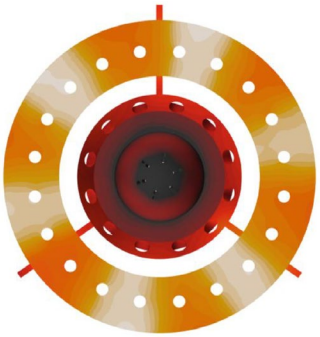
Plant and Process – Computer Aided Engineering

OUR SERVICE FOCUS

If you're a plant & process engineering manager, fixed equipment specialist or engineering consultant needing to keep plant equipment up-to-date and running with minimal disruption, Matrix is an established and internationally recognised CAE firm providing world-class Finite Element Analysis (FEA), Fitness for Service (FFS) and Computational Fluid Dynamics (CFD) engineering simulation and assessments.

SERVICE / SUMMARY

Detailed structural analysis of plant equipment using FEA, including static strength, buckling, vibration, fatigue assessment and fitness for service assessment (API 579-1/ASME FFS-1 and BS7910). Non-linear capability to account for complex effects such as contact and material plasticity. Advanced CFD including multiphase flows, heat transfer (conduction, convection and radiation), phase change (boiling, condensation and flashing), reacting flows (combustion), particle/spray flows and fluid structure interaction.



- Specialists in Finite Element Analysis (FEA), Computational Fluid Dynamics (CFD) and Fitness for Service Assessment (FFS)
- Fatigue assessment of metallic components
- Analysis and optimisation of flow in plant and process equipment
- Hazardous zone classification
- Whirling and vibration analysis of plant equipment
- Advanced analysis problems, e.g., parts in contact, bolted and bonded connections
- Proven seamless collaboration with utilities and consulting firms over the years

PROBLEMS / SOLUTIONS

Matrix provides solutions for plant and process engineers or fixed equipment specialists:

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 and flow 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.
Want to provide innovation that brings overall improvement in your processes?	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?	Significant expertise in fracture mechanics, fitness for service assessments (analysis of damaged parts) and fatigue assessment

CUSTOMERS / EXPERIENCE

- Decades of service to customers like Methanex (NZ, Egypt, Canada, Chile & USA), Mercury, Fonterra, Contact Energy
- FFS assessment of pressure vessels, driers, tube-sheets, heat exchangers, steam drums…etc
- CFD analysis of gas turbines, heat exchangers, converters, reformer combustion, ducting…etc

Find our customer success stories (such Methanex Mighty River or Oji) here or ask Matrix.

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
Kava Crosson-Elturan, BE(Hons), (Mech, Purdue), numerical simulation FEA/CFD, physics-driven design, 15 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.

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