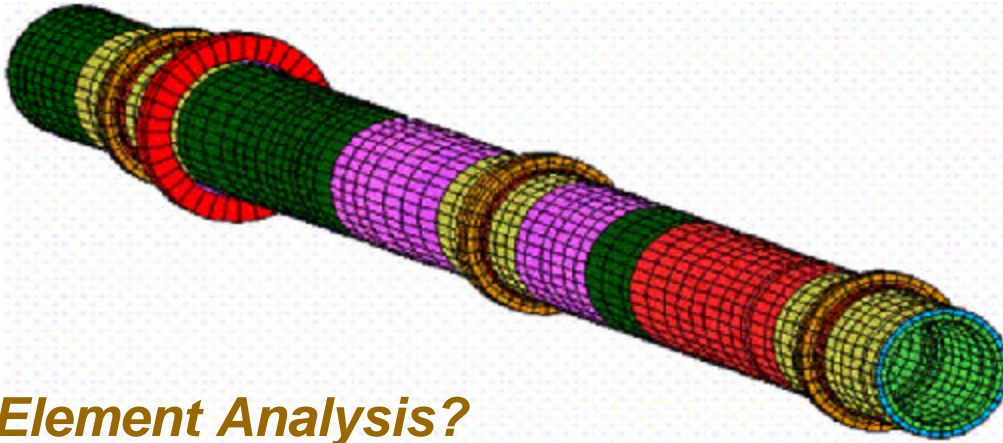




# Finite Element Consulting Service

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## *Finite Element Analysis?*

**Finite Element Analysis (FEA)** is a process in which a complex geometry is analyzed by breaking it into smaller and simpler 1-D, 2-D or 3-D “elements” that are connected to each other through “nodes”. Since each element has a simple shape such as a line, triangle or tetrahedron, the equations for stress, deflection, temperature gradient, etc. are much simpler than for the original complex part. The process, therefore, is to set up each set of equations with boundary conditions at the common nodes. A large set of simultaneous equations for the entire part is formed and its solution is compiled to provide results for the entire part.

## *Benefits of Finite Element Analysis:*

**Using Finite Element Analysis (FEA)** can:

- Estimate fatigue life and identify problems areas in designs.
- Provide for ASME code compliance verifications.
- Support due diligence reviews.
- Investigate dynamics in piping & structures.
- Reduce or eliminate time delays due to prototype redesign.
- Provide greater product reliability.
- Increase product life.
- Investigate reasons for product failure.
- Assist with development of testing processes.
- Determine and assess effects of loads.
- Minimize prototype manufacturing costs.
- Reduce costs and speed development of new products.

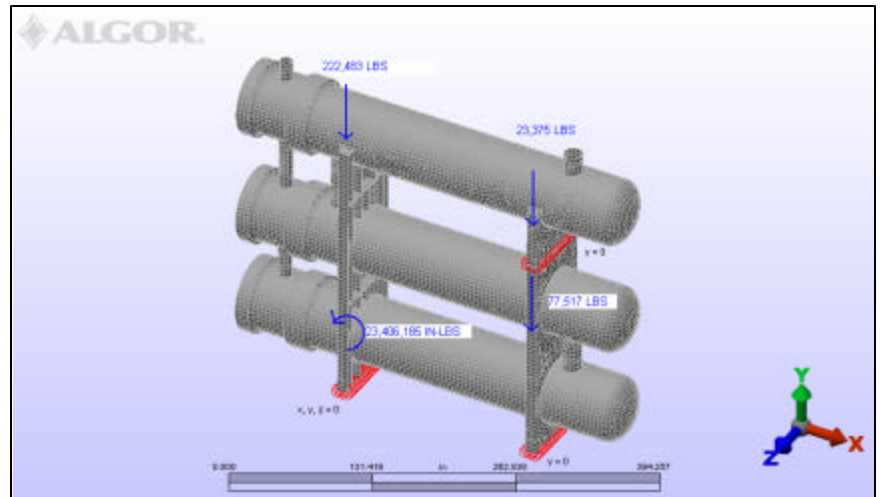


## Capabilities:

**ECO-Technica Inc.** provides complete finite element analysis (FEA) services using various FEA software, combined with the experience and knowledge gained from numerous analyses, to assist clients with the following:

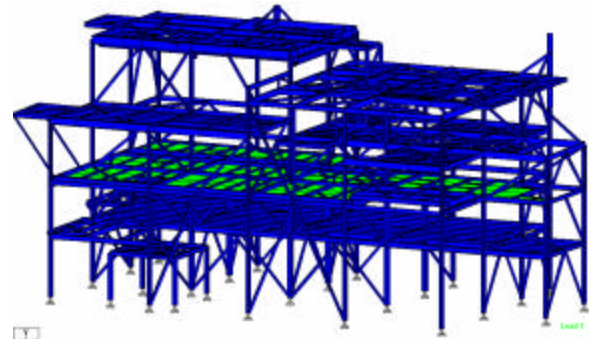
- ASME Code Compliance and Registration for Non-standard Designs
- Fatigue Evaluations
- Life Assessments
- Failure Analysis
- Heat Transfer Analysis
- Dynamic Analysis
- Piping Analysis

Current software include:  
S-Frame, Algor, Caesar II  
COMPRESS



## Why ECO-Technica?

- Engineering and designs approved and stamped by professional engineers
- Over 10 years of finite element analysis experience with programs such as Algor, Caesar, Staad Pro, S-frame and Compress.
- Can provide FEA Analysis on Civil/Structural and Mechanical Installations



## Next Steps

Contact any of these staff members at **ECO-Technica Inc.**

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Trevor King, P. Eng. (780) 440-0400 ext 1010	Mechanical	<a href="mailto:trevor.king@eco-technica.com">trevor.king@eco-technica.com</a>
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## *Project Experience.*

- **AC Equipment** – Fatigue Analysis and Life Assessment of Various Large Rotary Cement Kilns, Biomixers, Digesters and Reactors
- **Altex Heat Exchanger** – Thermal and Stress analysis of heat exchanger supports
- **Marsulex / Syncrude** – Finite element dynamic analysis and design for an existing six level steel structure with multiple vibratory screens and rotary crushers.
- **DOW Chemicals** – Caesar II dynamic piping analysis of reactor blowdown lines
- **Obed Mountain Coal Wash Plant** - Finite element dynamic analysis of existing building for new vibrating screen.
- **DOW Chemicals** – Code compliance verification and registration of special pipe tee
- **Norbord South Carolina** - Structural dynamic design for ring strander table top foundation and hog mill support structure.
- **ATCO Power** – Piping stress analysis and determination of hanger loads
- **Weyerhaeuser Canada** - Structural dynamic design for vibrating equipment support structures.
- **Suncor Steepbank Pump Stations** – Dynamic design of foundations six 1,500 HP pumps.
- **Medicine Hat Gas Turbines** – Dynamic finite element analysis and design for modifying two existing foundations to receive two larger 25MW gas turbine generators.
- **Agrium Redwater** – Stress Analysis (Thermal and Mechanical) of Seal Strips used on ANSI Pipe Flanges
- **Raylo Chemicals** – Stress analysis of lid on Filter Vessel
- **Husky** – Piping vibration analysis and determination of support modifications
- **CFER Technologies** – Piping Analysis for Code Compliance of Sustained and Expansion Stresses

## *About ECO-Technica.*

**ECO-Technica** is an Edmonton based, multi-discipline Engineering & Consulting Company offering a diverse range of Engineering and Project Services. Our business success is driven by our ability to understand our client's needs. ECO-Technica staff, through years of project experience, has developed a thorough understanding of all aspects of industrial project implementation. From engineering design to field installations, our team plans and implements projects balancing industry standards, client project requirements and efficiency without compromising safety or the environment.