



Baiersbronn (visitable at short notice)

EXOSKELETON AS A SENSITIZATION AID FOR ERGONOMIC LOAD MOVEMENT USING SENSORS

Application for logistics and for the manufacturing industry - using sensors to optimize posture

SUMMARY

People working in logistics and industry applications are increasingly incurring musculoskeletal strain as a result of lifting and carrying activities. It is not unusual for people to suffer joint and back pain or even slipped disks.

PARTNERS

**Steinbeis**

PROJECT DESCRIPTION

HUNIC GmbH is working with the Steinbeis research center for simulation to develop an ergonomic awareness aid for people involved in the manual lifting of heavy weights. By way of a prototype, sensors are attached to the existing exoskeleton and tested for their applicability. To this end, suitable parts of the body are equipped with smart sensors so that data indicating position and posture can be recorded during the handling processes and analyzed. Based on this data, users will be given feedback on how to correct their posture. Over time, this will train users to adopt the ergonomically correct posture implicitly in order to avoid musculoskeletal strain.

REFERENCES

<https://www.hunic.com>

INDUSTRY 4.0 FEATURES

- Direct digital optimization of human behavior
- Additive manufacturing (3D printing)
- Intelligent sensor systems



Source: HUNIC GmbH

CURRENT SITUATION

People involved in lifting and carrying activities often incur bodily strain while performing habitual tasks. Sensitization aids for ergonomic lifting and carrying activities are not generally available. No standardization work has yet been carried out on exoskeletons for use in industry. One of the requirements for the lifting aids worn on the body are that they must provide ergonomic support for users in their movement functions. In addition, the lifting aids must not restrict the user's movement apparatus and must be lightweight to wear.

SOLUTION

Ergonomic posture can be detected through the use of smart sensors and evaluation on the product. Incorrect posture is indicated to users by means of tactile and visual stimuli. This enables a fast learning curve for users regarding ergonomically healthy lifting and carrying activities. Users avoid musculoskeletal strain and the risk of musculoskeletal disorders is reduced.

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STANDARDIZATION APPROACHES

The IEC standards on ergonomics focus on simulation and system-related elements. The standards need to be extended to encompass exoskeletons and their direct integration into industry communication.