



# Distortion Analysis of Landing Gear during Oil Quench

DANTE Solutions, Inc.

## **Problem Statement:**

Landing gear made of AISI 300M experiences large distortion during oil quench due to its size and complex geometry.

Quenching process needs to be improved to reduce distortion and satisfy strength requirement.

## **Process Description:**

Furnace heating, air transfer, immersion process, and holding in oil tank are all included in the models.

Thermocouple measurements and dilatometry material tests are implemented for improved modeling accuracy.

## **Benefits:**

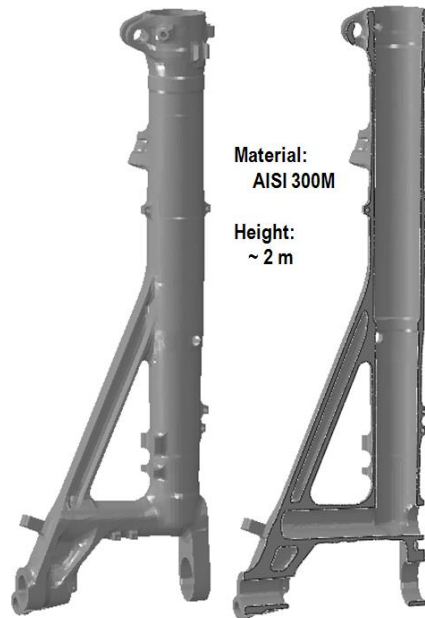
Sensitivity of heat treatment process parameters on distortion is studied.

Controlled regional cooling is designed to successfully reduce the bow distortion of the main fitting.

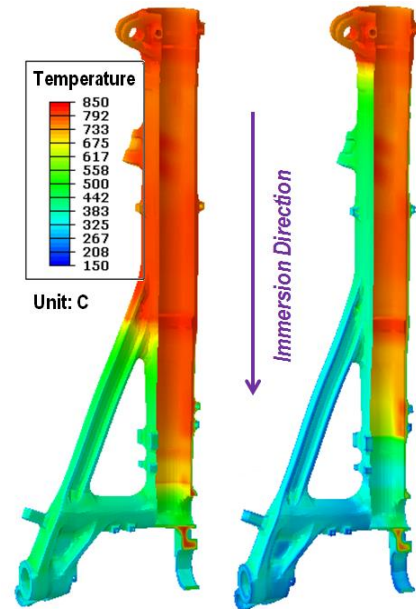
Email: [sales@dante-solutions.com](mailto:sales@dante-solutions.com)

Phone: (440)234-8477

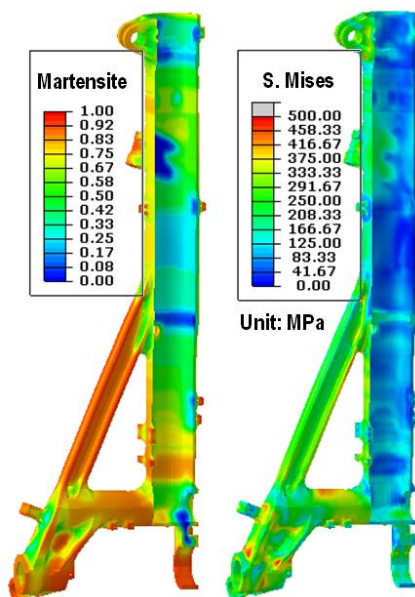
Website: [www.dante-solutions.com](http://www.dante-solutions.com)



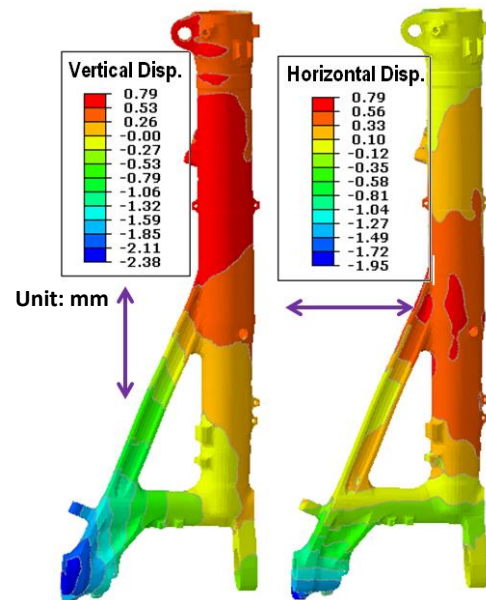
Geometry of Landing Gear



Temperature Distribution during Immersion Quenching Process



Phase Transformation and Stresses during Quenching Process



Vertical and Horizontal Distortions at the End of Quenching Process