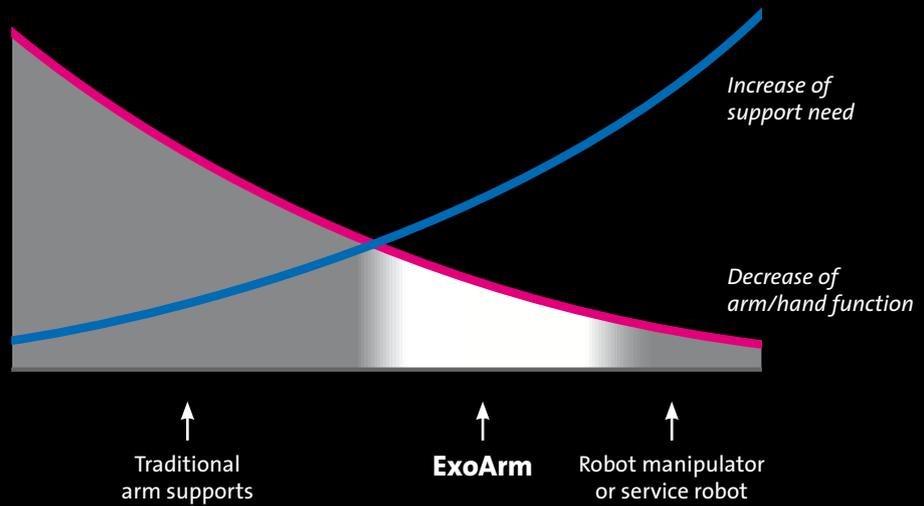




The next step in arm support technology

Intelligent dynamic arm support ExoArm



• *Precise manufacturing*

• *Position of ExoArm versus other arm supports/manipulators*

The next step in arm support technology

ExoArm is the world's first available intelligent exoskeleton for the arm function of disabled persons. Over a decade of research has led to a breakthrough in arm support technology. By combining the latest robot technology with in-depth knowledge of disabled arm movement, Focal and its partners have devised a product able to serve the persons who are the most challenged in performing independent arm movements.

All-round arm support

ExoArm is intended for persons who are most challenged in performing essential Activities of Daily Living (ADL). This includes eating, drinking, facial care, computer use and numerous other activities. ExoArm is the most high-end arm support available on the market. (See figure 2)

Use it or lose it: ExoArm pushes the borders of arm support use and decreases the need to use a robot manipulator. ExoArm can be used as a therapy device supplying gravity compensation during exercises in clinical settings. Optional software can be used to optimize the training while data output allows for analysis of performance and progress.

ExoArm's user

ExoArm is primarily designed for persons who need assistance due to a lack of muscle force. The device will intelligently and adaptively compensate for the effects of gravity, making complex movements needed for the execution of Activities of Daily Living possible.

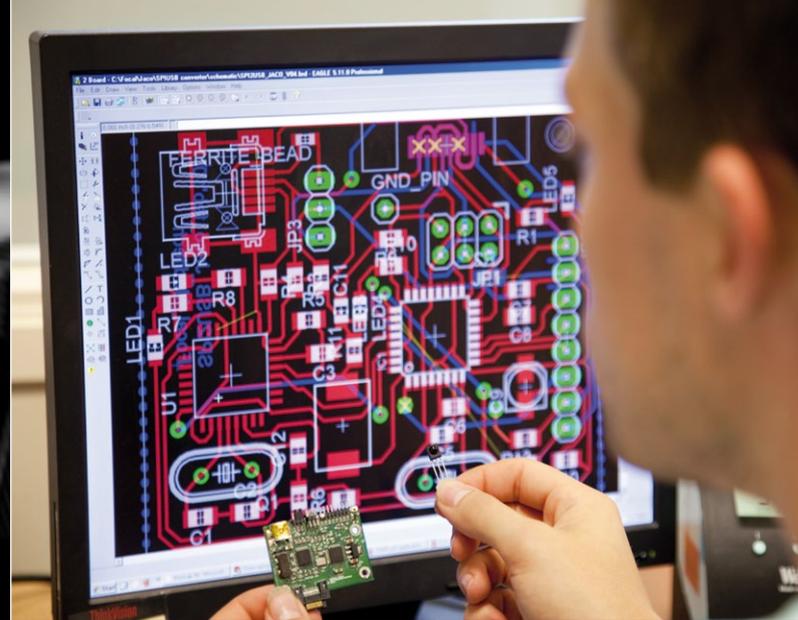
Depending upon personal disabilities, ExoArm may also serve persons with coordination problems by reducing the effects of excessive muscle functioning (guide spastic movements). Furthermore, ExoArm will redistribute pressures and forces of the arm and shoulder, and it could possibly decrease pain in the shoulder girdle.

About the use of ExoArm

ExoArm is a dynamic arm support based on robotics technologies. It is attached to the user's forearm and electric wheelchair. The wheelchair carries both the weight of the device and the user's arm while supplying the energy needed to power the device. ExoArm is easy to use once the individual settings have been installed. The user's forearm is placed into the fitting without any need to further secure the arm. It is always possible to optimize or adjust characteristics using the advanced user interface, however it is not needed during actual movements. In a fixed position, ExoArm can also be used as a training device.



- No need to secure the arm



- High professional level

Innovations

- High performance force sensor to measure movement intentions of the user
- Intuitive use by intelligent signal processing
- User interface to adjust specific parameters to match the user requirements
- Software controlled operating principle of the arm support allowing for knowledge and experience based optimization of the system
- Aesthetic appeal due to high level industrial design and use of modern materials
- Well-chosen kinematics ensure good alignment with the movement of the user's arm and shoulder
- State of the art drive trains for executing movements
- Durability and unmatched performance through high tech and very precise mechanical manufacturing, and 3D printing
- Provided with Focal's proven arm fitting for easy transfers and uncomplicated usage

Research and product development – How it started

It started over a decade ago when Focal's visionary CEO Paul Groenland, was unable to help a boy with Duchenne muscular dystrophy with the conventional dynamic arm supports then available. He felt the need for an advanced arm support that could constantly adapt to the needs of the user and that would support all the directions that the user's arm would make. This need led to the McArm projects of Focal. In these projects Focal closely cooperated with the most knowledgeable universities, institutes and companies. The goal was to design, build and test an intelligent

dynamic arm support that could assist persons with even the weakest arm function. Step by step a considerable amount of knowledge was gained. Gradually several prototypes were designed, built and tested thus increasing the knowledge about arm support application. Bringing technical, biomedical, ergonomic and rehabilitation groups together has now resulted in the ExoArm.



A selection of partners that developed ExoArm



Zuyd
Research



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Solutions for persons with disabilities or challenging working conditions

Focal Meditech BV is a developer, manufacturer and distributor of state-of-the-art technical and ergonomic aids.

Focal's product range lies within the domain of mechatronics that augment or replace human hand and arm function.

Focal specialises in dynamic arm supports, head supports, eating aids, personal robots, special controls and tailor-made devices.

The products meet the highest standards of quality and are the result of a close collaboration between the R&D department and device users.

Patent pending
ExoArm is a deposited trademark of Focal Meditech BV
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