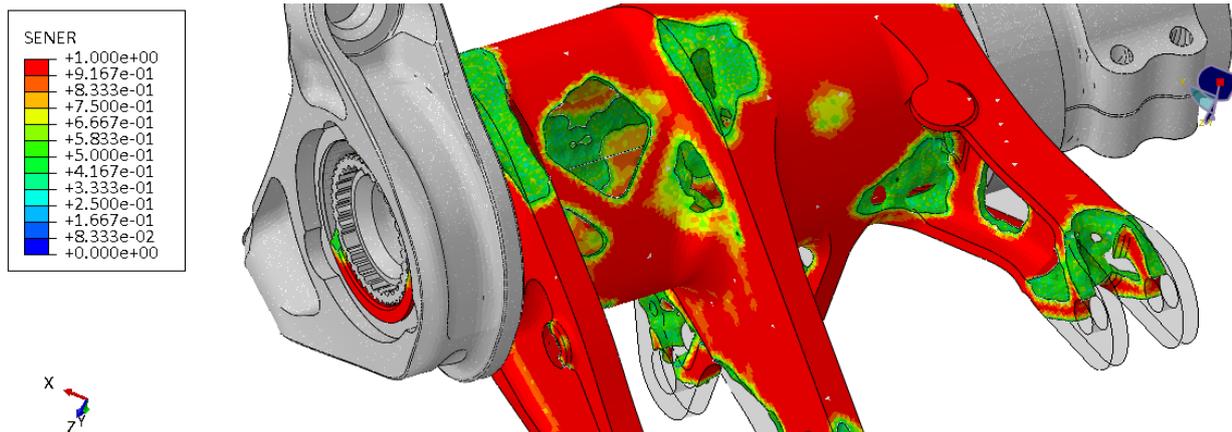


Lotus F1 – Abaqus Topology Optimisation



Background of TruForm for Abaqus

GRM is a developer and provider of CAE based design optimisation methods with a specific drive to

bring optimisation technologies to everyday design engineering. TruForm for Abaqus is a Topology optimisation tool designed to work directly with existing analysis model data directly within your Abaqus environment. Available either embedded within Abaqus/CAE or as a standalone tool, TruForm utilises the industry standard optimisation code Genesis to identify optimal designs, reduce current part mass or resolve design issues in a minimal solution time.

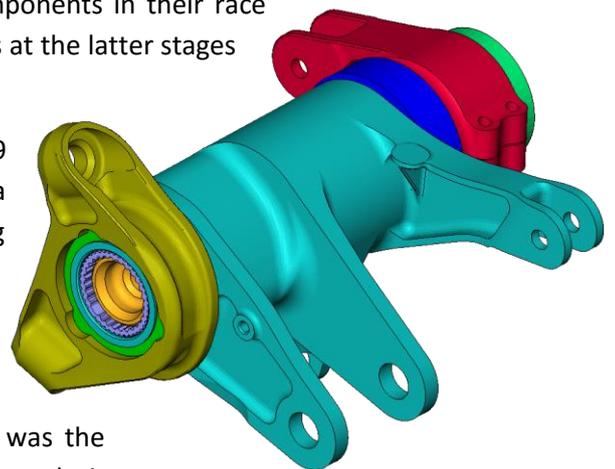
By taking advantage of the Genesis solver TruForm can develop optimum solutions in considerably less time than other tools available in the Abaqus domain, allowing optimisation to fit seamlessly into the daily design and analysis process.

‘Saving just 5% mass on a mature design can really make the difference.’

Rocker Arm Case Study

Whilst optimisation is commonly considered as a tool to identify new concept designs, the Lotus F1 Team found the easy application of TruForm to detailed Abaqus models of mature designs an excellent opportunity to achieve relatively small, but significant mass savings on components in their race cars. One such example was a suspension rocker arm, which was at the latter stages of design where analysis sign off was being performed.

With the need to verify the structural performance for 9 individual load cases the rocker arm are assembled into a detailed Abaqus model comprising of complex preloading conditions, contacts and the interaction to the complete rocker assembly. With no change to the Abaqus analysis model a TruForm optimisation was performed overnight, which readily identified several areas of the component where radii could be increased and weight reducing holes could be included. Such was the ease of the process the question is why wouldn't you apply it to your designs.



Relevant Products & Services

- TruForm for Abaqus – Topology optimisation available as embedded in Abaqus/CAE or standalone
- Optimisation consulting support

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