

1  
P17665 Rotating  
Dynamometer

1.1  
Joe - Project Manager

- 1.1.1 Make contact with customer
  - 1.1.1.1 Establish medium of communication and main contact
    - 1.1.1.1.1 Interface with Dr. Liu and periodic updates
    - 1.1.1.1.2 Research more documents provided by Dr. Liu
  - 1.1.2 Monitor engineering to make sure they're on target
    - Converse with EE leadabout benchmarking for microprocessor or
    - 1.1.2.2 Help EE lead with feasibility concepts
    - 1.1.2.3 Follow up with ME Lead to touch base on mechanical
  - 1.1.3 Define Schedule and availability with customer, guide, and team members
  - 1.1.4 Establish communications with team members through slack
  - 1.1.5 Become familiar with edge
    - 1.1.5.1 Learn how to edit/upload documents and links
    - 1.1.5.2 Continue to monitor and update as needed
  - 1.1.6 Help define customer requirements
  - 1.1.7 Identify key goals and deliverables
  - Develop understanding of Milling/Drilling processes and
  - 1.1.9 Discuss uses of device
  - 1.1.10 Risk Management-what could go wrong?
  - 1.1.11 Define Engineering Requirements
  - 1.1.12 Define use Scenarios for our device
  - 1.1.13 Realize what kind of constraints are on our project
  - 1.1.14 House of Quality

1.2  
Brian - ME lead

- 1.2.1 Design the part and run it in analysis software
  - 1.2.1.1 Begin prototyping the design and begin refining specs
  - 1.2.2 Become familiar with EDGE
    - 1.2.2.1 Learn to update site by direct edit (wikimedia), tortise SVN
  - 1.2.3 Help define customer requirements
    - 1.2.3.1 Review Customer requirements post interview
  - 1.2.4 Help create user scenarios
  - 1.2.5 Help make problem statement
  - 1.2.6 Review cutting techniques and processes
  - 1.2.7 Read supplemental research material
    - 1.2.7.1 Help build engineering requirements
    - 1.2.7.2 Help make risk assessment
    - 1.2.7.3 Help make House of Quality
    - 1.2.7.4 Help make Problem Definition
      - 1.2.7.4.1 Review problem definition after dry run with guide
    - 1.2.7.5 Material benchmarking housing prep phase 2
      - Link key ER and CR to benchmarked qualities of materials, cost, and previous
      - key functions to model the project for design ing the housing, tolerances,
      - 1.2.7.5.3 create the functional analysis and concept generation and morphological table
      - 1.2.7.5.4 make material selection finalize how the device will attach to the machine
      - 1.2.7.5.5 Need to know for models: research on own
        - 1.2.7.5.5.1 Space constraints, natural frequency, strain gauge type, material
        - 1.2.7.5.5.2 material of tool bit, microprocessor and battery weight
        - 1.2.7.5.5.2.1 size dimensions as well
        - 1.2.7.5.5.3 Specifics on the mill and drill press we're working on
        - 1.2.7.5.5.4 Inertia of the compiled system

1.3  
Elbert - Lead Process Engineer

- 1.3.1 Help define customer requirements
  - Help develop engineering requirements from the customer
  - 1.3.3 Help create use scenarios
  - 1.3.4 Help define the house of quality
  - 1.3.5 Help to write and clarify the problem definition
  - 1.3.6 Help develop the risk assessment and possible work arounds
  - 1.3.7 Review cutting force hand calculations/ create excel sheet for calculation
  - 1.3.8 Refine size requirements so that the tool fits in the machine
    - 1.3.8.1 Max diameter and weight
    - 1.3.8.2 How it will attach to the machine
  - 1.3.9 Figure out tool holder design
    - 1.3.9.1 Research different tool holders that can be used
    - 1.3.9.2 Figure out how it needs to attach to the rest of the system
  - 1.3.10 Become familiar with edge
    - 1.3.10.1 Be familiar enough to update the pages as needed
  - 1.3.11 Review Supplemental research material to help narrow concepts
    - 1.3.11.1 Use knowledge and research data to refine concepts to be feasible

1.4  
Muhammad - EE Lead

- 1.4.1 Help define customer requirements
  - Help develop engineering requirements from the customer
  - 1.4.3 Help create use scenarios
  - 1.4.4 Help define the house of quality
  - 1.4.5 Help to write and clarify the problem definition
  - 1.4.6 Help develop the risk assessment and possible work arounds
  - 1.4.7 Research strain gauge use
  - 1.4.8 Research wheatstone bridge circuits
  - 1.4.9 Contact manufacturer of wireless DAQ
  - 1.4.10 Benchmark various microcontrollers for data acquisition.
  - 1.4.11 Benchmark wifi modules for data transfer to computer.
  - 1.4.12 Benchmark bluetooth modules for data transfer to computer.
  - 1.4.13 Decide between wifi or bluetooth.
  - Make decision on using a microcontroller for data acquisition or
  - 1.4.15 Create functional high level diagrams for electrical components.
  - 1.4.16 Create ASM charts for microcontroller
  - 1.4.17 Perform necessary feasibility studies.
  - 1.4.18 Simulate strain gauge wheatstone bridge circuits.
  - 1.4.19 Create CAD drawings for all circuits
    - 1.4.19.1 Power supply
    - 1.4.19.2 Strain gauge wheatstone bridges.
    - 1.4.19.3 Microcontroller connections

1.5  
Zac - Team Manager

- 1.5.1 Help define customer requirements
  - Help develop engineering requirements from the customer
  - 1.5.3 Help create use scenarios
  - 1.5.4 Help define the house of quality
  - 1.5.5 Help to write and clarify the problem definition
  - 1.5.6 Help develop the risk assessment and possible work arounds
  - 1.5.7 Perform additional benchmarking for the mounting elements of the dynamometer
  - 1.5.8 Make major edits and updates to EDGE directory and wiki interface
  - 1.5.9 Discuss functional decomposition with team during meeting
  - 1.5.10 Make edits to EDGE based on feedback from first Design Review
  - 1.5.11 Develop concepts for feasibility analysis
  - 1.5.12 Research SOP and operating milling machine
  - 1.5.13 Research resonant frequency and machining