

# Composite Engineering

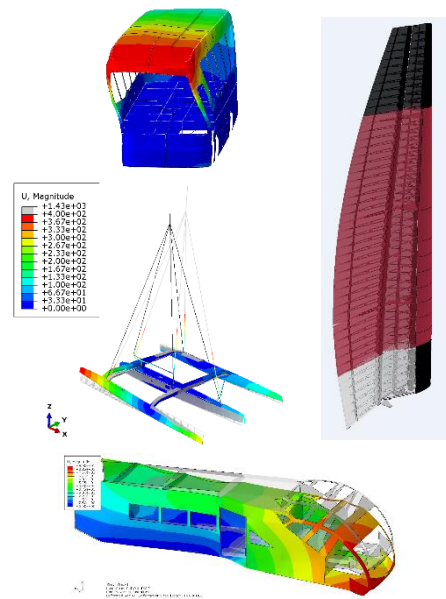
**OUR SERVICE FOCUS**

For Product and Vehicle Designers in need of light yet strong designs, composites offer a great solution. If you need detailed engineering analysis to determine areas of the design that need strengthening and/or where weight savings can be made, Matrix are expert providers of Finite Element Analysis (FEA). As New Zealand's most experienced engineering analysis team, we offer an efficient and robust solution to validate and improve your designs with a proven track record in collaborating with designers over a wide range of industries.

**SERVICE / SUMMARY**

Detailed structural analysis of composite designs using FEA, including static strength and buckling. Non-linear capability to account for complex effects such as flexible structures where load redistribution is important. Experience in carbon composites (e.g. high-performance yachts), fibreglass (e.g. vehicle bodies) and glass reinforced injection moulded parts.

- Specialists in Finite Element Analysis (FEA)
- Advanced analysis problems, e.g. parts in contact, bolted and bonded connections, large deformations
- Root cause assessment of parts that have had problems in service



**PROBLEMS / SOLUTIONS**

Matrix provides solutions for Product and Vehicle Designers.

Problem	Solution
How do I demonstrate that my design is code compliant and that my customer is confident it will perform well in service?	Detailed structural analysis using best-in-class software.
How do I avoid paying for costly analysis software, staff training and retainment?	Matrix prides itself on offering value for money and its ability to partner with our customers to achieve results.
How to optimise material placement to minimise weight and maximise performance?	Virtual prototyping using numerical analysis can quickly lead to optimised designs.
If a failure occurs in service, how do I identify the root cause and avoid further problems?	Matrix has expertise in fracture mechanics, fitness for service assessments (analysis of damaged parts) and fatigue assessment.

**CUSTOMERS / EXPERIENCE**

- America's Cup hulls and masts up to and including the 2020 campaign.
- Numerous other composite yachts.
- Fibreglass bus bodies.
- Solid glass reinforced injection moulded components.

**OUR TEAM**

Meet our highly qualified and experienced engineering analysts:

- Don Campbell**, BSc, BE(Hons), PhD, CMEngNZ, CPEng (Mech), IntPE, NAFEMS Adv Reg Analyst, 45 yrs exp
- Paul Bosauder**, BE(Hons), NAFEMS Adv Reg Analyst, Advanced CFD, composites & non-linear FEA, 20 yrs exp
- James Hamilton**, BE(Hons), PhD, CMEngNZ, CPEng (Mech), IntPE, composites & non-linear FEA, 20 yrs exp
- Guido Quesada**, MSME, ASME, FEA, advanced Abaqus instructor, pipe joints, product development, 23 yrs exp
- James Cheng**, BE(Mech), ME(Mech), fracture mech, press vessel design, plastic injection moulding, 18 yrs exp

**ABOUT MATRIX**

Matrix provides solutions for engineering design and information management. New Zealand's first and largest team dedicated to engineering computing, supporting the process of innovation for over 35 years. Visit [www.matrix.co.nz](http://www.matrix.co.nz).