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# Simulation of Heat Assisted Single Point Incremental Forming of Thermoplastics

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# Simulation of Heat Assisted Single Point Incremental Forming of Thermoplastics



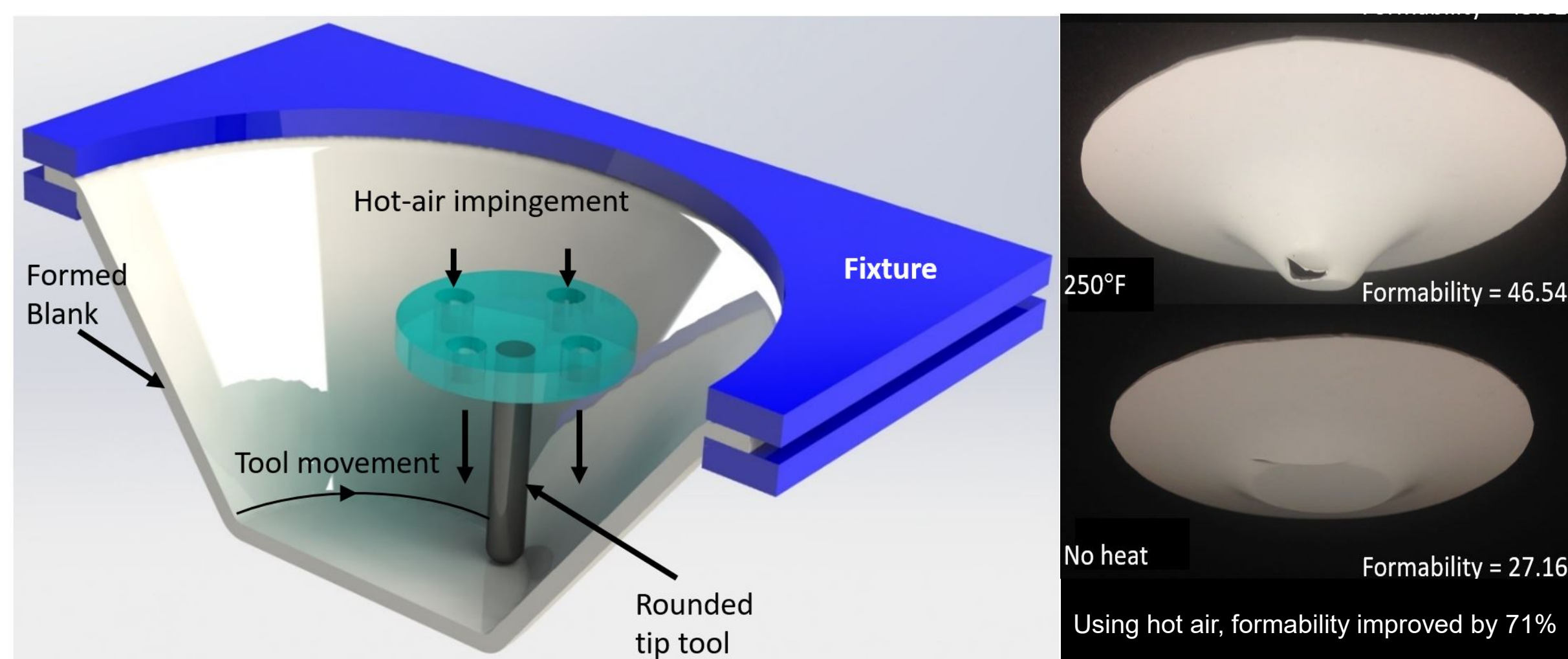
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## Objective

Develop a coupled thermo-mechanical model for simulating Heat Assisted Single Point Incremental Forming (SPIF) of thermoplastics

## Background

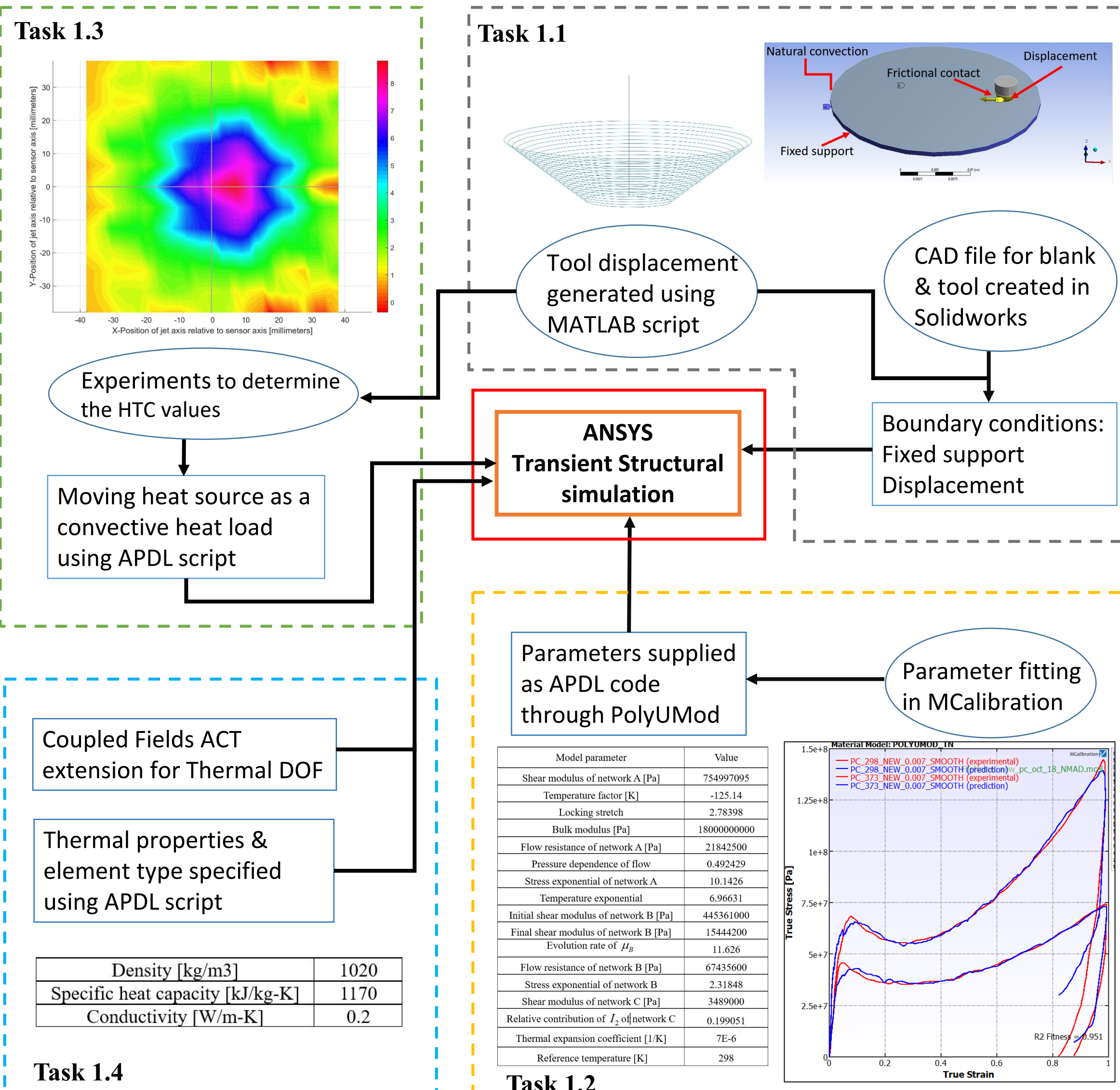
- SPIF is a prototyping process for forming thermoplastic sheets without using dies
- Localized heating improves formability



## State of the art

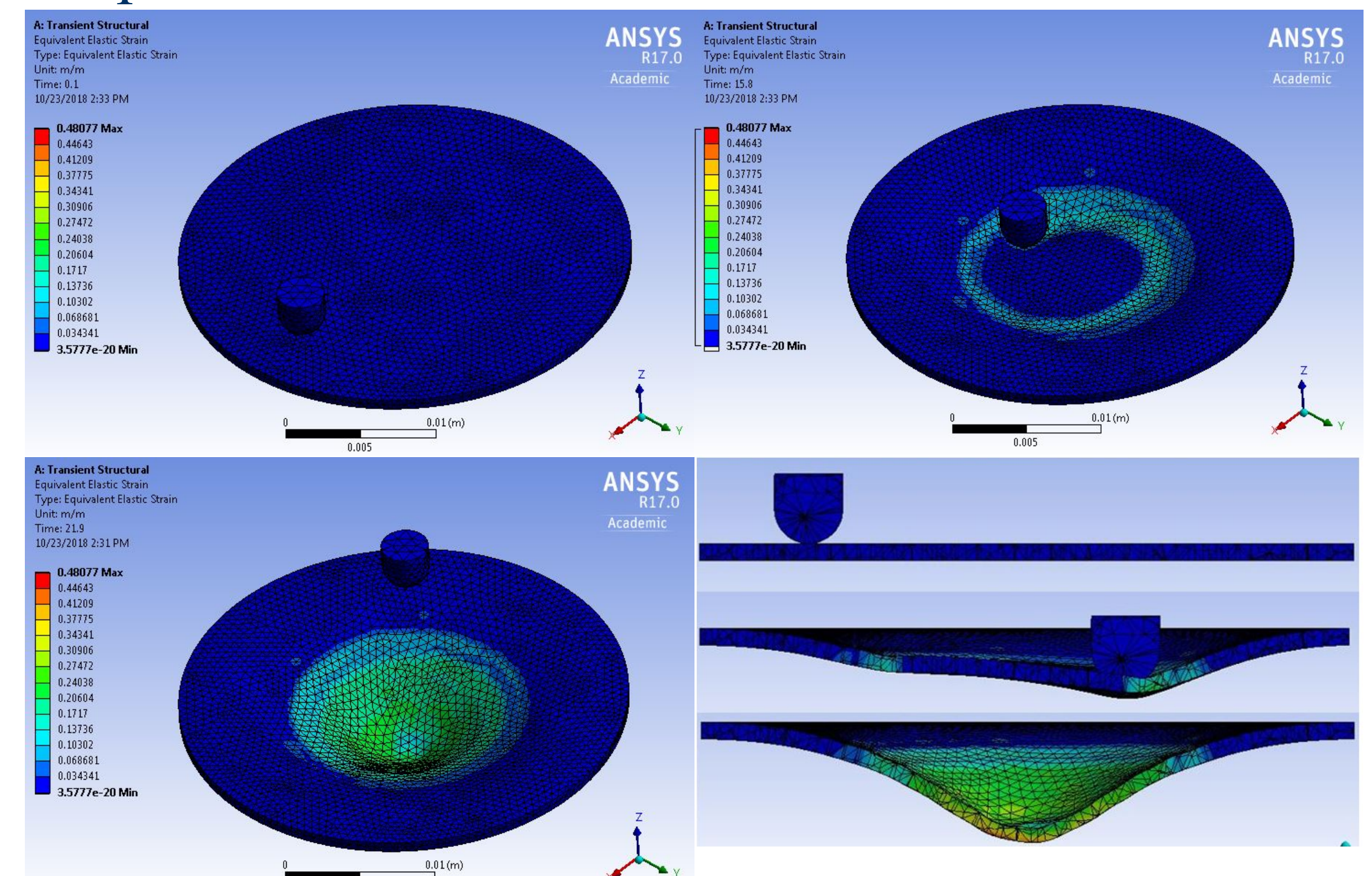
- Currently available simulation models are limited to room temperature forming of thermoplastics

## Model Description



## Results

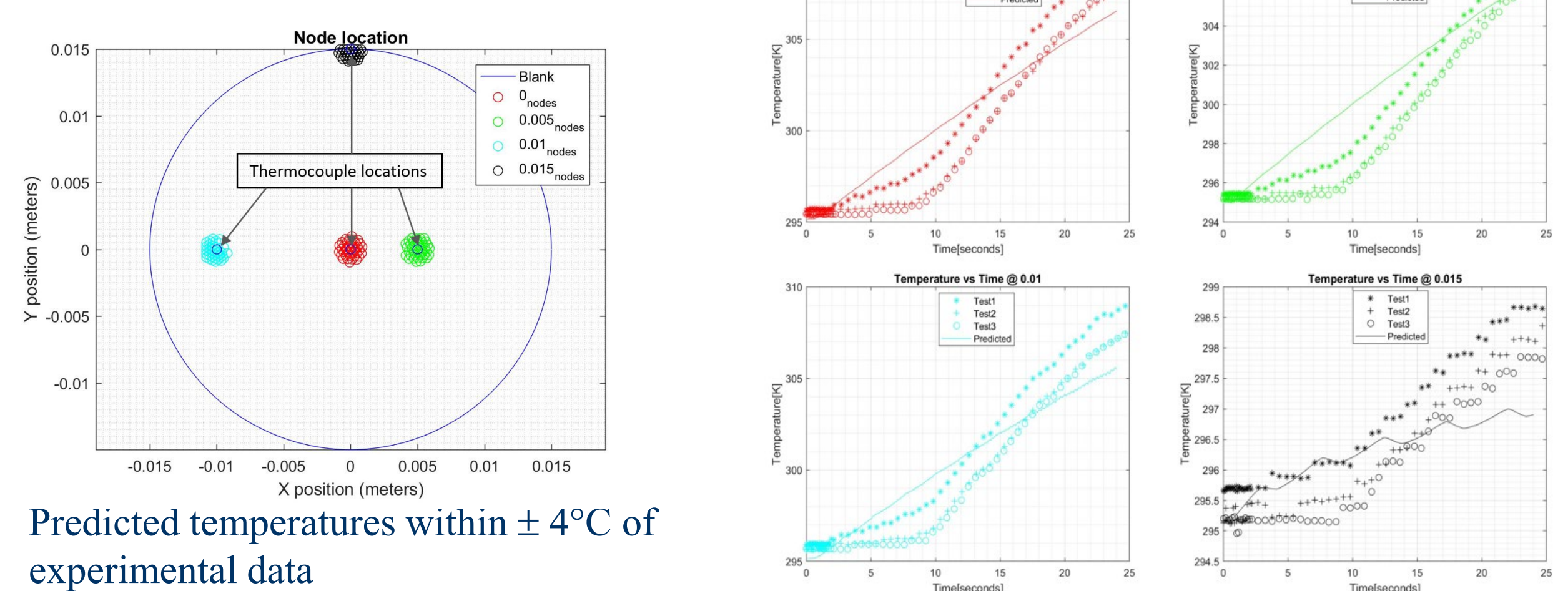
Strain prediction:



- Localized strain increasing with depth
- Variation of thickness with depth
- Comparison with experimental data underway

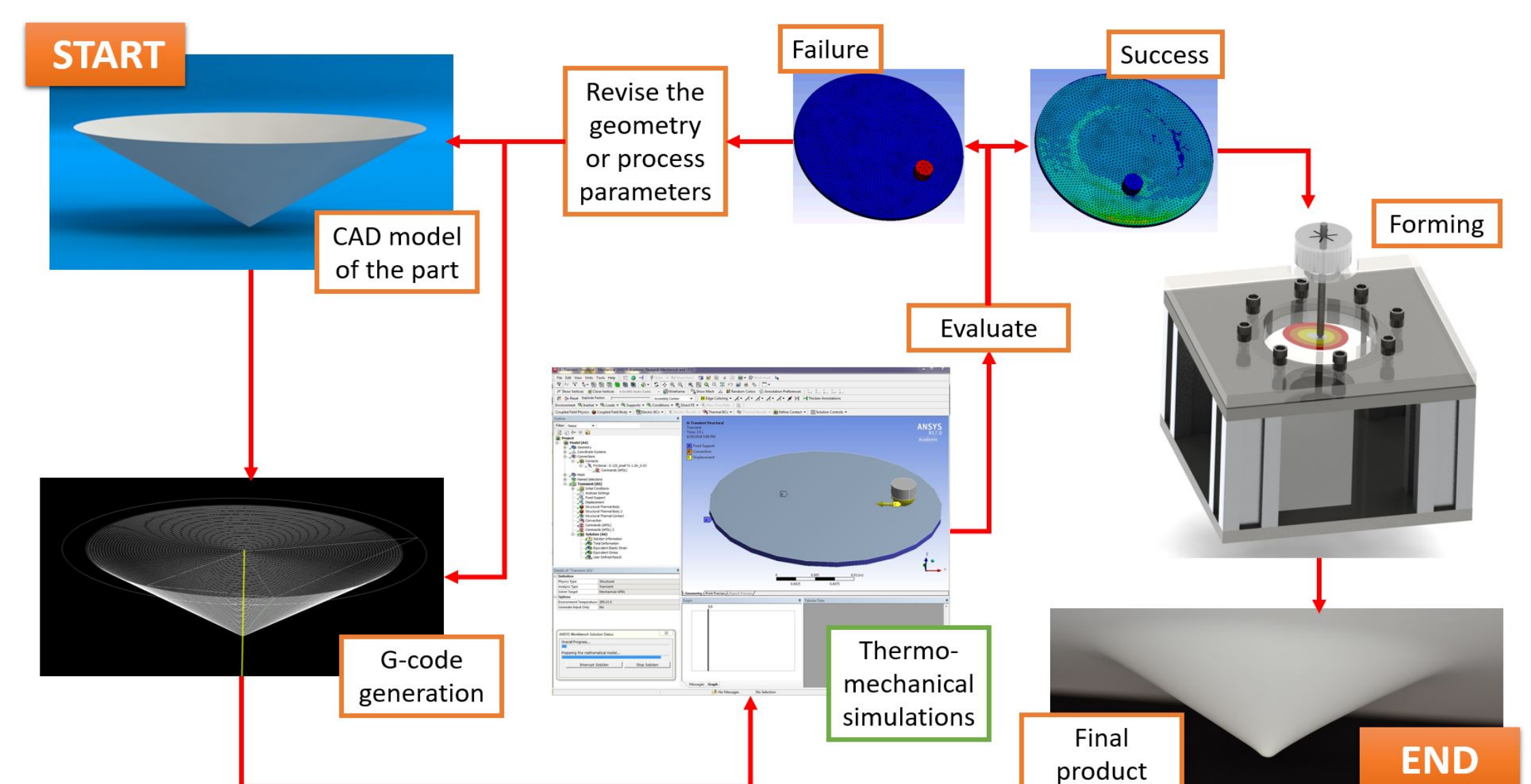
## Temperature prediction:

Temperatures measured using thermocouples



## Intellectual Merit and Broader Impacts

Improve process planning by predicting feasibility



## Conclusions

A coupled thermo-mechanical simulation model is developed and currently being validated