



What next?

Robotic vest lifts work on site to new possibilities

THE EKSOVEST, WHICH WILL GIVE WORKERS THE POWER TO LIFT HEAVY OBJECTS ON SITE, WILL BE LAUNCHED IN THE UK IN MARCH NEXT YEAR

A robotic vest designed to enable construction workers to lift heavy objects with reduced exposure to injury or muscle strain will launch in the UK next spring.

The EksoVest (pictured above), developed by California-based firm Ekso Bionics, is a form of exoskeleton, worn like a backpack, that can provide 2.3kg-6.8kg of vertical lift per arm when lifting tools or materials.

The device, which weighs 4.3kg, is being trialled by construction companies in the US and Canada, ready for production in September, with a UK rollout planned for March 2018.

The ability to augment upper body strength could open up construction careers to many more people, says Tom Mastaler, Ekso Bionics' senior vice-president of business development.

"Our device removes the brute force nature of the job, making smaller workers capable of doing what only larger workers were able to in the past," he says. "For many companies it will overcome the problem of workers' bodies being gradually broken down over a

20-25 year period, resulting in early retirement or the need to move into other jobs to avoid injuries or surgery."

The EksoVest is secured to the hips and incorporates two mechanical shoulders that follow the movement of the upper body as the worker carries out tasks. As the elbows rise to chest level or above, a gas spring engages to provide up to 6.8kg of vertical lift per arm to provide additional support for tools or parts.

A key aim is to reduce the risk of injury to workers that have to work overhead for long periods of time, who experience strain in the lower neck, upper back, shoulders and arms.

Mastaler explains: "University studies on the vest suggest a 20% to 45% reduction in muscle fatigue associated with the work task, depending on the size and shape of the worker."

The system has knock-on benefits for productivity and quality, he adds: "It enables the worker to focus on accomplishing the task at hand rather have to take frequent breaks to recover strength. The quality of work is also higher because they are not becoming fatigued and can ensure the work is done correctly."

EksoVest has a list price of US\$6,000 (£4,640) and will be sold with a range of "soft goods" to make it comfortable for different-sized workers for different applications.

At the same time the firm will launch the EksoZeroG gravity balancing arm in Britain, a steel device erected next to the worker that enables them to easily lift and operate heavy power tools weighing up to 16kg.

The company is also prototyping a full-body Iron Man-style version of the EksoVest, expected to launch by mid-2019, that would allow builders to carry heavy loads around a site without the need for specialist vehicles.

The suit would need to incorporate "a lot of electronics and control systems" to enable users, says Mastaler: "Developing the suit for construction sites will be tricky and the uneven ground must be incorporated into how the system manages the load and forces and velocities associated with moving it." ●