

ISWP Standards Working Group

January 29, 2016 Special Carousel Meeting Recap

The ISWP Standards Working Group met by conference call on Friday, January 29, 2016 from 11:00 a.m. to 12:00 p.m. U.S. Eastern Time. This document provides objectives, action items and a recap.

Objectives

Discuss and analyze feasibility of the different configurations of testing equipment for whole chair testing

Discussion

Benchmarks for the whole Chair test:

1. Carousel tester at Invacare
2. Double drum
3. CERAH France carousel test

Design Considerations for the test were specified by Don. It was proposed that implementing a turnkey solution for the test which can save initial development and experimentation time and effort.

Invacare works with CERAH – can contact and get more information if required.

Manufacturing conveyor design

- Can control speed on corners through automation.
- Other chairs on the linear track may speed up in which case may want to test 2 chairs at a time or install obstacles in a systematic pattern.
- Concerns with cantilever arm were addressed by the developers.
- Cannot utilize floor for obstacles.
- Can experience more forces during turning due to skid.
- Design cantilever mechanism such that chair does not lock during turning.

Towline floor conveyer design

- Eliminates concern for speed changes on corners.
- Questions about where to hold the chair?
- Testing of trikes can be an issue.

AGV design

- can be hefty for pulling 400lbs.
- needs wider wheel base than length of obstacles.

Treadmill type design

- 1000hrs of use for the belts-short life.
- Expensive system and difficult to attach obstacles.
- Wheelchair never travels in circular fashion which can be a limiting factor.

Recommendations

- Consider converting circular motion into a rectangular oval motion similar to conveyor design, may help from price standpoint.
- Offset cantilever for different type of chairs
- Hone down on how the tow bar grabs the chair and the mechanism of how the chair goes around the corners
- Implement a solution which produces reliable results, is easy to operate and can be replicated elsewhere.

Inavacare and Free Wheelchair Mission could collaborate to test few FWM chairs on the Inavacare carousel. Fundraising begins March and Don would appreciate a design solution that is feasible to be implemented in minimum time. Dynamic diagrams and other equipment can be drafted for the demonstration.

Subgroups (for reference)

- Design Guidelines: Mark Sullivan (lead), Daniel Martin, Jon Pearlman, Norman Reese, Chris Rushman, Eric Wunderlich
- Casters: Anand Mhatre (lead), Matt McCambridge, Jon Pearlman, Norman Reese, Don Schoendorfer
- Corrosion: Matt McCambridge, Don Schoendorfer
- Rolling Resistance: Matt McCambridge (lead), Jon Pearlman
- Whole Chair Testing: Don Schoendorfer, Matt McCambridge, Josiah Auer, Mark Sullivan, Daniel Martin, Jon Pearlman, Norman Reese, Anand Mhatre, Dave Mahilo

Participants

- ✓ Daniel Martin, Shonaquip
- ✓ Matt McCambridge: DEKA (formerly with Whirlwind)
- ✓ Norman Reese, LeTourneau University
- ✓ Caleb Elder, LeTourneau University
- ✓ Karen Rispin, LeTourneau University
- ✓ Mark Sullivan, Convaid and Polus Center (WG Chair)
- ✓ Don Schoendorfer, Free Wheelchair Mission
- ✓ Karl-Erik Westman, Handicap International
- ✓ Eric Wunderlich, LDS Church
- ✓ Chris Rushman, Motivation
- ✓ Dave Mahilo, Invacare
- ✓ Dr. Rory Cooper, University of Pittsburgh
- ✓ Anand Mhatre, University of Pittsburgh
- ✓ Dr. Jonathan Pearlman, University of Pittsburgh
- ✓ Nancy Augustine, University of Pittsburgh
- ✓ Ben Gebrosky, University of Pittsburgh
- ✓ Josiah Auer, Free Wheelchair Mission

Prepared by: Anand Mhatre, University of Pittsburgh