



68K Blade Process Handling



Mid-Point Review

Team 9

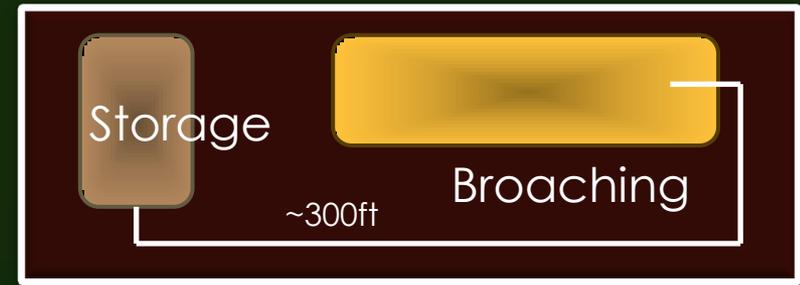
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Project Scope



- ▲ 68K Blade Process
 - ❑ 45lbs prior to broaching
 - ❑ Storage to loading 1st machine
- ▲ Current Procedures
 - ❑ Requires multiple lifts per shift
 - ❑ High risk of personal injury



▲ Storage Container Design

- ❑ Reorganize
- ❑ Place at safe working level

▲ Blade Handling Methods

- ❑ Eliminate lifting
- ❑ Remove strenuous physical requirements
- ❑ Reduce risk of injury

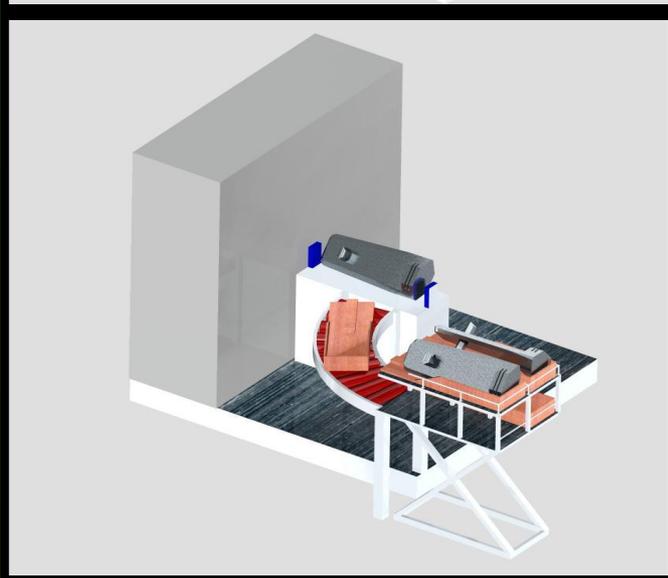
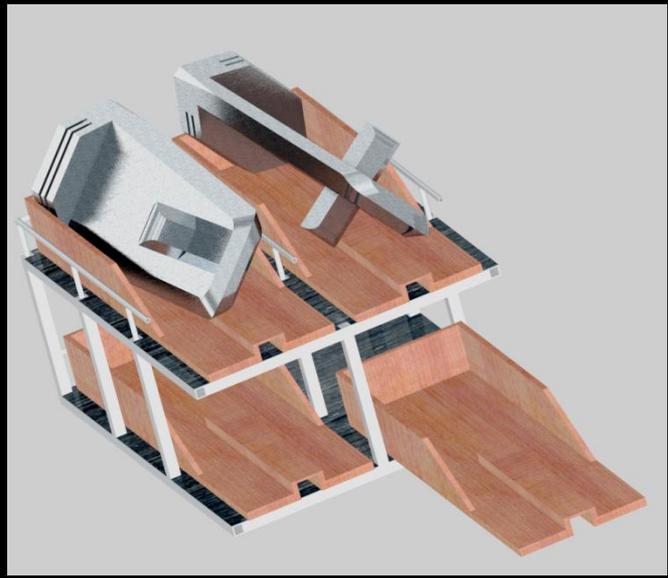
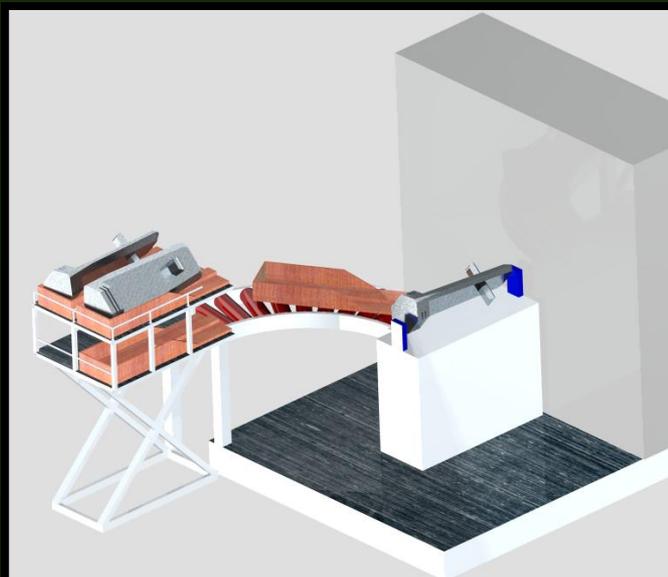
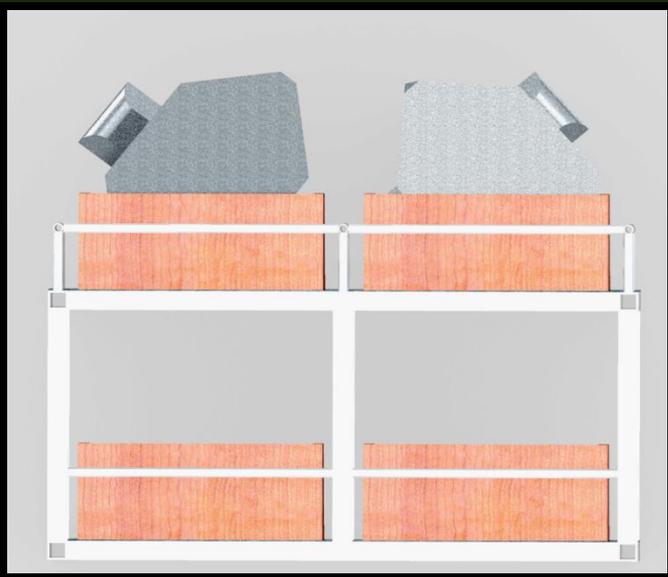
▲ Critical Customer Constraints

- ❑ No industrial cranes
- ❑ Budget: \$2,000



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Mechanism



▲ Over Budget

- ❑ Parts Cost \$2270
- ❑ Shipping costs (Freight) \$395
- ❑ Total Cost \$2665

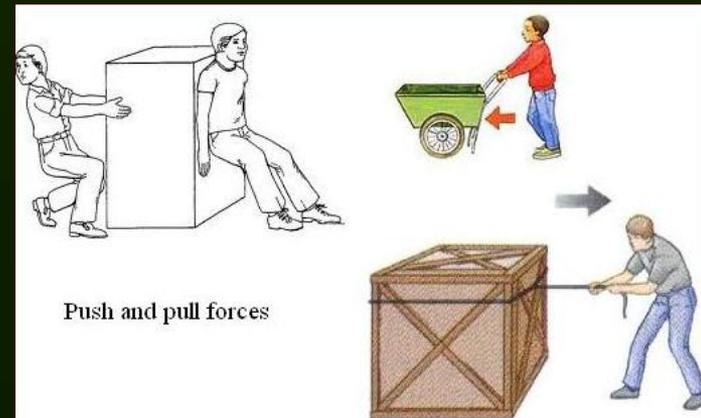
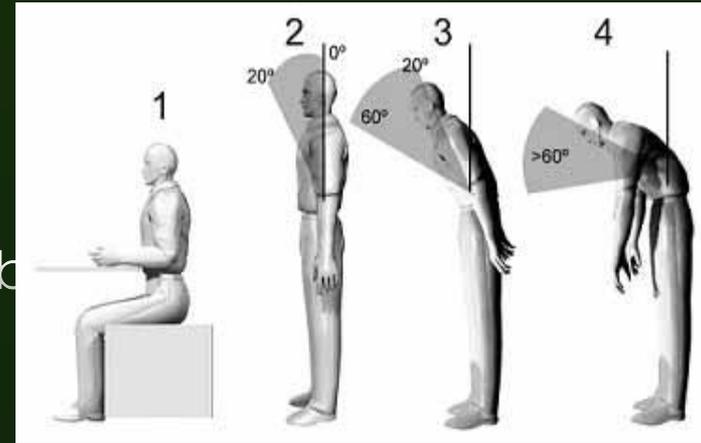
▲ Approved by ME department

Line	Qty	Product	Unit Price	Total Price
1	1	Conveyor	\$160.53	\$160.53
2	3	Conveyor Stand	\$44.78	\$134.34
3	1	Mobile Lift	\$1437.19	\$1437.19
4	8	Steel Tube	\$24.14	\$193.12
5	1	Sheet Metal	\$97.11	\$97.11
6	1	Angled Steel	\$15.00	\$15.00
7	1	Cap Screw	\$11.80	\$11.80
8	1	Hex Nut	\$5.40	\$5.40
9	1	Washers	\$10.20	\$10.20
10	1	Raw Aluminum	\$21.81	\$21.81
11	1	Plywood	\$64.00	\$64.00
12	1	Steel Mounts	\$20.43	\$20.43
13	3	Steel Guards	\$33.27	\$99.81

Merchandise Cost \$2270.74

- ▲ Parts order placed
- ▲ Fabrication Preparation
 - Finalize drawings for machine shop
 - Organize dates for machining
- ▲ Assembly
 - Will begin as soon as parts arrive

- ▲ RULA score
 - Final Score of 3
 - ▲ Score is acceptable
- ▲ Psychophysical Analysis
 - Allowable Push/Pull forces
 - ▲ 59lbs [42lbs]
 - ▲ 57lbs [35lbs]
 - Calculated Force
 - ▲ 11.25lbs



- ▲ Time Studies

- Use different people to do operation
- New Arena

- ▲ Comparisons

- RULA

- ▲ Theoretical to Actual

- Force Analysis

- ▲ Required Push/Pull

- ▲ Maneuverability
 - Simple to operate cart mechanism
 - Easy relocate cart with forgings stored
- ▲ Ease of access
 - Forgings easily removable
 - No features hinder movement
- ▲ Forging mounting
 - Simple locking
 - Reliable pivot for tray

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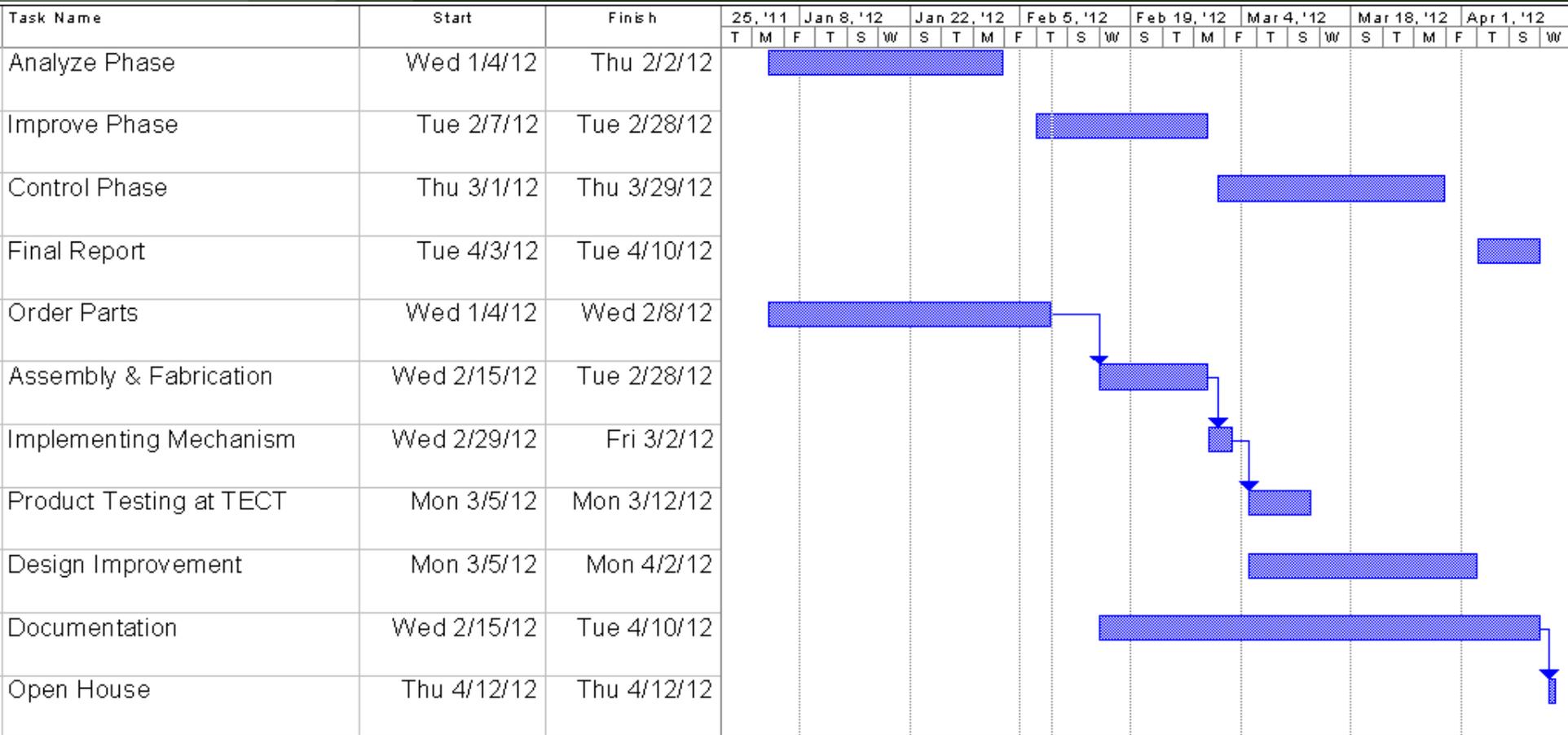
Next Steps: Improvements

- ▲ Operator Feedback
 - Suggestions for modifications
- ▲ Implement Modifications
 - Re-Test at TECT Power
- ▲ Supply TECT with ideal component decisions
 - Tray Material
 - Roller table in storage
 - Extendable Table
 - ▲ Optimized storage space

- ▲ Ordered Parts
 - 2/8/12
- ▲ Begin Assembly and Fabrication
- ▲ Implement/Improve Phase
 - Testing at TECT Power
- ▲ Control Phase
 - Ensure goals are met
 - Maintain quality levels
 - Training videos
- ▲ Final Report
- ▲ Open House

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Gantt Chart



- ▶ <http://www.ergonautas.upv.es/en/metodos/rula/rula-ayuda.php>
- ▶ <http://www.tutorvista.com/physics/push-pull-forces-worksheet>
- ▶ www.tectcorp.com

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QUESTIONS?

