Self-Propelled Walker

Overview
Based on the user’s experience on the previous model, a tricycle arrangement motorized walker, several areas of the design needed improvement. Areas of improvement from the previous design include: stability, manoeuvrability, and the addition of functions such as adjustable height for different users, and a braking system.

Objectives
The main goal of creating a walker is to decrease the strength required, and enable the user to travel longer distances with less fatigue. To achieve this main goal, several design objectives including safety, durability, stability, and comfort were set as the focus point of the design.

Approach
- Before generating ideas for the design, an initial conference was held with the sponsor to understand the needs and requirements.
- This initial site visit with the sponsor and potential user allowed further understanding of the overall project and user needs.
- Relevant patent and literature review on current available products were conducted to generate more ideas.
- Then the team came up with five design concepts. Based on these concepts, a final design concept was selected as a group to present to the sponsor.
- The final design chosen was based on trial and error and development of the specifications designated by the sponsor.
- A SolidWorks Model was drawn to allow clarification of the design.
- Stress and displacement test was conducted on the SolidWorks model to analyze stress and strain of the design.
- Testing was conducted on the life of the battery, a testing protocol to ensure walker in uphill, downhill, and sideway position by using ISO 11199-2:2005, and the braking ability.
- The results of the testing showed adequate battery life, stability in all positions, and sufficient braking ability to provide safety to the user.

Outcomes
- The walker has enhanced stability, manoeuvrability, and safety.
- The walker has reduced noise from wheels.
- Extended battery life of at least 3 hours.
- The sponsor as well as potential users of the device were very pleased with the ease of use and manoeuvrability of the design.