

FSU-FAMU College of Engineering

TECT POWER

68K Blade Process

Handling

Project Scope

Reevaluation

Group 14:

Patrick Filan, Clint Kainec, John Kemp

Project Advisors:

Dr. Kamal Amin

Department of Mechanical Engineering

Dr. Patrick Hollis

Department of Mechanical Engineering

Client Sponsor:

Mr. Ashok Patel

Industrial Engineer and EHS Manager at TECT Power



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EXECUTIVE SUMMARY

No major changes have been made to the project plan. Only minor design changes and budget awareness have made since the holiday break. This report will primarily act as a status marker in the project. This report will include the project scope, a brief description of the design, changes in the design (minor changes for machining purposes), and the currently allocated budget and the budget distribution.

PROJECT SCOPE

TECT Power, Thomasville; a turbine part manufacturing company; currently shapes their 68K turbine blade with manual single-axis mills. The blades are 45lbs and 3ft long as a raw forging and are currently transported from machine to machine by hand. Placing the blade into the mills and broach place much strain on the employees at TECT as they have to lift and place the blades often outside of a safe working zone. As such, some employees experience strained muscles, new employees are fearful of the process, and weakness or illness in an employee can halt production. Because of this issue, they have requested a device or process that can assist in the manufacturing process of this blade to eliminate manual lifting.

Last year, a team designed a cart that was capable of storing blades, bringing them to, and placing them in the first mill in the initial shaping area. However, other machines had to be accommodated. This project focuses on being able to adapt the old design such that it can place blades into any of the machines in the early machining area at TECT by use of a functioning prototype.

PROJECT PLAN

Stage	Status
Concept generation	Complete
Determination of minimum specifications	Complete
Conceptual design	Complete
Part designs	Complete
Ordering/Machining Parts	In Progress*
Prototype assembly	Incomplete**
Presentation of prototype	Incomplete**

Table 1- Project Plan

*See "Components" for more information

**Earlier stages must be completed before starting

CURRENT PROJECT STATUS

DESIGN

The current design is only slightly modified in dimensions from the previous semester to accommodate machining. However, the electrical components were decidedly not ordered during the Fall semester due to the unknown cost of the required machineable parts. This actually was advantageous for the electrical system was an expensive component in the design, but by ordering parts that have been already coupled together, such as in the form of an electric winch already containing a controller, cable, a motor, and a spindle; a lower price point and lower electrical specifications were found.

COMPONENTS

FRAME

The frame of the design is currently being machined by Westgate Sheet Metal in Orlando, FL. They have graciously decided to give a discounted rate for labor costs and material costs by using scrap metal. The components are expected to be completed by the end of January.

ELECTRICAL SYSTEM

The electrical system is being replaced by two ATV winches and two 12V batteries. This change from assembling what was essentially a winch independently saves both time and money. These parts have been ordered.

MECHANICAL COMPONENTS (GUTS)

The mechanical components – the pulleys, bars, and wheels for the turntable – are a minor price point and are ordered.

HARNESS

The harness will be used to manipulate the blades. Components for the harness are being bought as raw fabric and individual hooks and will be sewn together once received. These components are to be ordered once an adequate retailer and assistance in sewing is found (preferably local).

CURRENT BUDGET ALLOCATION

With a total budget of \$2000, the budget is divided among the components:

Component	Estimated Cost	Percentage of Budget
Frame	\$600	30%
Electrical System	\$400	20%
Mechanical components	\$200	10%
Harness	\$100	5%
Total	\$1300	65%
Remaining	\$700	35%

Table 2 - Allocated budget

The estimated costs are determined from part costs and quotes from retailers/machine shops.

With a total allocated budget of roughly \$1300, a remainder of \$700 is left for unforeseen expenses (having to purchase new parts, higher machining costs, etc.) and other project expenses (travel expenses, etc.).