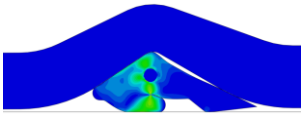
MATRIX | ENGINEERS OF INNOVATION

Pipe Joint Design

OUR SERVICE FOCUS

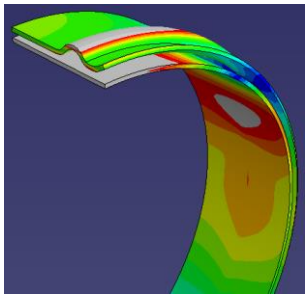
If you're a pipe maker, a gasket manufacturer or an installation contractor, needing to ensure that existing joints will comply with applicable standards, improve their performance or develop new pipe systems, gaskets or joint restraints, Matrix is an established and internationally recognised CAE firm providing world-class simulation driven analysis and design of pipe joints.



SERVICE / SUMMARY

Advanced FEA capability with proven experience in PVC, HDPE, PP, DI, steel, FRP and concrete pipe joints and their corresponding gaskets

- Thermoforming of pipe joints such as those using the Rieber system
- Assembly and performance simulation & analysis
- Integral pipe joint design (piping and sealing parts)
- Joints with spigot or socket mounted gaskets for pressure and non-pressure applications
- Internal or external joint restraints
- FEA modelling including hyperelasticity, elasto-plasticity, viscoelasticity, large deformation, friction, internal pressure loads and external loads or deflections



PROBLEMS / SOLUTIONS

Matrix provides solutions for piping and sealing engineers needing the most advanced analysis and design

Problem	Solution
How do I verify that a given set of pipe assembly and gasket will provide acceptable performance throughout their entire dimensional tolerance range?	Simulate your pipe joint at critical dimensional scenarios and apply simplified algebraic calculations characterize this performance.
How do I achieve consistent assembly force and performance throughout all pipe sizes?	Apply simulations to key cases and scenarios, parameterize, interpolate, and apply trend analysis based on our extensive experience.
How do I design a pipe joint that will enable gasket suppliers to provide the best possible sealing solution?	Apply simulation driven integral joint design assessing and optimising both pipe and gasket design.
How do I pick the best sealing or joint restraining solution for my piping system?	Apply comparative simulation and analysis of various possible solutions.

CUSTOMERS / EXPERIENCE

- Pipe joint and sealing systems successfully developed and analysed for companies in Canada, US, Mexico, Colombia, Spain, France, Netherlands, Italy, Germany, India, China, Korea, Australia and New Zealand
- Multiple patents generated in various types of pipe, sealing and joint restraint applications
- Engineering services provided from both the pipe maker and the gasket manufacturer's perspective
- Participation as expert witness, root cause, corrective action/preventive action consultant and technical mediator for pipe joint failures

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
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, 18 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.