Electric Motor Dynamometer Manufacturability

Kyle Plach  
*Iowa State University*, ksplach@iastate.edu

Michael Schulte  
*Iowa State University*, mas16@iastate.edu

Christian Van Sloun  
*Iowa State University*, vansloun@iastate.edu

Dylan Wood  
*Iowa State University*, dywood@iastate.edu

Michael Anderson  
*Iowa State University*, mea1@iastate.edu

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See next page for additional authors

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Electric Motor Dynamometer Manufacturability

Client: ABE/TSM 363 Lecture/Lab

Problem Statement
- Develop a manufacture-ready electric motor dynamometer based on a prototype system.
- System will be replicated and utilized in ABE/TSM 363 Lecture/Lab demonstrations and testing

Objectives
- Create a complete, visually appealing, and operational mechanical system including:
  - Appropriate safety shielding and electrical protection
  - Functioning instrumentation system
  - User interface and data collection system

Constraints
- Able to measure manually or digitally
- Budget: $2000
- Metal surfaces must resist rust

Timeline
- Design approved December
- BOM approved parts ordered January
- Manufacture completed March
- Finalized documentation April

Scope
- Manufacturable design complete with documentation
- Finalized visually appealing product
- Automated data collection
- Ability to manually and digitally collect data

Methods/Approach
- Inventor design
- Waterjet cut components to exact dimension
- Assemble parts on prototype board
- Finalize assembly design
- Document for repeatability

Major Deliverables
- Design of manufacture-ready dynamometer
- Bill of material
- Replication instructions

Recommendations
- Future project group should incorporate instrumentation to this design
- This design should eventually replace dynamometer used in ABE/ TSM 363

References
- Design based on previous prototype
- Autodesk Inventor used for CAD design
- LabView will be used in future for digital readings

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