

# Hydraulic Component Test Stand

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## Abstract

A hydraulic testing rig is designed to test various sizes of hydraulic cylinders. The final goal for the project is to be able to measure the pressure and flow across multiple hydraulic circuits and log data readings over time with a variable logging frequency.

## Background

CNH Industrial focuses on designing Hydraulic cylinders for agricultural purposes. The current testing rig was found to be oversized and immotile initiating the need for a new bench.

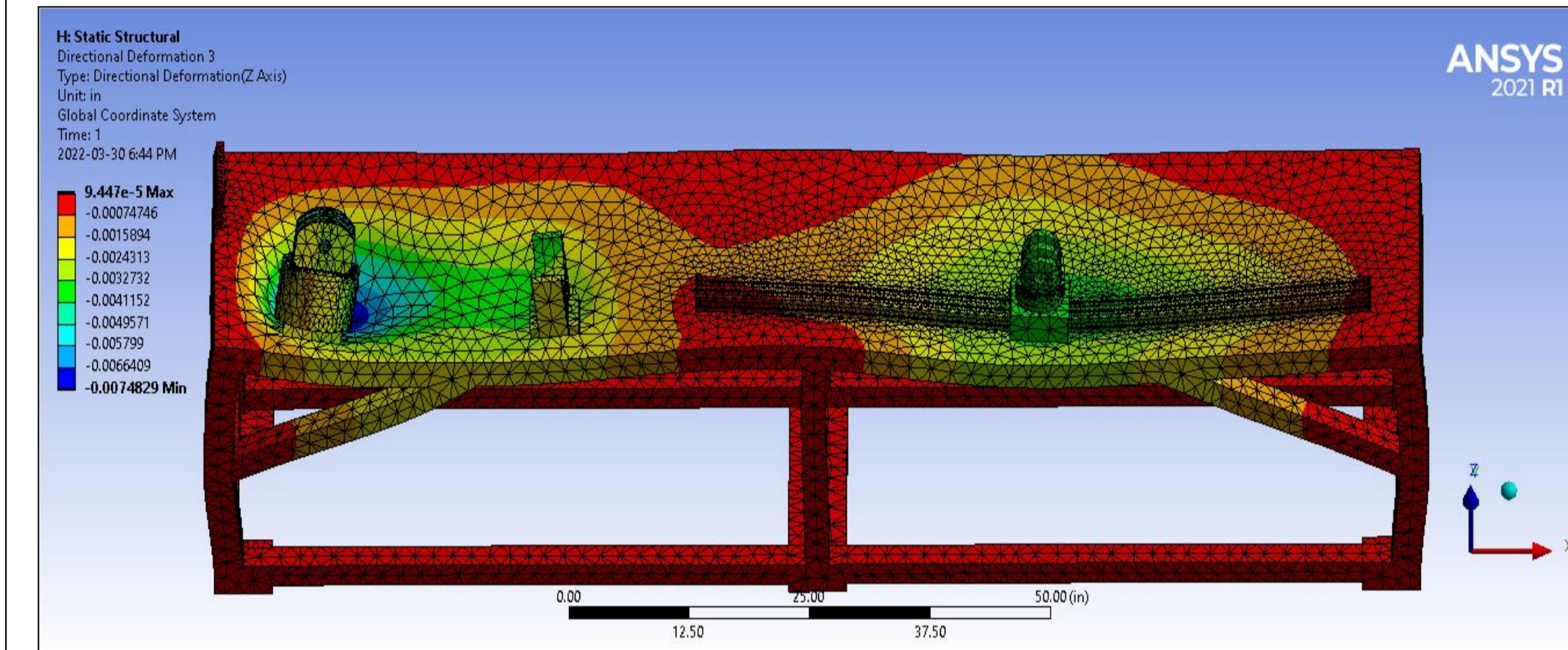
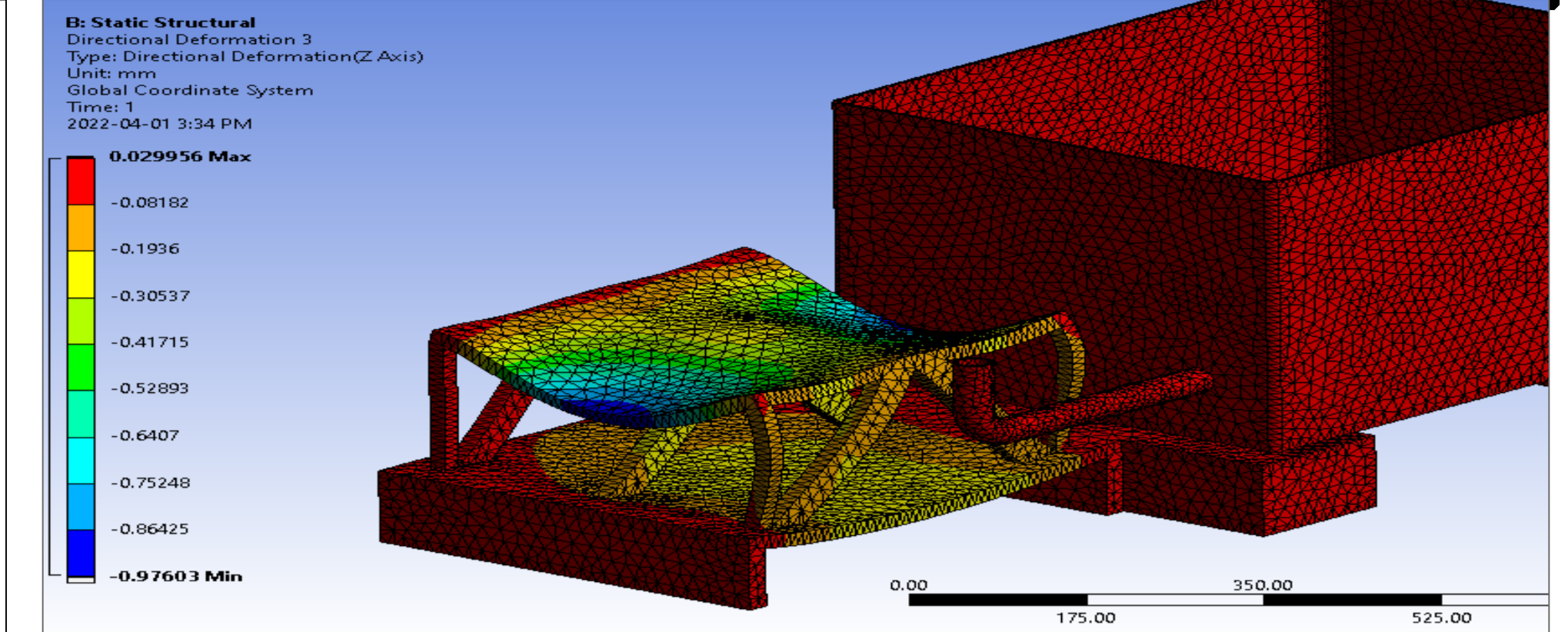


## Objectives

- Design all components of the hydraulic testing rig
- Improve modularity of the existing design
- Measure the pressure and flow across multiple hydraulic circuits
- Log readings over time using a software

## Methods/Process

- Thorough research relating to hydraulics components
- Proposed various hydraulic schematic designs
- Selected the best hydraulic schematic using a design matrix
- Designed sketches of the full hydraulic test stand
- Created a visual Model through Solid Edge
- Evaluated the current proposed design in ANSYS for stress analysis
- Made several improvements on the proposed design to minimize structural deformation
- Pressure drop calculation was conducted to size the pump
- Selected the right pipe size and fittings with minimal pressure drop
- Selected the best pump-motor combination
- A cost analysis was performed



## Conclusions/Recommendations

Simulated deformations were minimal  
 Calculated pressure drops: 0.989 kPa and 5.49 kPa  
 Selected pump: Geartek DTC series Tandem Pump C65  
 Selected Motor: Model Number: PEWWE40-36-324TS  
 Selected Piping: 1 1/4 " and 3/4" schedule 40

## Acknowledgments

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 Namwila Deborah  
 Uline

## References

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