



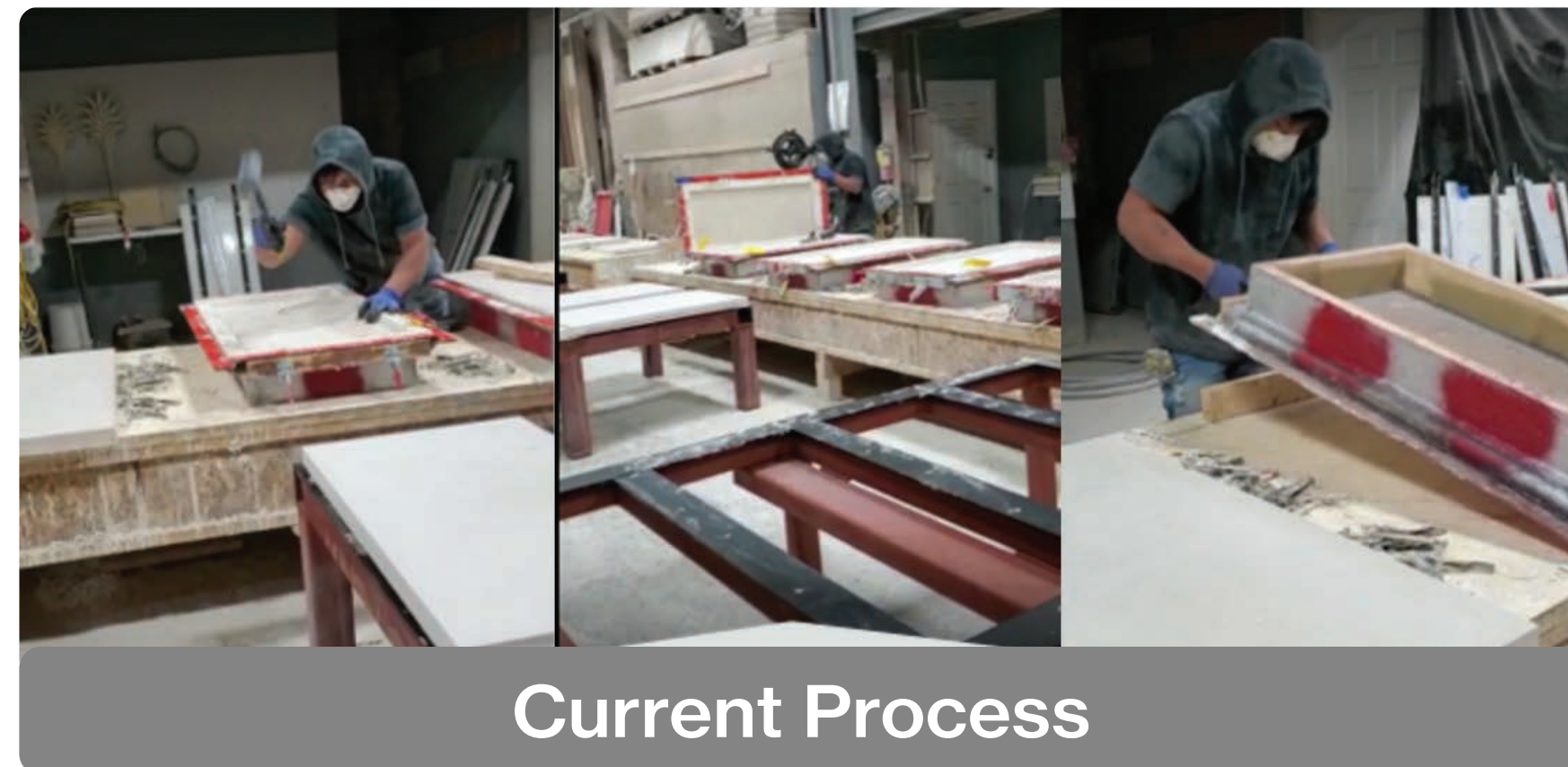
Reduce Cycle Production Time in Glass Fiber Reinforced Concrete Molding

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Introduction

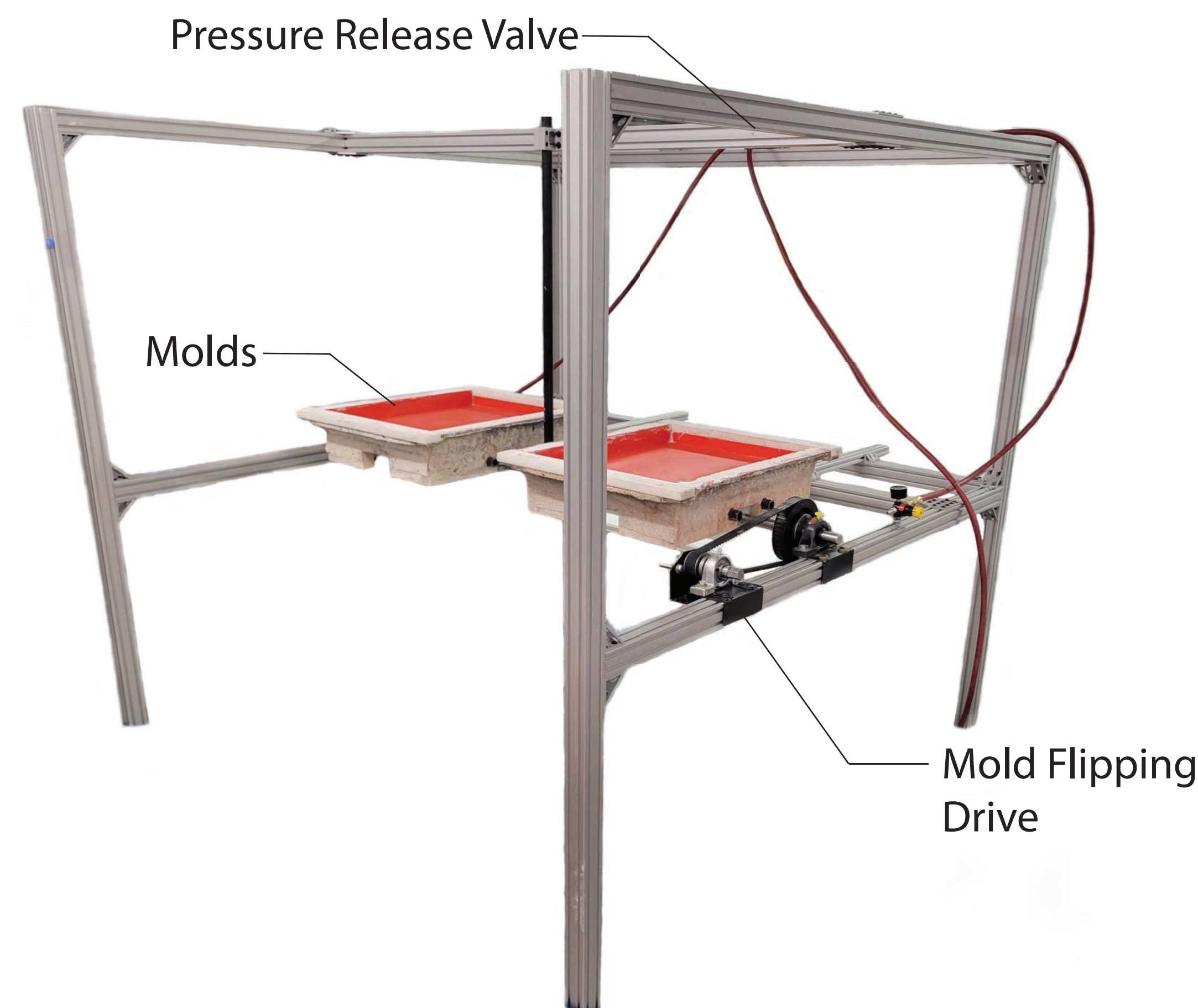
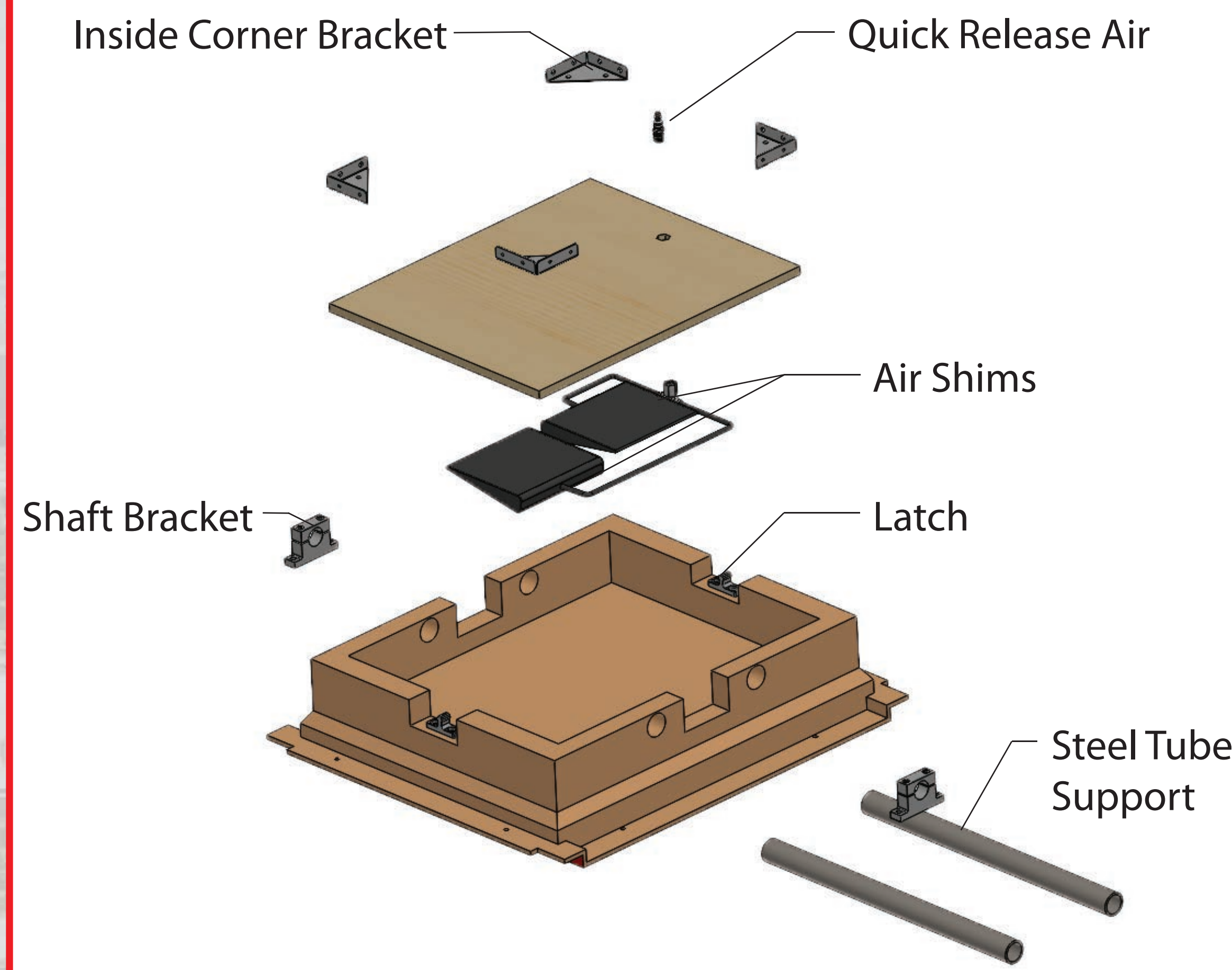
- Working with Unlimited Designs, a Glass Fiber Reinforced Concrete (GFRC) manufacturer.
- The project goal was to reduce overall production cycle time by at least 15% and find potential areas for automation.



- The team identified that in the current molding process demolding took up a significant amount of work.
- The panel needed to be released from the mold in a way that would not damage it and would also be economical to scale up.
- The final product would need to be a faster way to release the molds and had no impact on the quality of the resultant product.

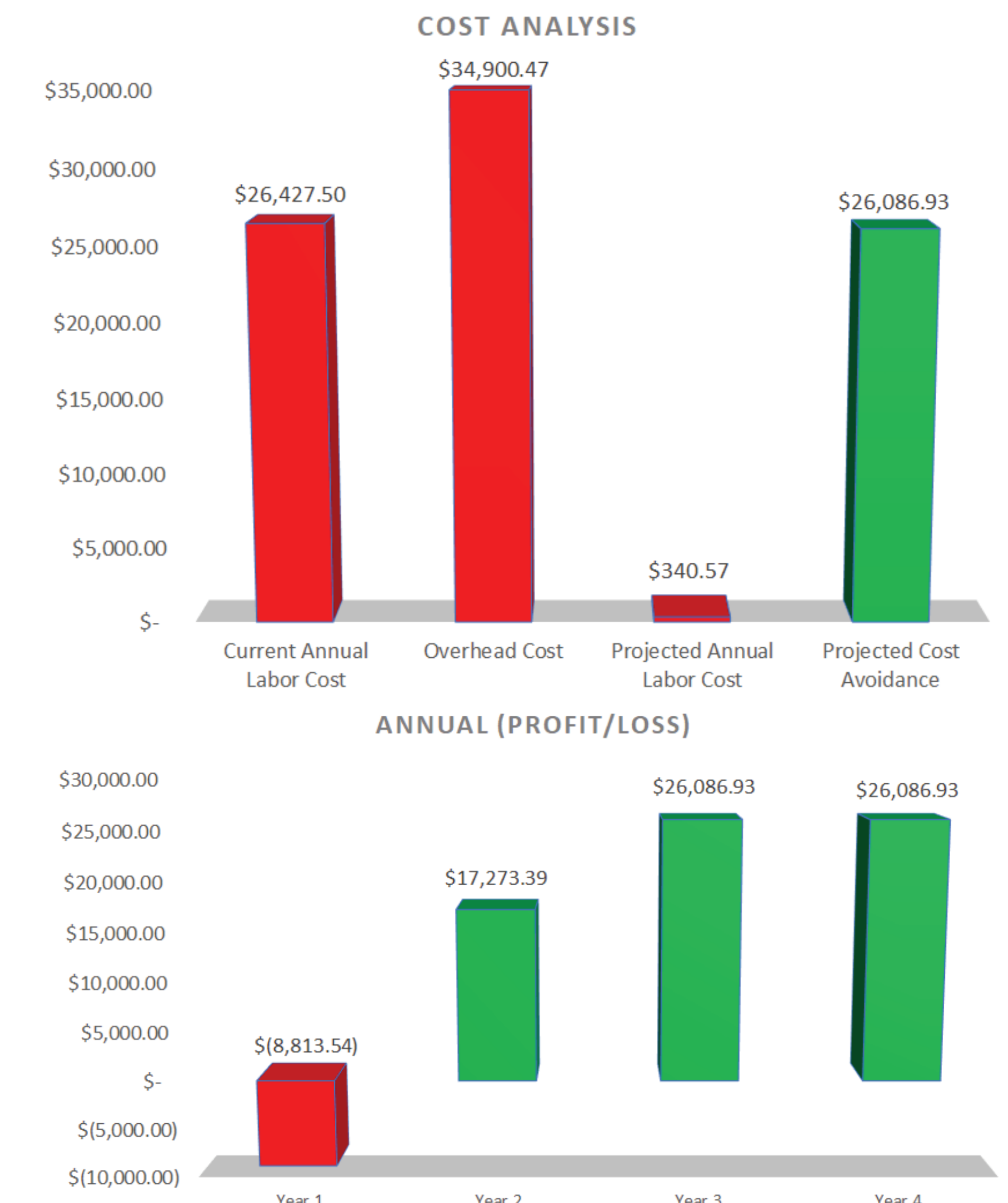
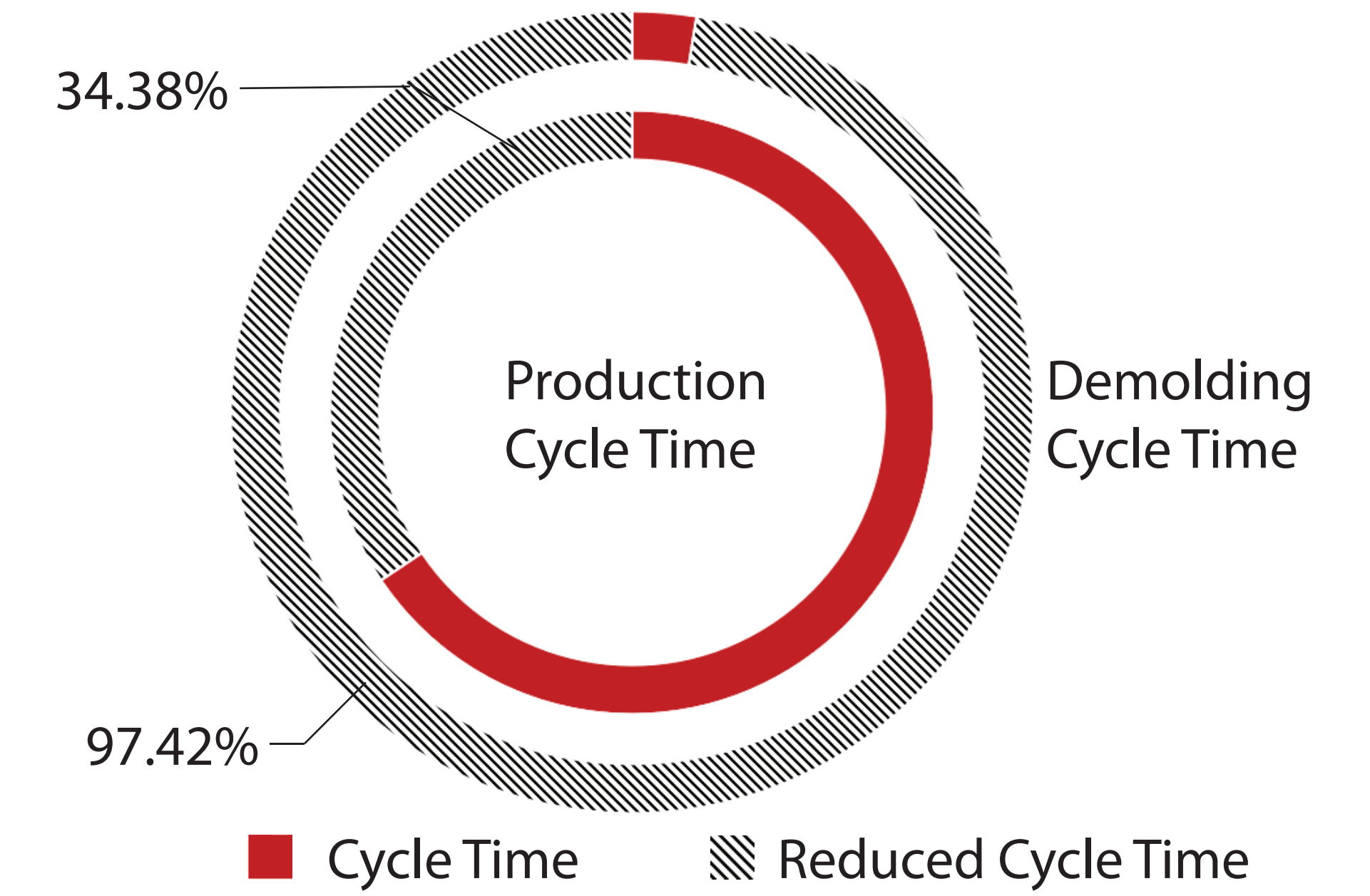
Prototype

- Our solution was to use an air shim mounted behind the fiberglass mold to slightly displace the center of the mold so that the panel is safely removed from the mold.

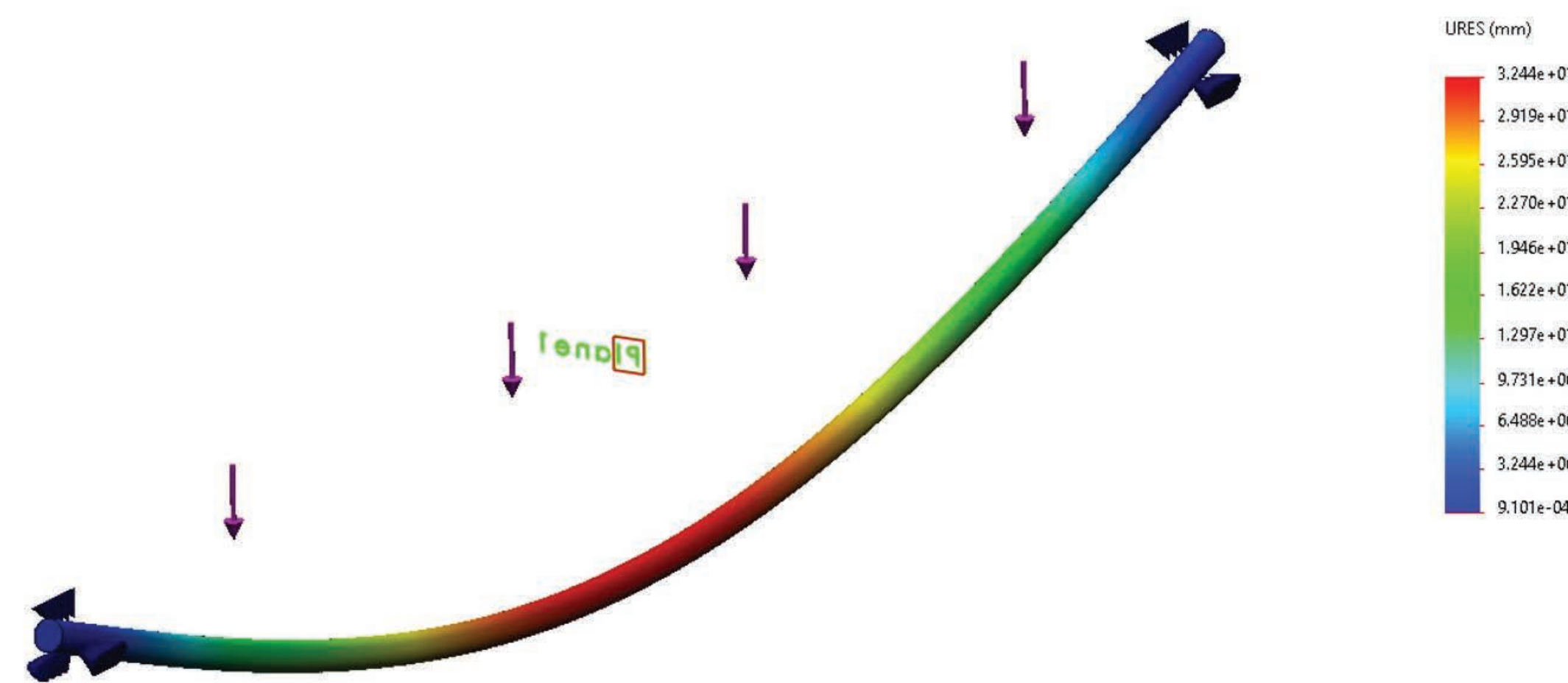


Results

- In testing we saw an average release time of 20.85 seconds, a significant improvement on the original method.
- We also found that we consistently produced quality panels with no cracking or face defects.
- Cutting out 200 seconds (about 3 and a half minutes) of processing time on each panel will save over an hour a day in manufacturing time.



Finite Element Analysis



- The team conducted Finite Element Analysis of the main rotating beam and the frame to validate the structural integrity of our prototype before we built it.
- Through our analysis we were able to discover that our main rotating shaft did not have enough support, so we were able to modify our design to include a center support.