AugmentX – Exoskeletons and Lift assist devices

Introduction

Scope

This document is intended as a **thematic fiche** on infrastructure of the **R&MM core lab** facility. Consequently this document only covers elements that have the R&MM facility as default location and fit in the scope "**Exoskeletons and lift assist devices**".

For questions relating to the infrastructure presented on this fiche, please contact AugmentX@Flandersmake.be

Exoskeletons

Overview

Exoskeletons in industrial applications not only enhance worker safety and reduce the risk of injuries but also improve overall productivity and worker comfort. These wearable devices can be customized to specific job requirements and are increasingly being adopted in various industries to address ergonomic challenges and improve the working conditions of employees.

Industrial applications of exoskeletons include :

- Construction and Heavy Lifting: Exoskeletons can assist construction workers and laborers by providing additional support when lifting heavy objects, reducing the risk of back injuries, and minimizing fatigue during long hours of work.
- Manufacturing: In manufacturing and assembly-line operations, workers often perform repetitive tasks that can lead to musculoskeletal disorders. Exoskeletons can help reduce strain on the arms and shoulders, improving worker comfort and productivity.
- Logistics and Warehousing: Workers in warehouses and logistics centers often engage in tasks like order picking and carrying heavy loads. Exoskeletons can make these tasks more manageable and efficient by providing support to the back and upper body.
- Agriculture: Farm workers who engage in activities such as planting, harvesting, and carrying heavy equipment can benefit from exoskeletons to reduce physical strain and increase efficiency.

- Shipbuilding and Dock Work: Shipbuilders and dockworkers frequently handle large and cumbersome materials. Exoskeletons can assist in handling heavy objects and performing tasks like welding in challenging positions.
- Mining and Extraction: Exoskeletons are used in mining operations to help miners carry heavy loads, especially in deep underground mines where the physical demands are substantial.
- Maintenance and Repair: Maintenance workers in industries like aviation, automotive, and aerospace can use exoskeletons to support their arms and reduce fatigue when working in overhead positions for extended periods.
- Oil and Gas Industry: In the oil and gas sector, exoskeletons can aid workers in tasks such as pipe handling, equipment maintenance, and inspections in challenging environments.
- Electricity and Utilities: Exoskeletons can assist utility workers who need to climb poles, towers, or work at heights, improving their safety and reducing fatigue.

The following tables yield an overview of the available exoskeletons.

Brand	Model	Type	Power
Laevo	Flex	Back	Passive
Innophys	Every	Back	Passive
Paexo - Ottobock	Back	Back	Passive
Laevo	2.5	Back	Passive
Heroware	Apex	Back – Suit	Passive
German Bionics	Cray-X 4th gen	Back	Active
Auxivo	Carry Suit	Back	None
Auxivo	Lift Suit	Back – Suit	Passive
Auxivo	Omni suit	Shoulder – Back – Suit	Passive
Levitate	Airframe	Shoulder	Passive
Paexo - Ottobock	Shoulder	Shoulder	Passive
Comau	Mate	Shoulder	Passive
Ekso Bionics	Evo	Shoulder	Passive
Hilti	EXO S01	Shoulder	Passive
SkelEx	360	Shoulder	Passive
Festool	Exo Active 18V	Shoulder	Active
Noonee	Chairless chair	Legs	None

Laevo Flex

Innophys Every

Paxo Back

Lavo 2.5

Hero Wear Apex

German Bionics Cray-X

Auxivo Carry Suit

Auxivo Lift Suit

Auxivo Omni Suit

Levitate Airframe

Paexo Shoulder

Comau Mate

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Ekso Bionics - Evo

SkelEx - 360

Hilti EXO S

Festool – Exo Active 18V

Nonnee – Chairless chair

Interested?

Contact AugmentX@flandersmake.be for more information.