

Impeller design & finite element analysis automation

Customer Case Study – Oil & Gas

Customer

A technology leader and the world's leading manufacturer of diesel and natural gas engines, industrial gas turbines and construction and mining equipment. With revenues of ~ \$41 billion, the company employs a workforce of over 95,000 across continents.

Requirements

- To automate the process of modeling, drafting and FE analysis of an Impeller
- Improve the process capability by reducing the process time without affecting the quality of the final product.

QuEST approach

- CAD Automation
 - The automation software generated using the UG-UFunc coding (back end) and Java programming (front-end).
- FEA Automation
 - Similar to the above the front end developed in JAVA and the back end uses the UG-UFunc and ANSYS codes to achieve the FEA results.

Results

- Capable of automatically creating a model and it's drafting for varying parameters of the model.
- A tool added with a viewer where the user can see the stress plots of the impeller sector model.

Impact

- Enormous reduction in design cycle time from 40 hrs to 12 minutes.
- Reduction in man- made errors/ mistakes due to minimal User Input requirements.
- During the design process, these impellers models are very critical to time & quality, thus saving our time & cost.
- Remarkable increase in the process capability.

About QuEST

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