



## Impeller design & finite element analysis automation

### 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

QuEST is a leading provider of outsourced engineering services and manufacturing. We provide support across the entire product life cycle from design and modeling through analysis, prototyping, automation, data documentation, manufacturing support, vendor management, and in-house precision machining. Through our Global Product Development frame work leveraging our local presence and global reach, we enable companies in the aerospace, civil structures, industrial products, oil& gas, power generation, and transportation markets to cut product development costs, shorten lead times, extend capacity, and maximize engineering resources. QuEST has delivery centers in India, USA, and Italy, and a footprint in UK, Germany, China and Japan. For more information, please visit [www.quest-global.com](http://www.quest-global.com).