

Case Study

Nova Design

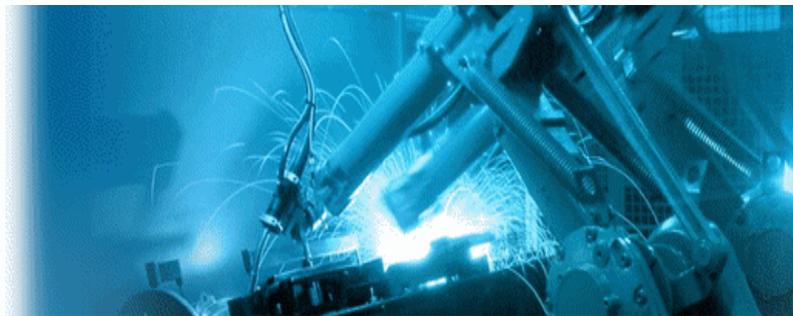
Linear & Nonlinear Static Analyses

Company Profile

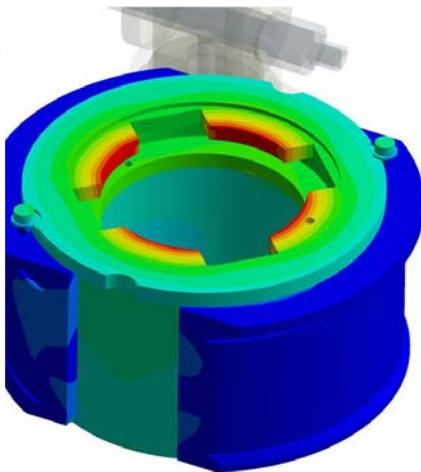
Nova Design is a well established CAD Design and Drafting company, providing engineering design services and CAD drafting skills across the engineering disciplines.

Nova Design have built an enviable reputation as a leading CAD design company offering a professional, reliable and cost efficient range of services. Their internal team of design engineers allows Nova the flexibility to provide a quality and cost efficient solution to engineering design resource problems.

Nova Design engineers have many years of experience in providing process solutions for a wide variety of engineering industries, including Automotive, Aerospace, Nuclear and General Mechanical. Nova's engineers have extensive experience in designing and producing solutions for body and closure framing systems, sub assembly cells, manual and robotic welding lines, Ground Support Equipment and mechanical/material handling systems.



Background



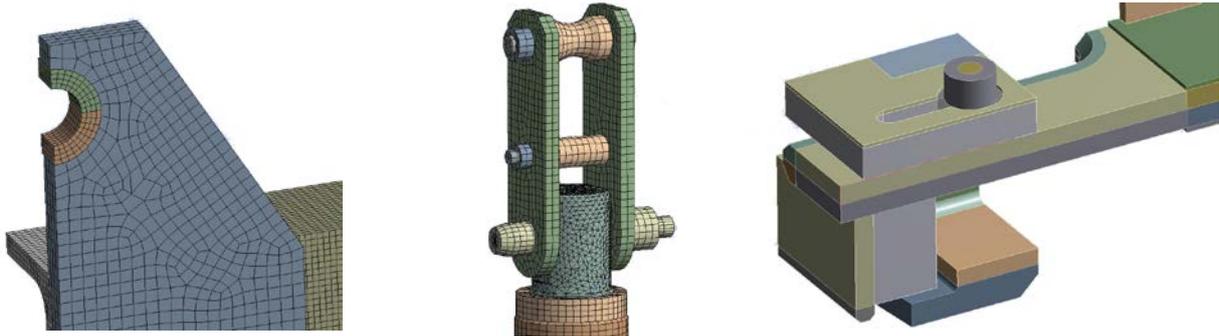
With an enviable reputation as a leading CAD design company NOVA have a good relationship with numerous engineering companies who require stress analyses to be performed as a part of the professional work they carry out. As such Nova has invested in ANSYS as their Finite Element Analysis (FEA) tool.

Using this state of the art FEA computer based stress analysis technique; Nova can provide design verification from 3D generated solid or surface models from a CAD system using ANSYS Workbench Software. In addition to their own in-house capabilities Nova Design also use **IDAC** on a regular basis to supplement their FEA skills and provide external expertise.

Analysis

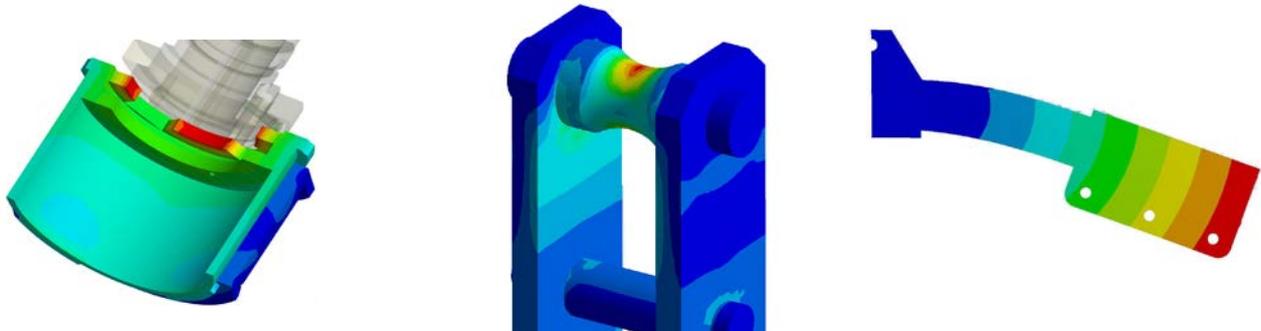
Over a period of 2 years, **IDAC** have carried out hundreds of structural analyses for NOVA on various projects and this work is ongoing. Most of the work done for Nova Design has been for the Aerospace and Automotive industries. Analyses have been performed on two main types of components; lifting tools and transportation devices.

ANSYS Workbench has been used to perform the linear and non-linear static analyses. The geometries of the models supplied by NOVA were easily imported into ANSYS and in some cases the geometry simplified so that Finite Element Analyses (FEA) could be performed more efficiently. Examples of some of the solid models and meshes are shown below:



The model geometry modifications and the solution setup were generally found to be straightforward, especially as for most projects the analyses have been mainly linear structural. Reliability and safety were a key part of the structural assessments performed by NOVA and **IDAC**.

The results reported and presented for each of the analyses have been equivalent stresses and safety factors, as requested by NOVA. These were presented for each project as contour plots of total deformation, equivalent stress and the safety factors, examples of these are shown below.



Design Benefit

The work supplied by NOVA, often at short notice, presented **IDAC** with many challenges in terms of logistics and flexibility due to the quantity of work. Simon Parry of Nova Design says “**IDAC** have been able to provide NOVA with a consistently high quality service providing a quick turnaround for the analyses they have carried out. Our satisfaction with the results and service provided by **IDAC** has ensured our return custom time and time again”.