Accessibility and Universal Design

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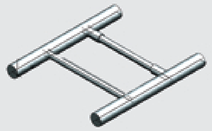
Introduction

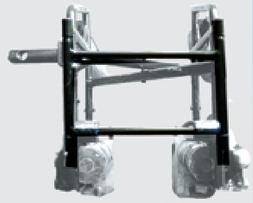
Electric powered wheelchairs enhance the mobility of disabled individuals in daily life and reduce the dependance of human aides. In this project, we combined a seat of a child buggy with the chassis of a motorized wheelchair in order to design a electric wheelchair which is adapted to the requirements of a specific client. The project was carried out to increase the client's maneuverability, independence and mobility.

The Buggy
This is the initial seat of the client. It is a baby chair without any engine but with an adapted chair: a belt, a support of the head, the feet and the whole back.

The motorized wheelchair
This is an electric wheelchair with a motor and a joystick as steering system.

Universal Seat Fixture





Why an Universal Seat Fixture?

The Universal Seat Fixture is created in order to fasten the seat of the buggy with the chassis of the motorized wheelchair. The seat of the buggy is tailored to the needs of the client. For instance it is equipped with a security belt, a head support, a back support.

The Universal Seat Fixture offers:

- Easy click and go system
- Stable materials
- Cheap solution
- Secure seating
- Functional system

Handles

Why new pushhandles?

The new seat covers the initial place of the handles. To cope with this problem it was necessary to change the shape of the fixing system. The new design proposed a fixture placed on the outward of the chair.

The new handles offer:

- Adaptable position to the person who pushes the wheelchair
- Possibility to fix the new seat on the chassis
- A larger size for comfort while pushing

The client: Nahuel

Nahuel, 13 years old, suffers of Spasticity with Dystonia. This disability alters skeletal muscles and creates a neurological movement disorder.

- Able to notice his environment and pay attention
- Can not control his movements properly
- The head is the part of the body, that he is able to move most consistent
- Client is not able to talk

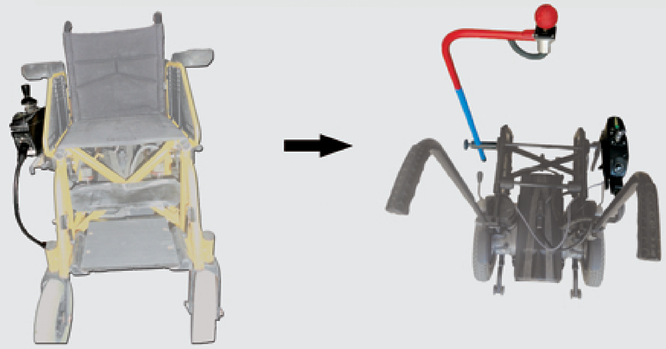
Steering System: Chin control

Why a new Steering System?

The decision to design a new steering system was made due to the fact that the client was not capable of using the old joystick steering interface. A research on different steering approaches and an evaluation of ten steering systems delivered the chin control as the most appropriate steering interface.

The Chin Control steering offers:

- Accessible steering interface
- Use of the most consistent body part
- Safe system
- Easy to learn and use



Conclusion

With the adjusted electric powered wheelchair we delivered a product which has a high psychological and a social impact on the life of our client. It improves the way of moving and also enables him to participate in normal life without beeing dependent on help of caretakers.

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