IPRO 304: IMPROVING MANUFACTURING PROCESS CONTROLS

Heat Treatment

The Problem

A new technology is needed in aiding A. Finkl & Sons in their heat treatment process. Currently, a foreman is tracking the placement of steel parts in the furnace by pen and paper. When a problem in the process occurs, the only useful source of information comes from the foreman's documentation.

The Objective

To objective of this IPRO is to create a 3-D software modeling program that displays the placement and information of steel parts as they are loaded into the furnace for the heat treatment process. Then, the user will be able to save all the load information on that particular furnace to a database for future reference.

The Team

Joseph Pawlak
- Computer Science
- Lead Programmer

Bryan Murillo
- Electrical Engineering
- Assistant Programmer

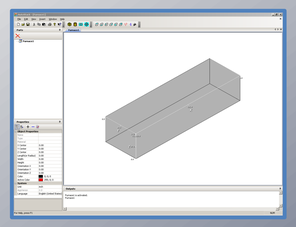
Nick Przbysz
- Mechanical Engineering
- Shape Code Modeler

Nikolay Popov
- Mechanical Engineering
- Shape Code Modeler

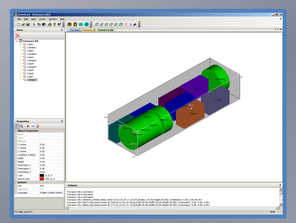
The Process

Research previous semesters' work and documentation → Meeting with A. Finkl & Sons for requirements document → Cost benefit analysis revealed a new program was necessary → Included basic functions like scaling, moving, rotating, collision detection → Included advanced functions including integrating with Finkl's database to obtain work and part numbers → Simplified final program to meet Finkl's needs and user requirements

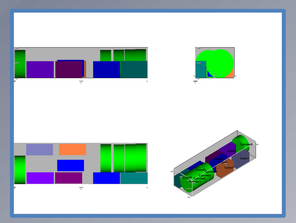
The Solution



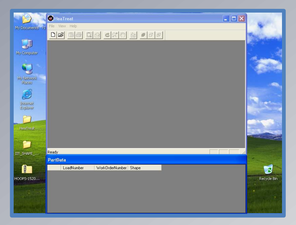
An empty furnace



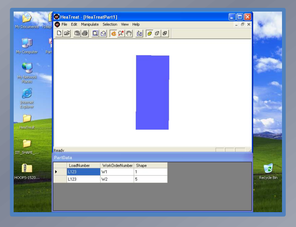
Furnace with parts



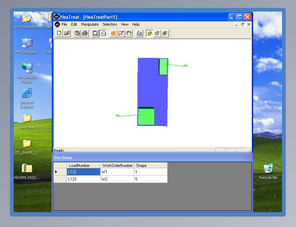
Multiple views



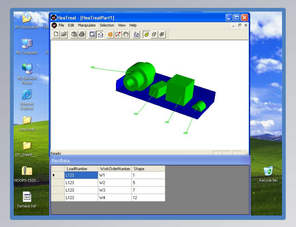
Program first started



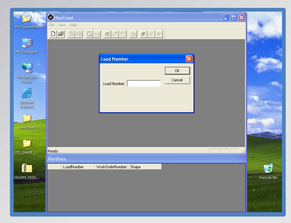
An empty furnace



Furnace with parts



Sideview of furnace



Entering the load #