

Don B. Daily

MEMORIAL FUND

To Promote Steel Industry Safety and Health



Mentor Updates

Georgia Institute of Technology

Project Title: *Real-time Pro-Active Equipment Operator and Ground Worker Warning and Alert System in Steel Manufacturing*

Professor: Dr. Jochen Teizer

Mentor: Matt D. Moore, Gerdau Cartersville Mill, Cartersville, Ga., USA

We have made some very good progress on the project. On 10 November 2011, we conducted a basic project orientation and planning discussion via conference call. The action plan created during that meeting included a site visit to the Gerdau Cartersville Mill on 14 November. Our focus would be to identify opportunities to improve pedestrian safety around mobile equipment. On 14 November, we conducted a three-hour site visit and reviewed opportunities for the project by observing the mobile equipment operations at the plant. We focused on activities that are typical of steelmaking facilities to ensure that the outcome could apply to the largest possible market.

The area we reviewed included slag pot hauling, scrap bucket hauling, finished goods hauling (on-site) and general forklift operations. During this time, the Georgia Tech group demonstrated some new technology that may be useful in creating a system to prevent pedestrian accidents with mobile equipment. Over the next few months, we will work to test different equipment at the site to determine its usefulness in steelmaking.

— Matt D. Moore



Eric Marks and Nipesh Pradhananga, Georgia Tech graduate research assistants, research proximity sensing technology.

Milwaukee School of Engineering (MSOE)

Project Title: *Design of Smart Lockout/Tagout Hardware for the Steel Industry*

Professor: Dr. Joseph Musto

Mentor: Kevin Burg, Charter Steel, Saukville, Wis., USA

The student team visited Charter Steel on 18 November 2011 to share the proposal, tour the Charter Steel facility, and discuss the practical application of a lockout device and its usage. A student team was formed: MSOE seniors Heather Bobrowitz and Tim Johnson. MSOE sophomore Fred Karsten will be assisting the team. Background research, including a patent search, was performed. References on lockout/tagout (LOTO) procedures were provided by the LOTO product manager at Brady Corp., Milwaukee, Wis.

Detailed design specifications for the device were developed. Preliminary design activities were performed:

- A decision was made to provide lockout redundancy by designing a mechanism to attach to a standard lockout padlock.
- A programming platform and an interface platform were selected (MATLAB/Labjack).
- An actuator was selected for the locking mechanism (9V DC solenoid).
- Preliminary design configurations for the locking mechanism were synthesized, and one promising design alternative was selected for development.
- A proof-of-concept software application was developed, simulating a short version of lockout procedure automation and driving a solenoid.

As part of their senior design course requirements, a detailed design proposal was written, summarizing all work to date and providing a detailed project plan for the remainder of the development effort.

— Kevin Burg



Members of the Virginia Tech project team (left to right): Adam Humphrys, Christian Birkett, Mary Seals and Lynn Akers.

Virginia Polytechnic University

Project Title: *Fall Prevention Program for Flatbed Trailers and Flatbed Trucks*

Professor: Dr. Alan P. Druschitz

Mentor: G. Lynn Akers, Steel Dynamics Inc., Roanoke, Va., USA

I met with Dr. Alan Druschitz and three members of the Virginia Tech project team on 12 November 2011. Our meeting started with a review of the purpose of the project and timeline for completion. We then toured the Steel Dynamics facility in order for them to get an understanding of the steel manufacturing process. We plan to meet on site again to gather specific information about fall hazards at the truck and railcar loading areas.

— G. Lynn Akers