

## Weight optimization on the Yoke component of a construction equipment using DEP MeshWorks

### About the Client

The client is a leading construction equipment manufacturer, headquartered in Europe with manufacturing and engineering facilities globally.

### The Challenge

The client was interested in reducing the mass of its YOKE component of its existing product lines. The objective of the project was to achieve a reasonable amount of weight reduction from the component using morphing, parameterization & optimization features of Meshworks. One of the main request from the customer was to maintain the performance from the baseline design during the optimization & consider the casting manufacturability.

### The Solution

The 'transformed product development process' using

Meshworks was executed for the weight optimization.

Following are the major tasks conducted:

- Performed optimization on the Yoke design using MeshWorks and achieved minimum mass design with the performance same as the baseline design.
- Shape parameters and wall thickness parameters were considered for the minimum mass design creation.
- The casting manufacturability was considered during optimization.
- Yoke and Yoke Extensions were considered as the design objectives.
- The loads considered were TE loads, Suspension

Loads, Lateral Outward, Lateral Inward, Front Outward, and Rear Outward.

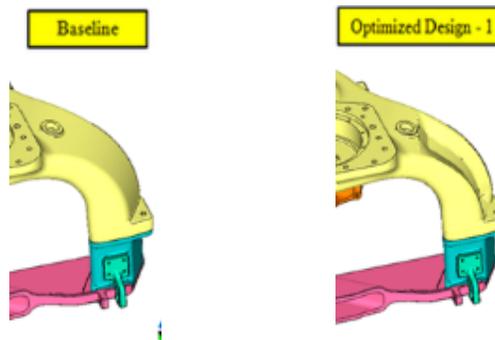
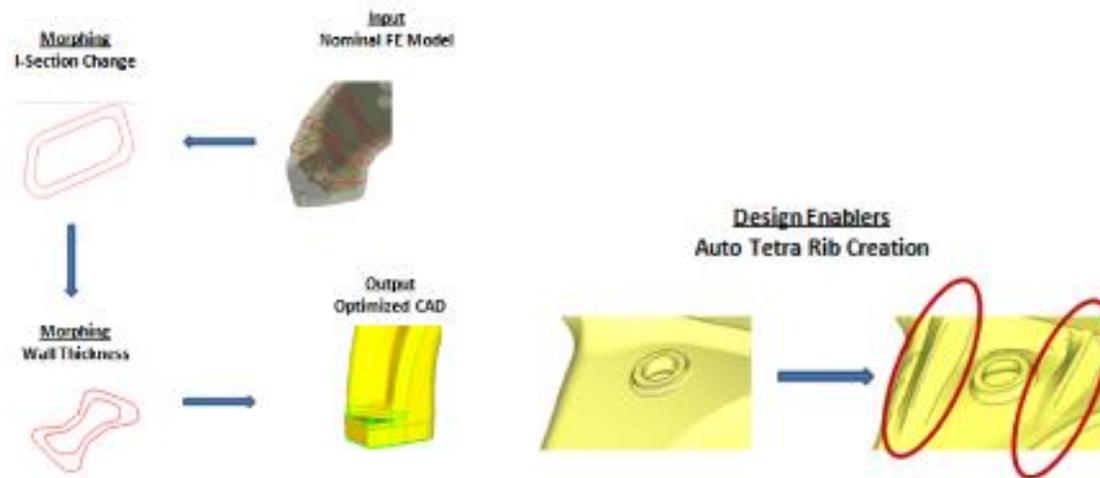
### The DEP Edge

Design enablers from DEP MeshWorks and minimalistic design based approach from DEP was used for the optimization, resulting in considerable time savings.

## The Result

- Two designs were optimized in the shortest possible time.
- The optimized design-1 has 4.5% reduced mass as compared to the baseline.
- The optimized design-2 has 12.3% reduced mass as compared to the baseline.
- The baseline performance was maintained.
- The design was generated keeping the casting manufacturing feasibility in mind.

Following are the major changes conducted:



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