

Conversion of a Flanger into a Joggler

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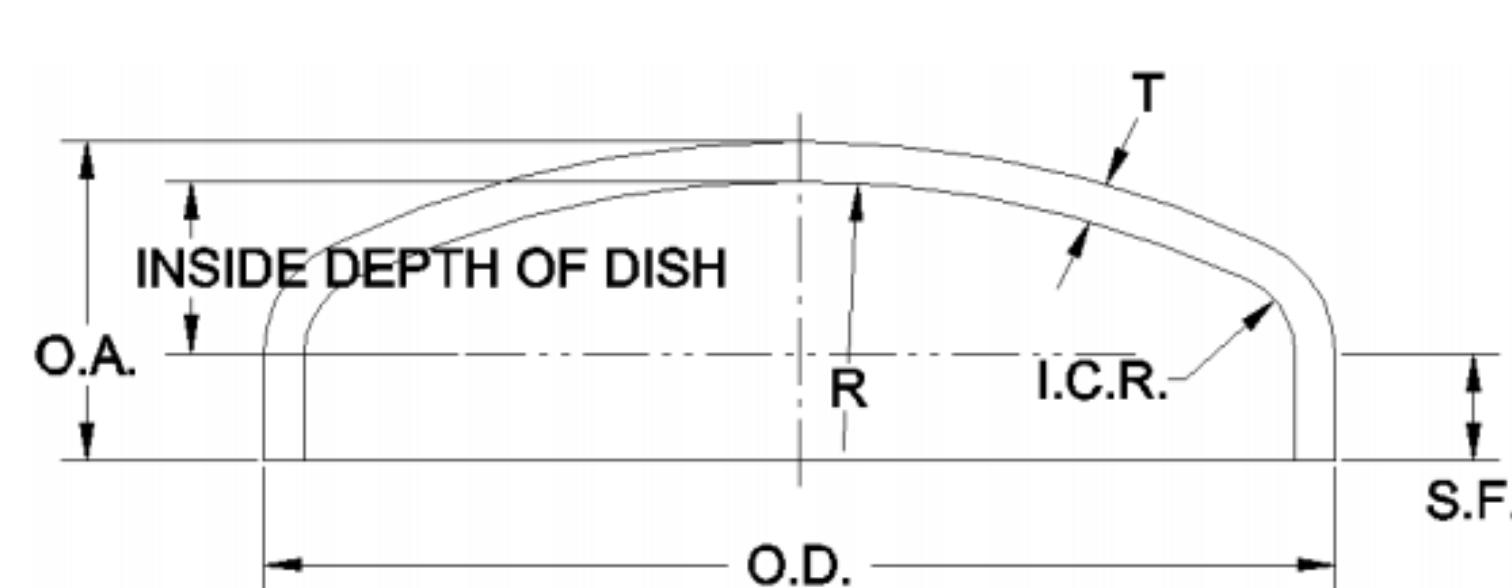
Abstract

A team of Youngstown State mechanical engineering students worked alongside a Youngstown based company called Commercial Metal Forming (CMF). CMF specializes in is the manufacturing of pressure vessel tank heads. These tank heads go through a process of beveling, cutting the edges of the tank head to make a sloping edge, or the process of joggling, applying an indentation to offset the end of the flange to fit inside cylindrical shells. The team of engineering students were to reengineer an existing machine from a flanger to a joggler. The primary focus of the new converted joggler was to joggler 72 inch diameter tank heads with a maximum thickness of 0.625 inches. The team was to repurpose various parts of the original flanger machine to perform the joggling process. A new design was created with the intent to reach all customer needs and to perform the desirable process.

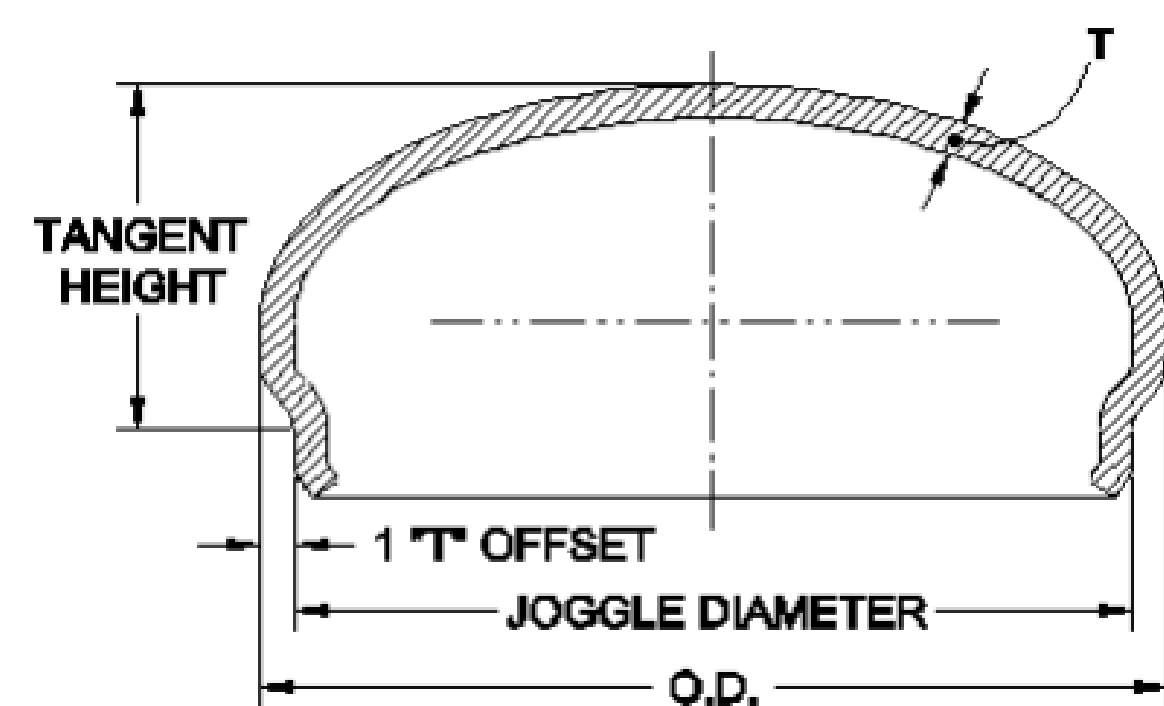
Project Goals/Purpose

- Re-engineer an existing flanger machine into a joggler machine.
- Create a way to joggle large size tank heads.
- Repurpose any existing components on the flanger machine
- Assure joggling process is substantial enough to form larger tank heads than specified
- Design all additional tooling to be used on the new joggler

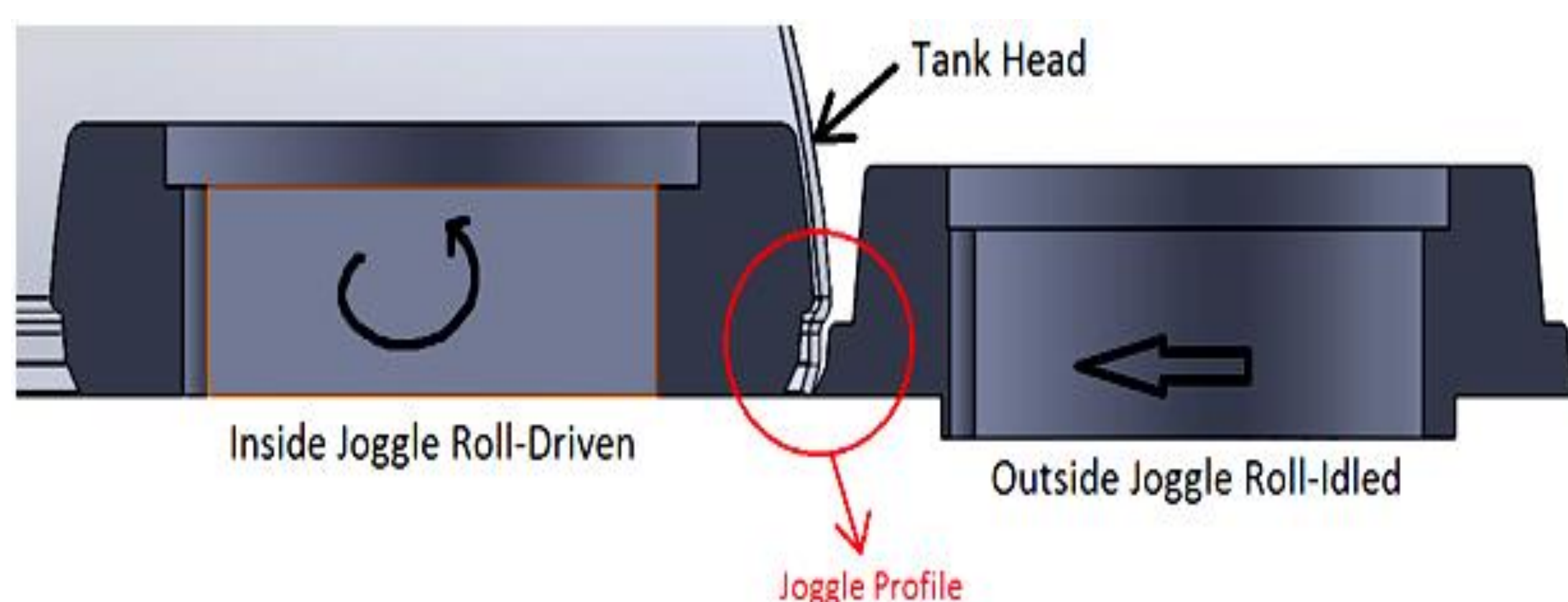
Flanged Tank Head



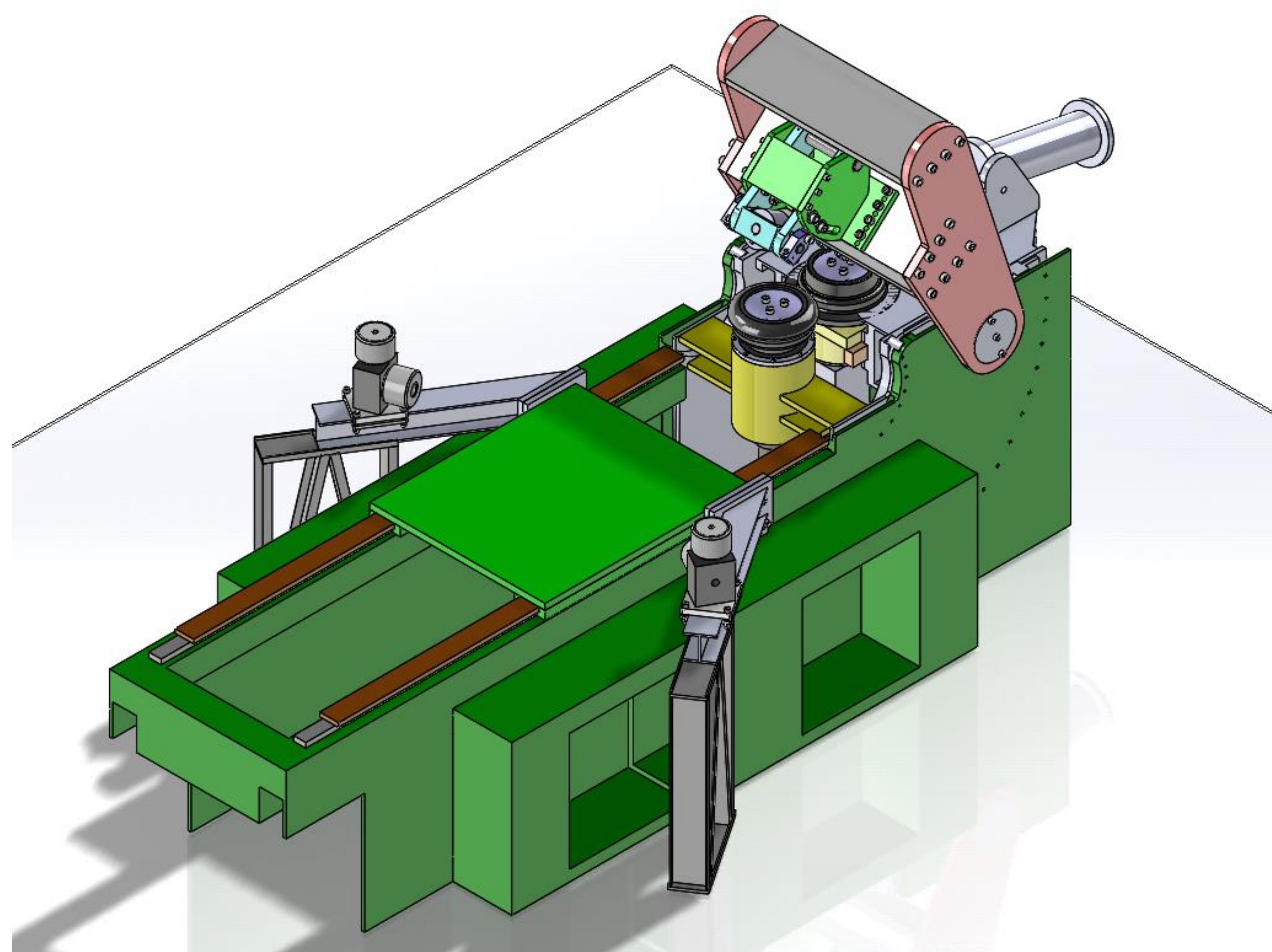
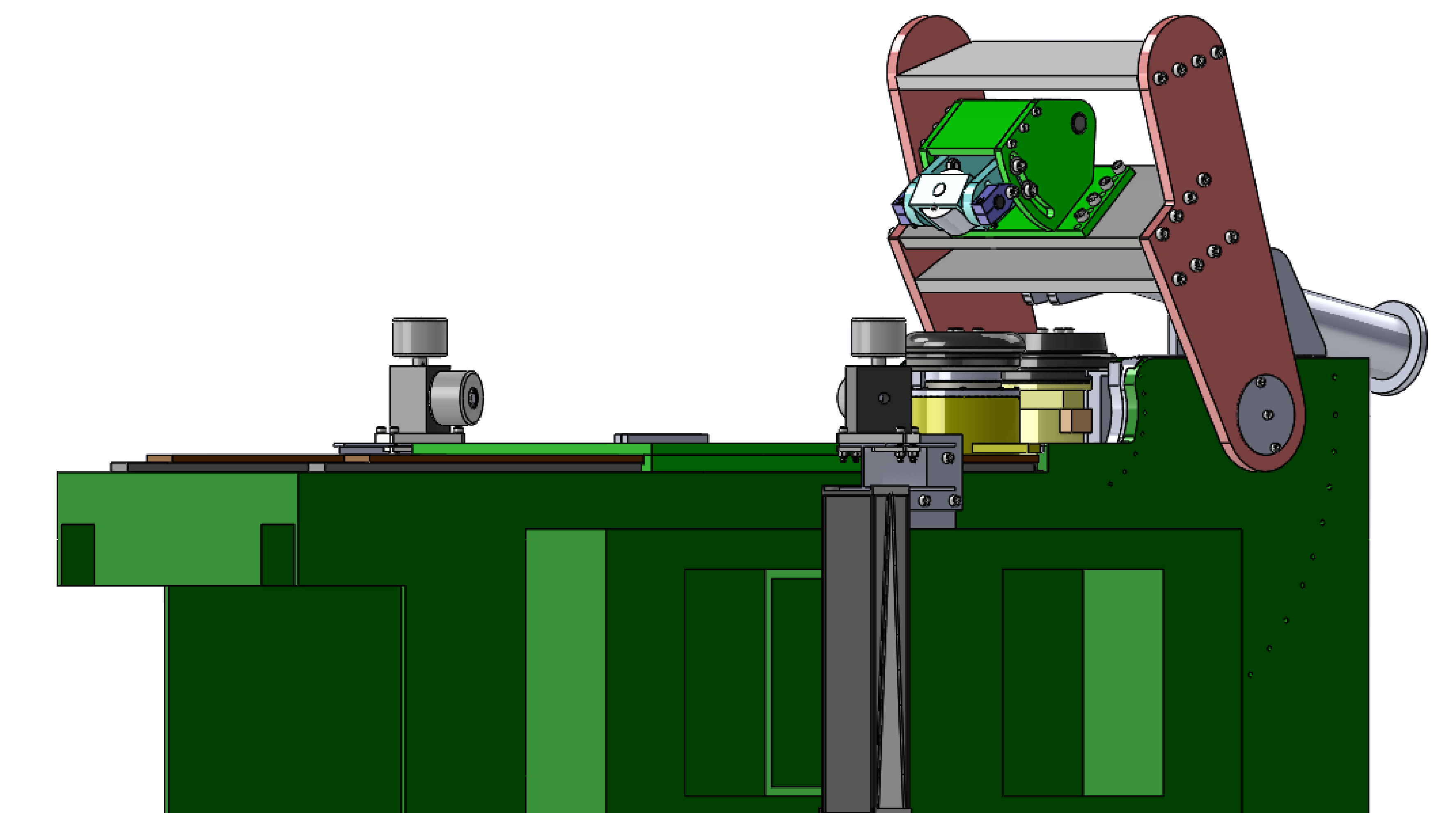
Joggled Tank Head



Joggle Profile



Joggler Design



Design Capabilities

- Joggle up to 72 inch diameter by 3/8 inch and above thickness tank heads
- Incorporates repurposed cylinders and hydraulic motors and pumps from flanger
- Keeps same interface of other jogglers for simplicity on plant floor
- Keeps cost minimal for Commercial Metal Forming
- Gives Commercial Metal Forming a product in which no other company is capable of doing.
- It allows Commercial Metal forming to be ahead of their tank head manufacturing competition

Next Steps

- Send out detailed drawings
- Determine total cost of machine
- Purchase components for the machine
- Receive parts and assemble machine
- Test and run joggler