

Email to team for Week 7

Friday, January 18, 2013
2:11 PM

Hey team,

Great job today with the first run of the presentation with the professors and our peer review.

For the ME's going to D-R:

As we discussed after the presentation, I am sending out the notes from today and a template for Monday's notes with some of the logistical info on it (where to meet, when, etc). Whoever takes notes can use this or another format, it's just a suggestion. As long as notes get taken and shared with the group, that's all that matters.

Also, I attached the presentation PowerPoint so you can either access it from here or from EDGE. It is titled "Presentation SDR - for DR". The only difference between this one and the one from today is that the last slide has the discussion points to focus on and not forget.

For next week:

I'm passing the torch to you guys since I'll be in Chicago and won't meet up with you until Friday morning.

For our usual Wednesday night meeting - focus on the results of the meeting with D-R and come up with a game plan for the rest of MSD I. What do we need to revise? What do we need to research more? What are we missing? Where can we start our detailed design and who's going to do what?

Use this to fuel your discussion with John for the guide meeting Thursday morning.

Keep in touch and let me know if you need more direction. I'll have my phone on me while I'm out of town and have access to email and internet.

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Direction Moving Forward

Tuesday, January 29, 2013
10:22 PM

Detailed Design:

1. Scaled Model
 - a. Purpose
 - i. Give D-R operators an understanding of what the new system could potentially look like and how it would be used - gain feedback and buy-in
 - b. Design aspects
 - i. 10-20% of purposed system weight and size
 - ii. Use casters instead of air bearings
2. Full Scale System
 - a. Purpose
 - i. Give D-R recommended detailed drawings and vendors with quotes in order to build system, with proven simulation and analysis to defend design
 - b. Design aspects
 - i. Only designing system for steps 1-5 of assembly
 - ii. Use air bearings (as proposed in SDR)
 - 1) D-R checked the floor surface with a laser level - within the 1/4" tolerance the manufacturers recommend
 - 2) D-R is pursuing an on-site full scale demo with in the next month
 - iii. Fit system within frame shadow to promote good ergonomics and safety
 - iv. Use powered tuggers
 - c. IE aspects
 - i. ROI calculations (info from Henry on 1/30)
 - 1) IRR is vague - payback period should be < 2 years
 - 2) Payback period of < 1 year is better for acceptance
 - 3) "This project is strategic, so economic payback is not always as importance as how well you sell the project"
 - ii. Ergonomic justification
 - 1) Weight to pull/push
 - 2) Height of work piece

3. Possible Additional Work -TBD, working with Henry & John on exact requirements, from PRP
 - a. Integrate process requirement layout (stations, inventory, stands, etc) with material handling system and make it fit within footprint available- IE
 - i. First step is CAD layout for area and the sizes of each of the assembly work areas
 - 1) Lay out truck loading area, paint booth, test beds
 - 2) Divide remaining area by the # of work stations
 - ii. Tape or chalk it out full size on the shop floor
 - iii. What they know:
 - size of the space that we have to work with
 - size allowance for truck loading
 - size of our test stands
 - size of the new wash and paint booth that we want
 - how many assembly stations there need to be
 - b. Design, build, test of subassembly benches/stands/carts - ME, IE
 - c. Work with D-R team to get the AFE funds request prepared and ready and approved - TBD if they still need assistance, IE
 - d. Work with people in operations to improve design and get their feedback and buy-in - ME, IE

Questions for John:

- ✧ For Lauren's Work Breakdown Structure:
 - When should we finish the detailed design on the scaled model?
 - When should we finish the detailed design of the full scale system?
 - What should our DDR cover? (see above questions)
 - What kind of time line should we associate with the additional work?
 - What milestones should we put on the plan for the additional work? (Skipped SDR...)
- ✧ Can we pursue the additional work D-R is requesting?


Questions for Henry:


- ✧ What is the loading process for the frame onto our system? - waiting for a response
- ✧ Do you need any further assistance on the AFE funds request? - waiting for a response
- ✧ When can we get operations involved in the design to gain their feedback and buy-in? - waiting for a response


Agenda - Team Meeting 1/30

Wednesday, January 30, 2013

1:13 AM

-  • Review info from Henry
 - See "Direction Moving Forward"
 - Casters for prototype
 - Air bearings for full scale system
 - Demonstration at D-R within next month -
 - We need to make sure they bring in the right equipment from MH vendor
 - ME's expressed interest in observing demo - share with Henry
 - Timing
 - DDR 1 Week 10 of MSD I - present DD of prototype
 - Order and build prototype by end of Week 2 MSD II
 - Present prototype to D-R mgmt & operations end of Week 2 MSD II
 - Incorporate feedback into full scale system -> DDR 2 by end of Week 5 MSD 2
 - Process Layout Assignment - Nick
 - Prevent our system from being the bottleneck of the assembly process
 - Create CAD drawing for layout - include all stations, inventory, tools/equipment footprints

-  • Design work
 - Alex - stress analysis
 - Jordon - air bearing sizing, static weight cap, vendor search
 - Cole - prototype caster -frame integration, scaling at 15%
 - Shawn (on hold) - air bearing-frame integration
 - Nick - initial process layout from givens

-  • Prep for guide meeting at 9AM on 1/31
 - Questions for John
 - Status - individual
 - Status - group - work breakdown structure

Agenda - Friday Workshop

Thursday, January 31, 2013
7:05 PM

Meet in Systems Lab at 9AM
Work 9AM to 5PM

Review work load split for prototype to ensure we meet DDR 1 target of Week 10 Thursday @ RIT, Friday @ D-R

Detailed Design for Prototype -

Goal for 2/1: complete cart design, initial hand calculations for stresses, decisions on factor of safety, # of casters

- Casters sizing and frame integration - Cole
- Frame design - Cole, Alex, Shawn
- Air skid and frame integration - Shawn, Jordon
- Weight material selection, appearance - Lauren talk with Henry
- Air Bearing Sizing, Weight Caps, vendor look-up - Jordon

Prototype Tasks

By 2/6:

- Loading analysis for full scale, hand calc - Alex
- CAD initial caster model full scale - Cole
- Scaling for prototype - Cole
- Create Prototype part and assembly drawings - Cole
- Contact Jordon's guy for welding timetable/lead time - Jordon
 - Cole to send scale size assembly drawing to Jordon
- Frame-tugger interface - find out details and start design - Jordon, Shawn
- Preliminary ANSYS model - Alex
 - Cole to send full size assembly drawing to Alex

On 2/6:

- BOM and parts selection for prototype
- Order prototype parts

By 2/13:

- Weld prototype frame - Jordon's guy
- Create and assemble pin sub assembly for prototype
- Assemble prototype frame
- Create scale model of MOS4
- Compile data and create presentation for DR
- In house testing of prototype @ RIT

Full Scale Tasks:

- ANSYS model for full scale
 - Preliminary for DDR 1
- Air skid selection
- Air skid frame integration
- Brainstorm ideas for lifting
- Brainstorm ideas for post cylinder attach
- Compile part and assembly drawings and BOM
- Complete costs estimate

IE Tasks:

Process Layout investigation - Nick (lead), Lauren (assist)

- Needs to connect with Henry to discuss timeline and expectations of detail
- Go down to D-R next Friday 2/8

Ergonomic Justification - Nick, complete by DDR Week 10

- Vertical and Horizontal Reach Envelope
- Work Height
- Push/Pull - max weight and # of occurrences/shift
- Lift - max weight and # of occurrences/shift

ROI Investigation - Lauren

- Henry is going to send funds request proposal
- Investigate what payback period could be for this strategic project

Planning:

Air Bearing Demo at D-R - Henry

- Will let me know when it is so my team can be present
- Needs to occur ASAP so we can know direction for full scale

Scope of Project:

- Currently designing cart with casters for stations 1-5 (no cylinder weight)
- D-R is not ready to throw in towel on find an alternative to an overhead crane that costs \$500,000
 - Requested second system be looked into for moving compressor to test, to paint, to shipping, then loading for shipping
 - Best case scenario would be to have as detailed designs as the cart system
 - Assumptions: does not need to interact with test bed (need transfer from system to test bed), truck pulls into facility at shop floor level (need to lift)
 - **Can we do this? Do we have the resources, time? NEED TO TALK WITH JOHN ON 2/4**

DDR Prep - Slides, Logistics with RIT and D-R - Lauren

- Henry blocking 2 hours on Friday 2/15
- **Revised plan: NEED TO TALK WITH JOHN ON 2/4**
 - Build up prototype in next 2 weeks (<\$75)
 - present at DDR on 2/15
 - Start MSD II by incorporating feedback and direction into full scale system
 - Hold FDR (Final design review) sometime week 3-6 of MSD II

Project Mgmt Review Prep - Lauren

- Started Excel spreadsheet for green light, red light

Team Meeting Notes

Wednesday, February 06, 2013
3:58 PM

Updates for team:

- DDR next Friday at D-R - present prototype to operations and project team, process layout start, ergonomic justification, economic analysis
- Process Layout - Nick and Lauren going to D-R on Friday, iterative process -> propose designs just to put something in front of D-R and get feedback, re-design and get feedback, etc.
- Shared new schedule for Phase I, Phase II, and process layout projects for rest of MSD I and MSD II

Due today:

- Loading analysis for full scale, hand calc - Alex - need to finish it tonight
- CAD initial caster model full scale - Cole ✓
- Scaling for prototype - Cole ✓
- Create Prototype part and assembly drawings ✓
- Contact Jordon's guy for welding timetable/lead time - Jordon - will speak to weld guy tomorrow to find availability
 - Cole to send scale size assembly drawing to Jordon ✓
- Frame-tugger interface - find out details and start design - Jordon, Shawn - work on today and finish by end of Friday (need to call companies)
- Preliminary ANSYS model - Alex - need to finish it tonight
 - Cole to send full size assembly drawing to Alex ✓

Agenda today:

- Alex - ANSYS model, loading analysis
- Shawn - scale down positioning plate and pin design
- Jordon - work on frame-tugger interface
- Cole - finalize prototype/full-scale part and assembly drawings
- All ME's - compile parts list

Goal for tomorrow 2/7:

- Guide meeting @ 9AM:
 - Present parts list for approval to John
 - Order parts by 2pm through MSD office
 - Find out if/when we should hold an RIT review for this prototype model
- Nick - send Henry email for arrival time and what resources we need for trip on Friday 2/8

To do for Friday 2/8:

- IE's are at D-R:
 - process layout work
 - slides for next week's review - process layout, ergonomic analysis, economic analysis
- ME's are at RIT:
 - Put all documentation in EDGE repository - restructure for phase I detailed design (assembly stations 1-5), start phase II (test+paint+shipping)
 - Start slides for DDR next Friday - look at MyCourses for requirements

For next week:

- Possibly find time to meet before Wednesday if we are doing a RIT review (Thursday 2/14?)
 - Finish slides by Wednesday morning to send out to invitees
 - Invite professors - Wellin, Gomes, Mark Smith, Esterman, etc. ASAP
 - Reserve room with Chris in office ASAP
- Finish building prototype
- Possibly start work on phase II system if 1-2 ME's free up
- Project Management Review prep
 - Find time to meet as a team with John Week 11

Team Meeting 2/12 @ 8pm

Monday, February 11, 2013
11:34 PM

Alex absent
Nick came in at 9pm from class

To do for Friday 2/8:

- IE's are at D-R:
 - process layout work
 - slides for next week's review - process layout, ergonomic analysis, economic analysis
- ME's are at RIT:
 - Put all documentation in EDGE repository - restructure for phase I detailed design (assembly stations 1-5), start phase II (test+paint+shipping)
 - Start slides for DDR next Friday - look at MyCourses for requirements

For this week:

- Finish prototype fabrication
 - Will be finished by Friday, casters come in tomorrow and Shawn needs to do the pin/plate install
- Finish slides by Wednesday ~~morning~~ evening to send out to John and Henry
 - ME divisions:**
 - 1) Casters - Cole
 - 2) Preliminary Assembly Design of Cart - Jordon
 - 3) Pin/Plate Design for interface between compressor and frame - Shawn
 - 4) Stress/FEA Analysis - Alex
 - 5) Capability for air bearing use - Jordon
 - 6) Risk Analysis - Cole
 - IE divisions:**
 - 1) Ergonomic Justification - Nick
 - 2) Process Layout - Nick
 - 3) Economic Analysis - Lauren
 - ? Risks in design
 - Caster plate holes and interference with gussets - based on vendor specs for parts
 - Welding analysis for loading/stress - team has limited experience
 - ? Test plans
- Need Henry's feedback on timeline for MSD II - get this Friday at review
- Guide Meeting prep - status report with questions, progress
- Project Management Review prep
 - Find time to meet as a team with John Week 11 - Wednesday 10:00-11:00, after 3:00

★ Friday 2/15 @ D-R starting at 9am - Prelim Design Review for Phase I with prototype and progress report on floor layout

- Possibly start work on phase II system if 1-2 ME's free up