

Dynamic stress analysis on Railway Bogie with EN 13749 Standard and Fatigue Strength evaluation for Weld location

THE CLIENT

A India-based client offering an approved fabricated bogie frame and bolster manufacturer for electric locomotive, diesel locomotives, coaches, freight Wagons, Electrical Multiple units(EMU) and special purpose bogies as per customer requirements.

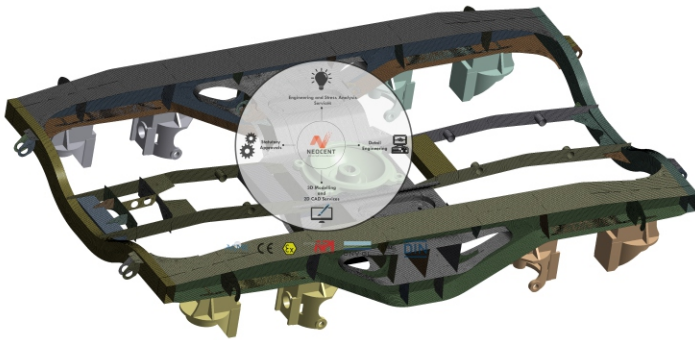
THE BUSINESS NEED

Our client was seeking engineering design assistance for a customized bogie based on the railway standard EN 13749. Bogie need to be tested dynamically along with fatigue strength evaluation at weld location.

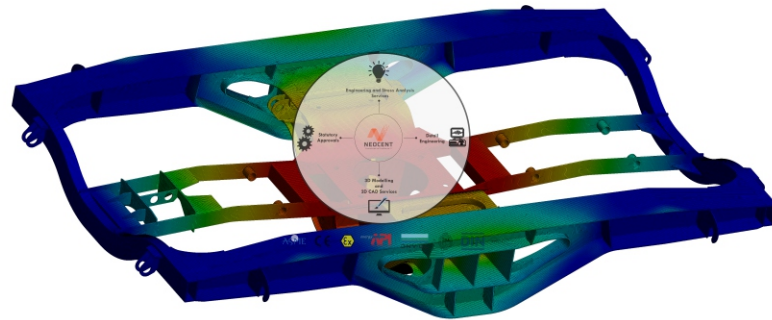
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Analysis :

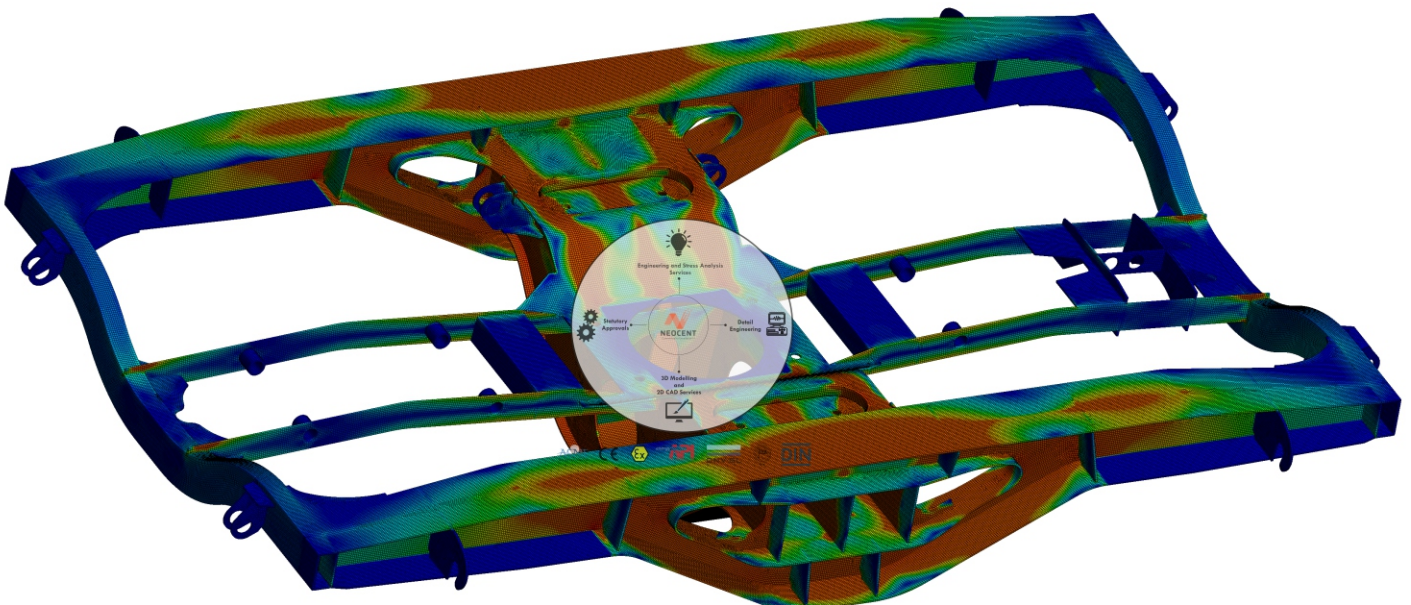
The analysis was based on the railway standard EN 13749 that describes the relevant load cases that represent different operating conditions of the structure. The loads can be separated into two main groups: exceptional- and operational loads. With the exceptional loads, the aim is to verify that the bogie does not suffer fatal damage as a result of an extreme load. While in the case of the operational loads, the strength of the bogie must be examined not only for static failure but also for fatigue due to the cyclic nature of the load. Since the tested bogie is a welded steel structure, the fatigue of the welds was investigated as a typical failure mode in terms of durability.



Details 3D CAD Modeling and meshing for Bogie structure (Shell meshing)



Deflection on railway bogie with static load case



Stress Distribution on Railway Bogie structure under Dynamic load

Neocent Engineering Services is a multi-discipline engineering services company. Established in 2015, we offer high-quality engineering support solutions to global EPC organizations across some of the industries listed: Automotive, Aerospace, Turbo machinery, Heavy engineering, HVAC, Oil & Gas, Material handling and Process industry.

Neocent provides detailed engineering services to EPC, EPCM, OEM, and PMC as long-term turnkey projects. Our EPCM services include Project Management, Feasibility Studies, Conceptual & Basic Engineering, Detailed Design, Procurement, Construction Management, Commissioning & Start-up, and Operations & Maintenance.

Neocent Engineering's service offering, include;

- Engineering and Stress Analysis Services
- Details Engineering
- 3D Modelling and 2D CAD Services
- Statutory Approvals

Neocent FEA Consulting Services

Neocent Engineering expert engineers are proficient in analyzing the impact of external focus on static structures, such as construction components, machine components, and more. Our highly skilled engineers offer structural analysis to ensure that these modules meet fatigue safety requirements.

Our Structure and stress analysis specialists help simulated the movements of non-stationary objects in vibration analyses, lifting analysis, and other services. With our technology and experience in structure stress analysis, we quantify and further rectify failure in the structure of components that do not meet the proposed design plan, which could results from improper use of materials or even flaws in the manufacturing process.

Industry codes and standards adhered to by our Designers :

ANSI, AISC, UBC, ASCE, ACI, BS, IS.

The technical expertise of our FEA consultants in delivering Finite Element based product design optimization enables you to address complex engineering design problems and help validate product designs prior to production.

At Neocent, we aim to achieve our vision by emphasizing ensuring that our offerings meet the following criteria, agility , on-time delivery, superior quality, cost-effectiveness and great efficiency continues learning culture amongst the team an able and guarantees continuous innovation in the business.

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