly people has been accompanied, in most populations, by steady declines in the proportion of young people.

Importance of ergonomics

The U.S. Bureau of Labor Statistics reports 650,000 work-related musculoskeletal disorders (WRMSDs), resulting in **costs to employers of over 20 billion dollars.**

Exoskeletons as part of the factory of the future



Comau's wearable concept

MATE is a lightweight exoskeleton designed to assist shoulder flexo-extension movement.



Passive upper body limb exoskeleton

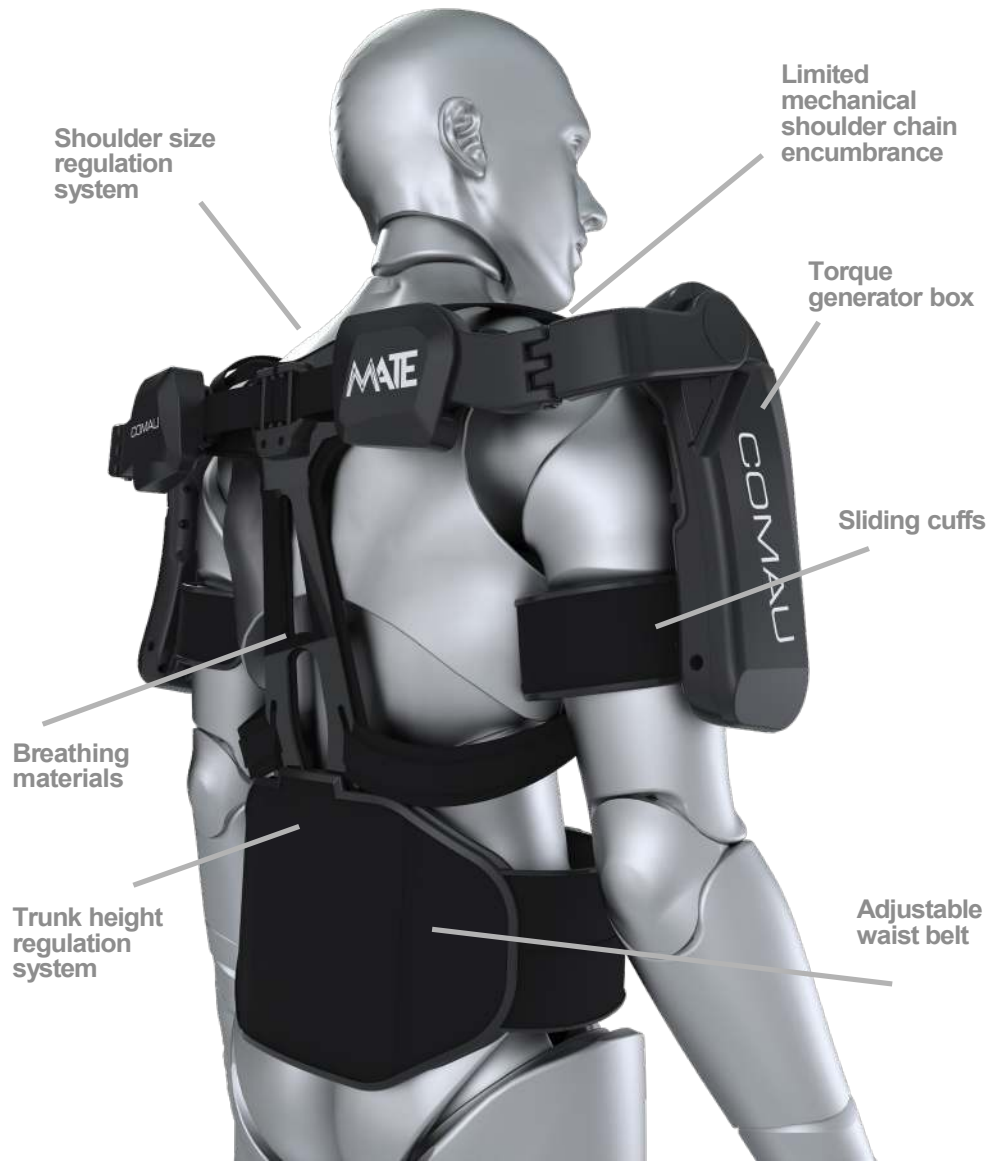
Comfortable, easy to wear, lightweight and modular

Developed together with leading experts

Learning from operator and user experience

MATE is ergonomically designed to fit workers and its structure delivers breathable and effective postural support all day long.

2 sizes: S/M, L/XL
All parts in contact with the human body are adjustable to any body shape



How does it work?

MATE is composed of:

- **Garment interface:**
all parts in direct contact with the user's body
- **Mechanical shoulder chain:**
parts that facilitate the free movement of the user, such as sliding and rotational joints
- **Torque generator box:**
to store and transform potential mechanical energy of order to create an adjustable assistive torque (7 levels)

The choice of assistance level is based on the anthropometry and ergonomic considerations of the user. Calculation of the optimal assistance torque is also strictly dependent on the task to be carried out.

Like you do

The user provides the strength, control and balance whilst the exoskeleton transfers much of the burden away from the arms to the pelvis.

MATE allows replication of the dynamic movements of the shoulder while enwrapping the body like a second skin.

This ensures greater comfort for the worker and increases work quality and efficiency by providing consistent movement assistance during manual and repetitive tasks.

Features

- Compact structure
- 2 sizes: S/M, L/XL; each size can be further adjusted
- 7 assistance levels
- Lightweight 4.0 kg
- Easy to wear
- Highly ergonomic design
- Passive spring-based mechanism

Benefits

- Reduced muscular and cardiac fatigue
- Improved posture and reduced occupational diseases
- Improved job quality and work excellence
- Naturally comfortable and highly breathable
- Follows physiological movements without resistance or misalignment
- Improved precision of repetitive tasks



MATE applications

- Assembling, packaging and stock management
- Filling machines and retrieving finished products off conveyor lines
- Gripping or holding items
- Operating vibrating hand tools
- Material manipulation
- Underbody and finishing phase
- Gluing
- Drilling
- Painting



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Made in Comau