

**World-class analysis
and modelling services**

Problem

- ▶ You want to shorten your time to market or reduce the cost of developing a product
- ▶ You're at the design or manufacturing stage, or somewhere through the lifecycle of a product, and need a multidisciplinary team whose simulation and experimental capabilities will help you beat the competition.

Solution

IRL's innovative research in continuum mechanics, constitutive modelling, and numerical simulation with emphasis on composite materials, high-performance metal alloys, elastomers, advanced ceramics, concrete and metamaterials, means we can offer the following world-class analysis, modelling, and testing services, with the support of experienced professional researchers:

- ▶ design review and analysis
- ▶ finite element analysis of structural and thermal problems
- ▶ experimental characterisation of materials and structures
- ▶ material models for accurate predictions
- ▶ structural reliability estimation
- ▶ vibration analysis and testing
- ▶ acoustics and computational fluid mechanics
- ▶ advanced fracture analysis and simulation
- ▶ impact, penetration, and explosion simulation.

Benefits

Our diverse track record includes outstanding performance in the following projects:

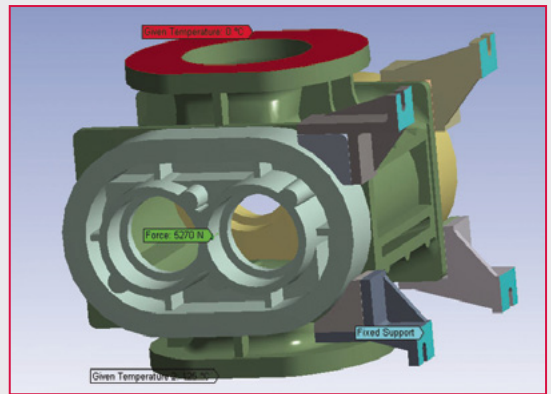
- ▶ structural analysis for the Navy to determine safety factors and allowable working loads
- ▶ thermal-structural failure analysis of rubber joint manufacturing process to reduce failure rates, as well as for product enhancement, and insurance and litigation claims
- ▶ acoustic-fluid flow analysis for noise reduction during the design review process
- ▶ cyclic fatigue testing of composite wind turbine blades
- ▶ analysis and testing of high-end sandwich composites for aerospace interiors and marine structures
- ▶ experimental and computational verification and improvement of power pole and support designs
- ▶ shock testing of equipment and systems for the military and transport sectors.

IRL. First for your analysis and modelling needs.

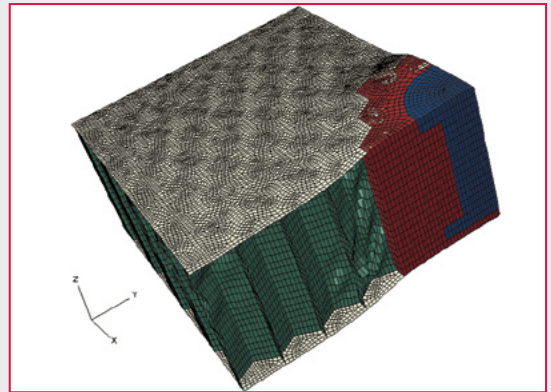
For all enquiries please contact the Industry Engagement team on 0508 CALL IRL (0508 225 5475). If calling from overseas phone +64 4 931 3000 or visit the *Contact Us* page on our website.

www.irl.cri.nz

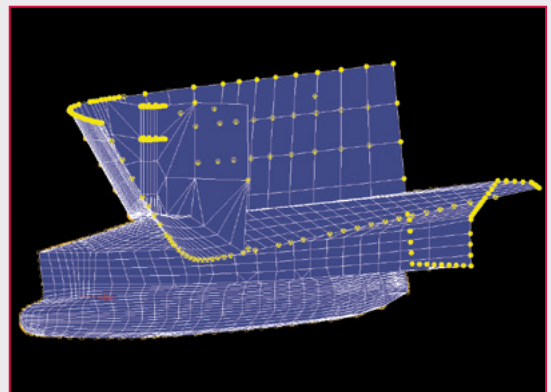
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Stresses at a vacuum blower attachment point.



Buckling of a sandwich honeycomb structure with an insert.



Stress contours in a wave piercer.