



European Project Semester

PROJECT OUTLINE

Project dates: March 2017 - June 2017

Title: Design and realization of mechanical elevation system for wheelchairs

Project activity areas:

Mechanical engineering, CAD, machining

Keywords:

Wheelchair, mechanical system, elevation

Tutor's name and coordinates

Client – End-user: TEJEDOR Maurice
Technical ENIT Supervisor + contact:
GRIZET François : francois.grizet@enit.fr
SCHONHOFEN Emmanuel :
Emmanuel.schonhofen@enit.fr

Project origin

Associative

Project technical background:

According to recent studies, wheelchair users represent about 1% of total population in Europe. These users may use their wheelchair for long trip or at any time. More and more public places such as restaurants, pub, cinema, concert hall and so on are equipped to receive wheelchairs. However, some constraints appear in socialization of wheelchair users. For example, in a pub, valid people can use stool leading to a position unbalance regarding disable people.

Moreover, private places are not fully accessible to wheelchair users. For example, all stuff placed in high cupboards are not accessible. The classical solution is simply to avoid high cupboards. However, this solution may be expensive and may lead to extreme design changes in the rooms. Another solution is to equipped wheelchairs with elevation systems.

Finally, wheelchairs cost between 150 euros for the simplest ones and 20 000 euros for the more complex ones... without elevation system...

Consequently, a general elevation system, adjustable to any wheelchair has to be designed. The price of the system shall be sufficiently low to avoid a significant increase of the global price of simplest wheelchairs. Moreover, the system has to avoid user to apply a very high stress to move. It shall be easily used. Possibly, hydraulic or electric assistance could be considered for complex wheelchairs. Obviously, the stability of the wheelchair shall be ensured, whatever the considered elevation.

Studied topics:

As previously described, designing an elevation system for wheelchair induce to consider many technical and theoretical aspects such as :

- CAD,
- Machining,
- Static mechanic,

Project dates: March 2017 - June 2017

Title: Design and realization of mechanical elevation system for wheelchairs

Project activity areas:

Mechanical engineering, CAD, machining

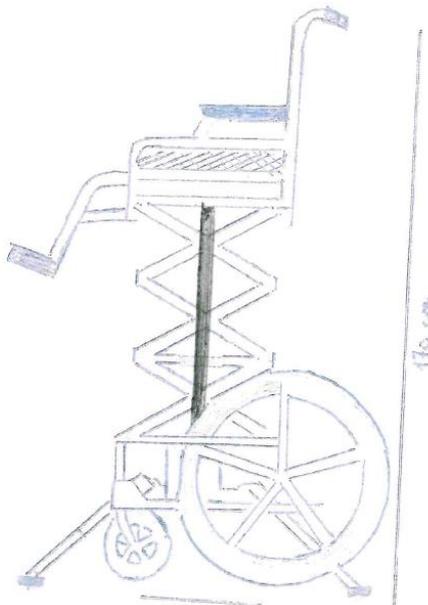
Keywords:

Wheelchair, mechanical system, elevation

- Dynamic mechanic...

The objective of the project is to design, develop and built a simple solution regarding the general requirements expressed in the background: stability, easy moving, fully mechanical or partially assisted by hydraulic or electricity.

The system should provide an elevation of 1.10 meter for a person with a maximum weight of 120kg. A general idea of the concept is given bellow.



Deliverables of the project are :

- Requirement document,
- Project analysis and planning,
- Conception drawing, mechanical calculus,
- CAD,
- Mid-term presentation and report,
- Final presentation and report,
- Prototype (full size or reduced size).