University of Toronto

SOLID MECHANICS-DESIGN STREAM IS FUNDAMENTAL TO ENGINEERING

by

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Mechanics & Aerospace Design Lab

Mechanical and Industrial Engineering

5 Top Engineering Jobs in Canada Today

1. Electrical Engineer

2. Mechanical Engineer

Mechanical engineers apply the principals of physics to the design, creation, and maintenance of mechanical systems. Mechanical engineer remains one of the most in-demands jobs in Canada. Mechanical engineers can work in a variety of industries, from the mining industry to the oil industry.

This description is of mostly a stress engineer!

3. Software Engineer

4. Biomedical Engineer

5. Civil Engineer

SOLID MECHANICS & DESIGN

Design is Engineering
and

Engineering is Design!

SOLID MECHANICS

Most stimulating and interesting engineering discipline that combines traditional/advanced mechanics and materials to significantly advance engineering design/testing of engineering systems, life sciences, construction engineering that is safe and economical.

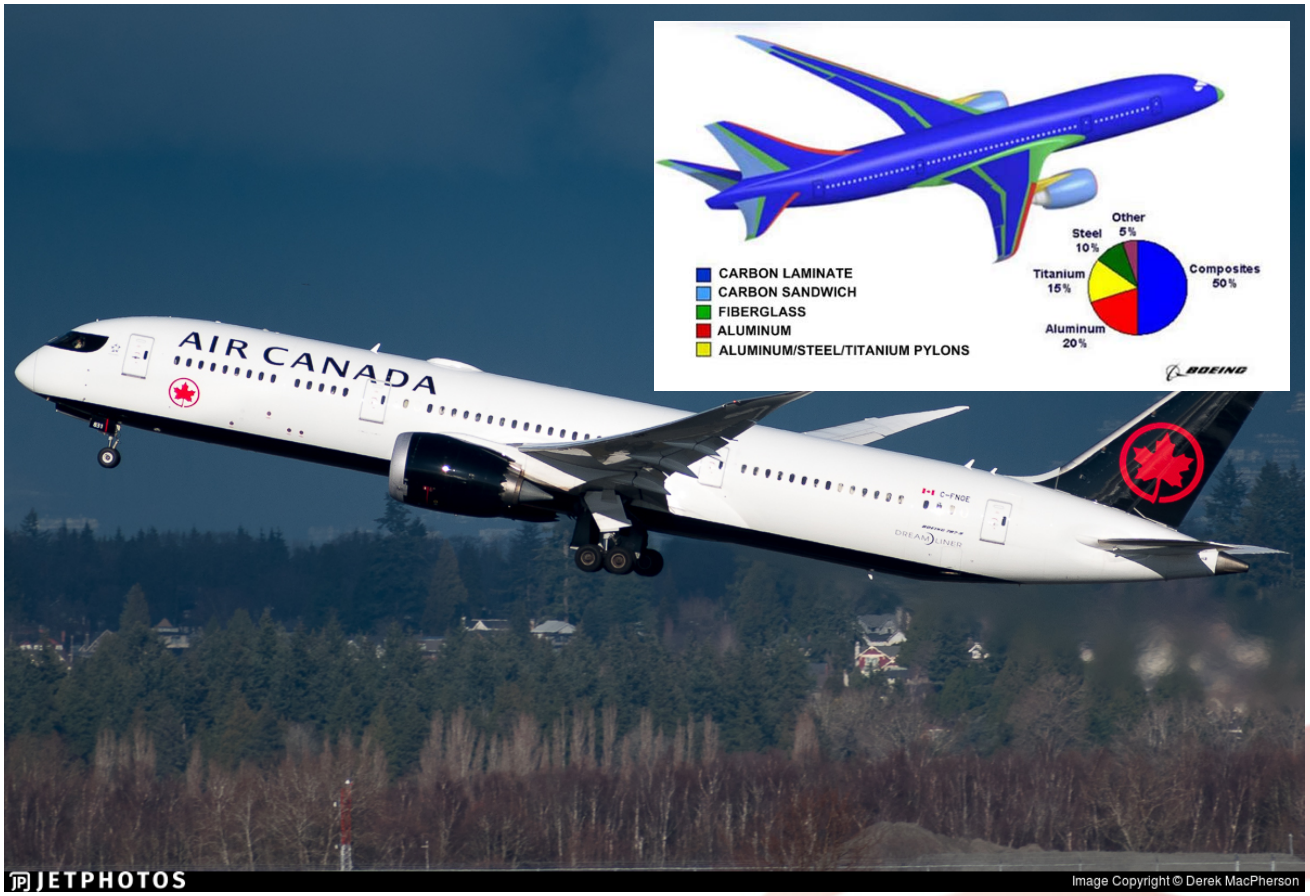
Solid Mechanics is Everywhere!

Design, Analysis and Failure Prevention of Assemblies and Subassemblies:

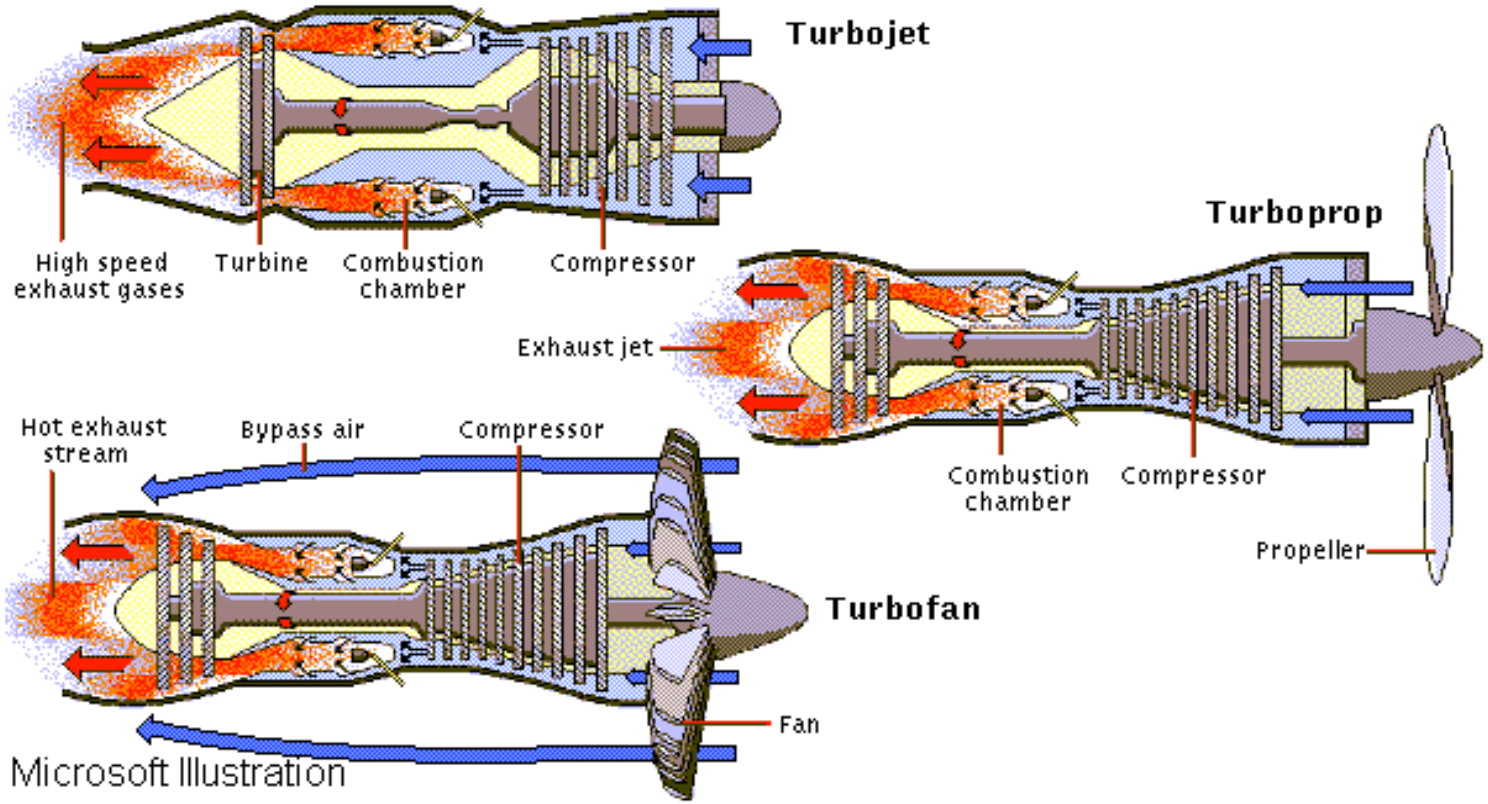
Entire Transport Industry: Aerospace, Automotive and Locomotive, Construction, Medical Engineering seeks the employment of Stress Analysis - Design Engineers.

1. **Engineering Design**
2. **Design Analysis: Computational Mechanics**
3. **Failure Analysis, Diagnostics and Prevention**
4. **Crashworthiness and Impact Mechanics**
5. **Vibration and Dynamic Response**
6. **Advanced Composites**
7. **Surface Engineering**
8. **Biomedical Engineering**

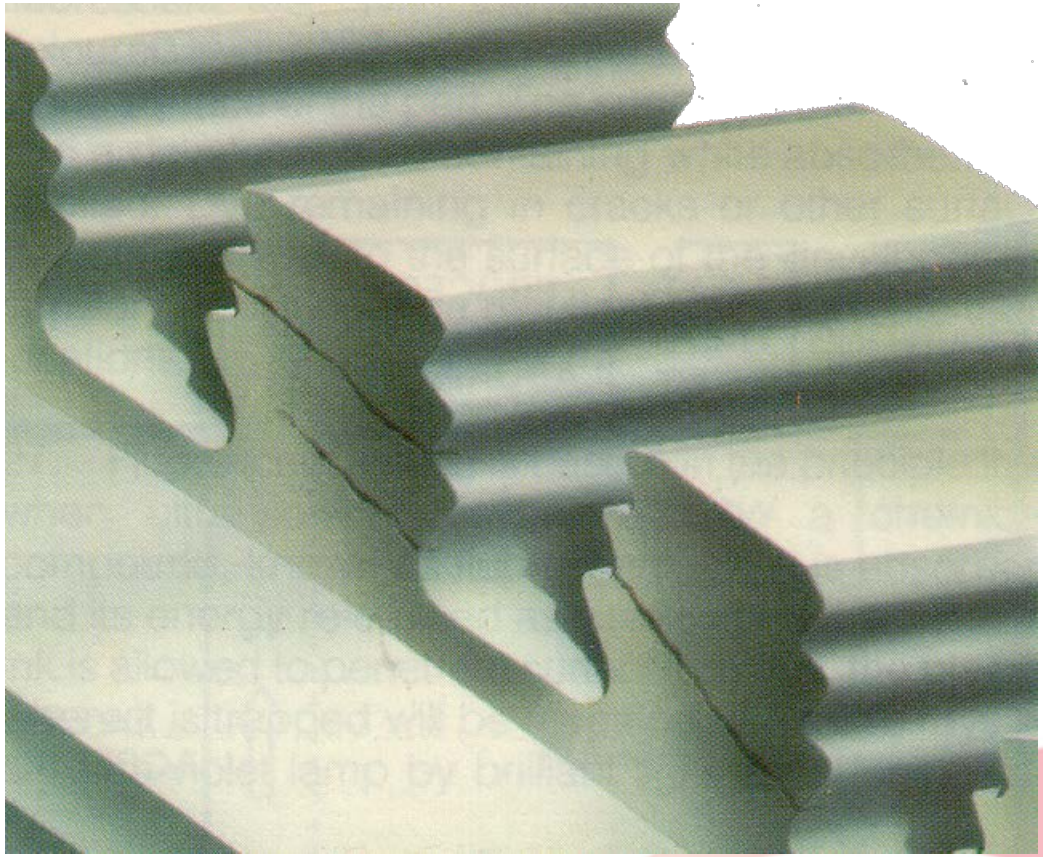
Transport Industry:
Aerospace Engineer - Structures



Transport Industry:
Aerospace Engineer - Engines

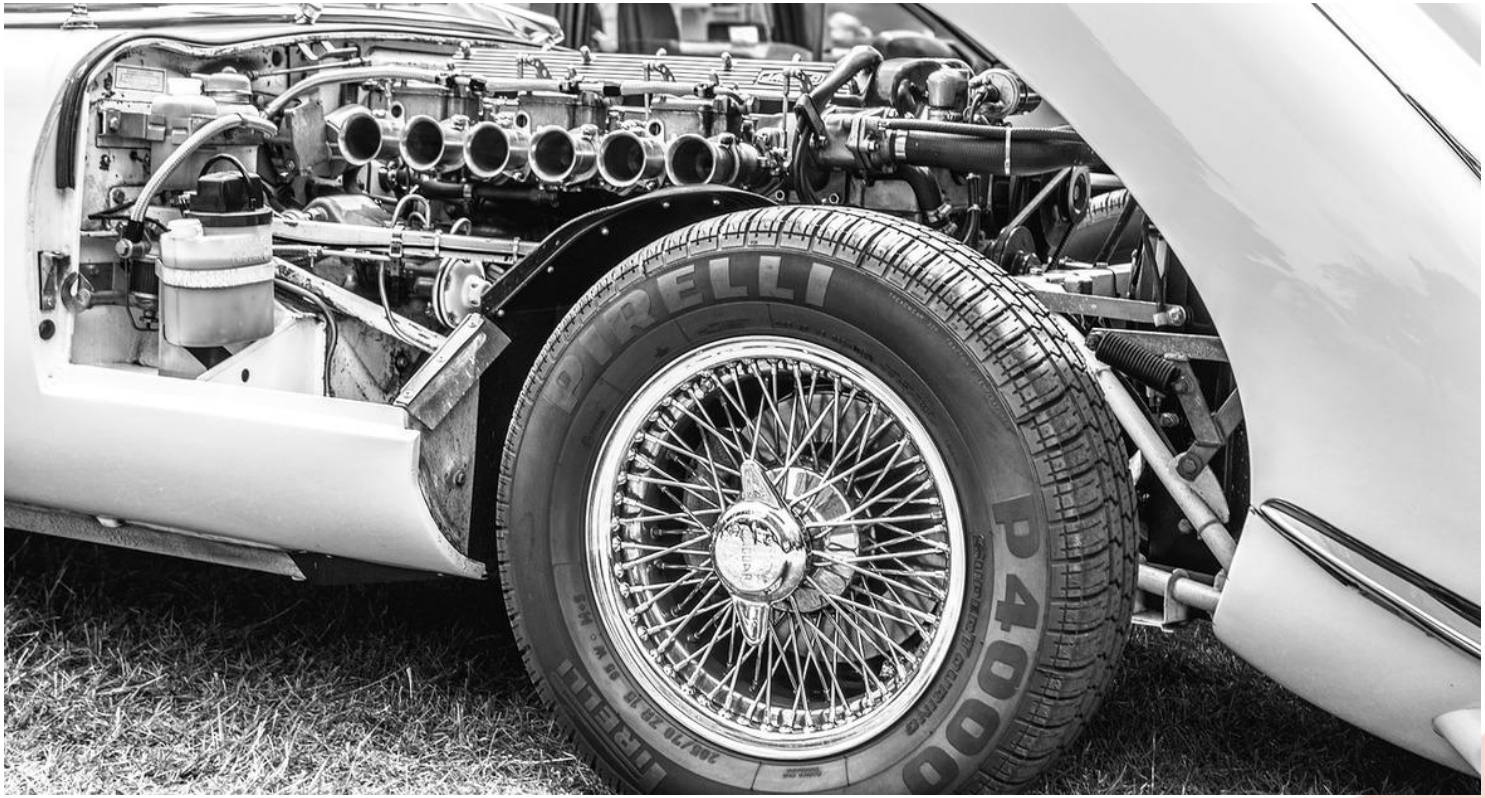


Failure Diagnostics and Prevention: Failure Analysis Engineer

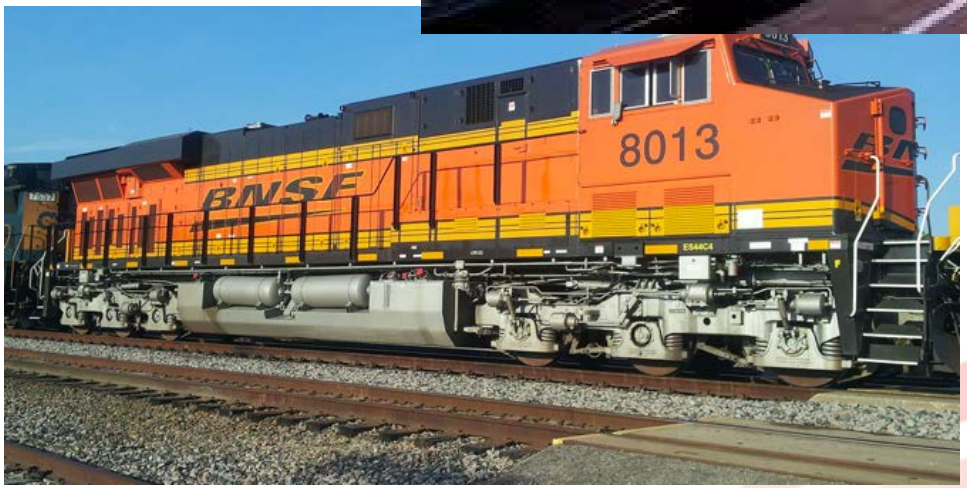


Transport Industry:
Automotive Engineer - Structures

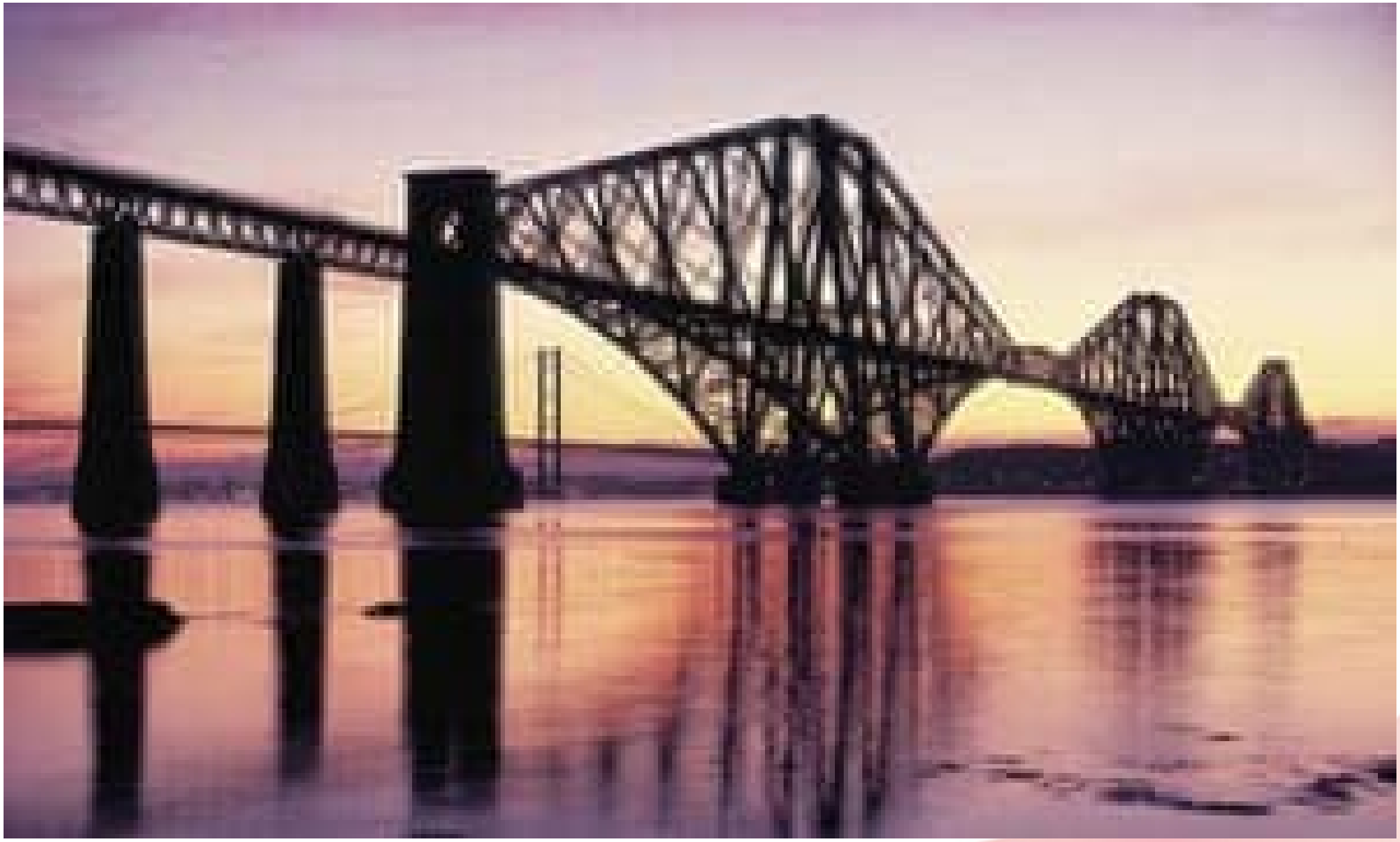
Transport Industry:
Automotive Engineer - Engines



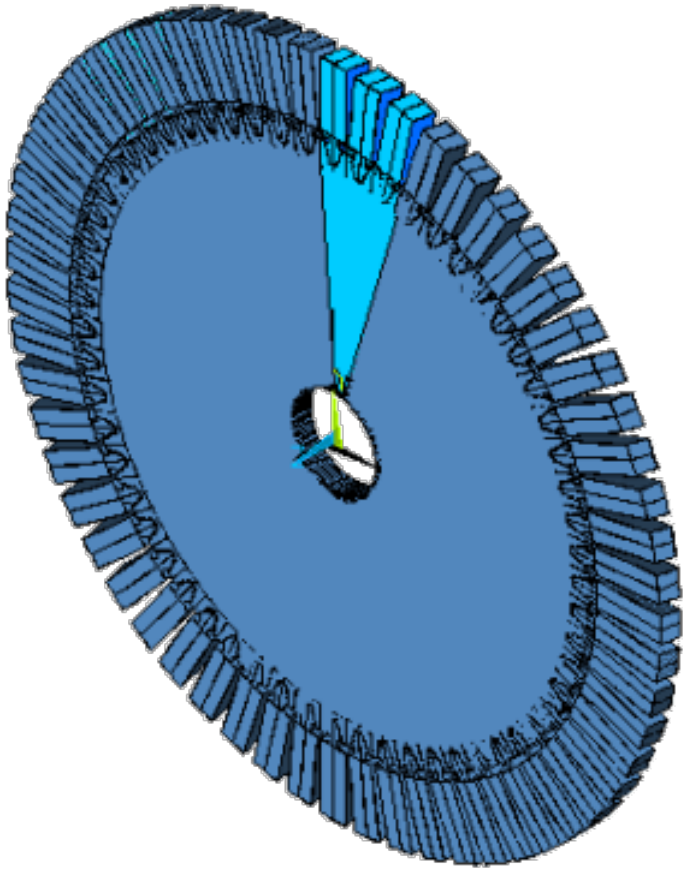
Transport Industry: Locomotive Design Engineer



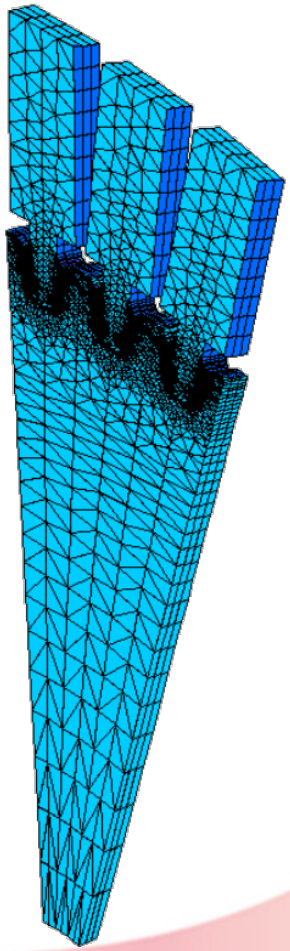
Construction Engineers



Design Analysis: Stress Engineer

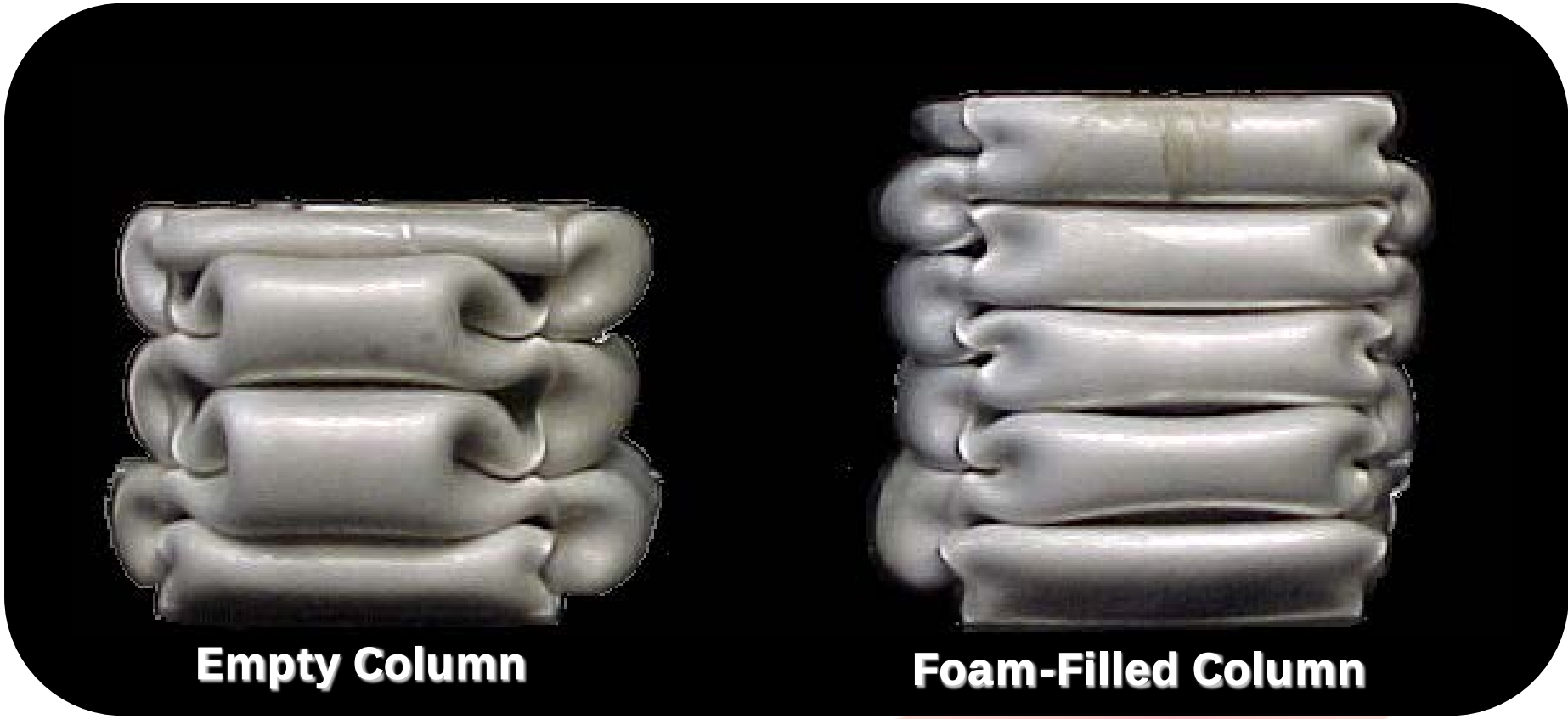


Turbine disc model



Blade section

Failure Analysis Engineers



Comparison with Experiments

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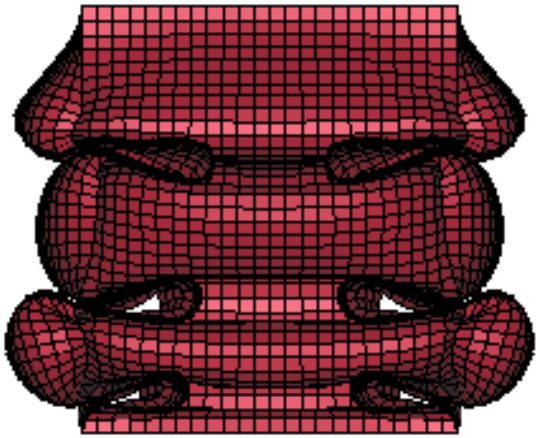

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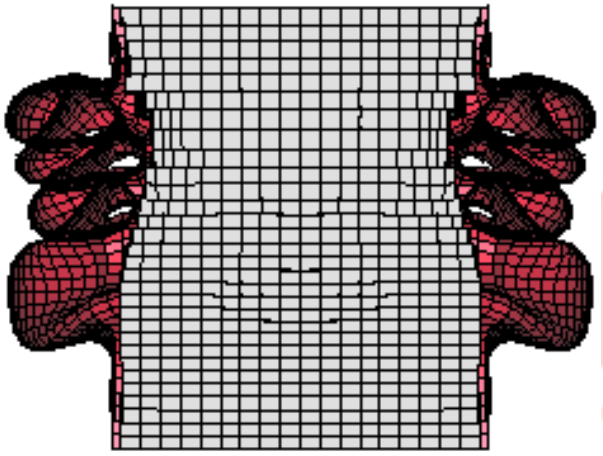
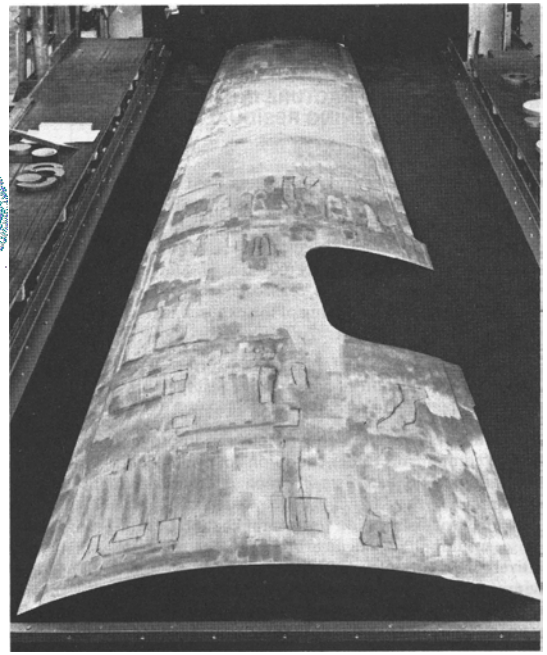
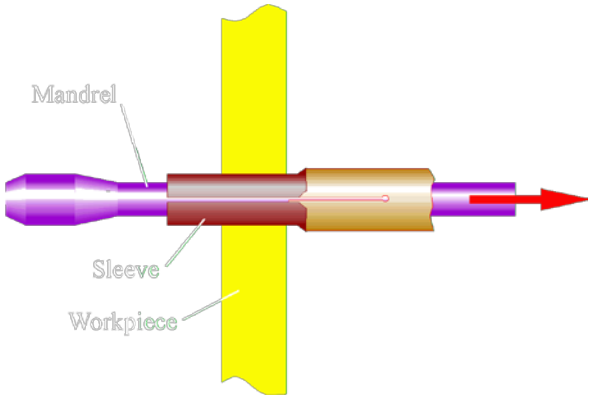


Surface Engineering:
Welding and Coating Engineers

Surface Engineering:
Post Processing & Finishing Engineer



Shot Peening



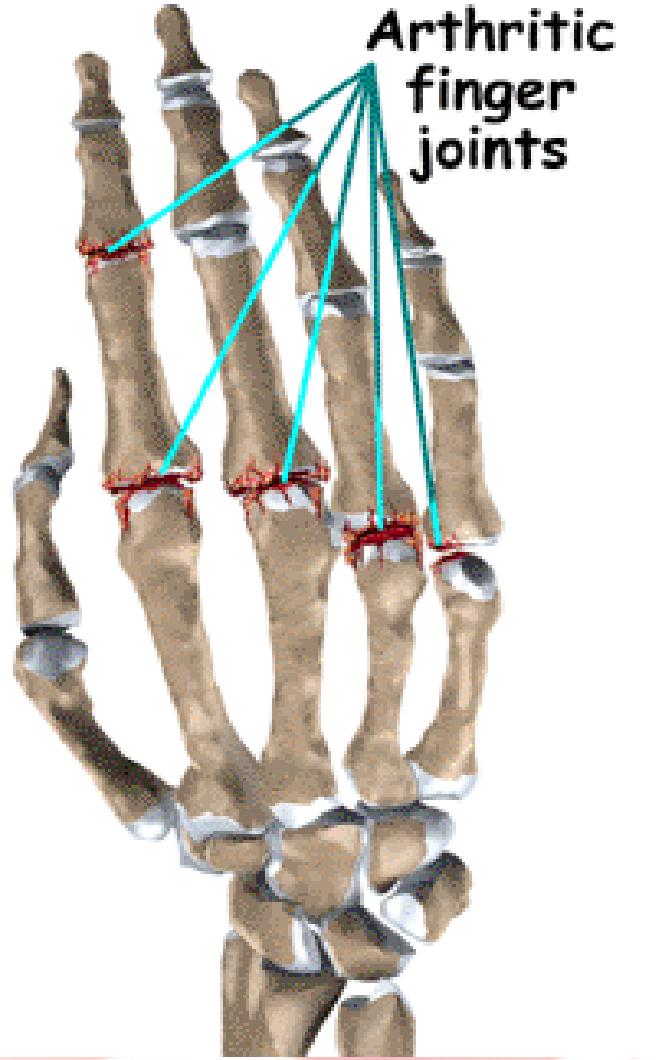
Cold Hole Expansion

Rheumatoid Arthritis

http://www-medlib.med.utah.edu/WebPath/

BONEHTML/BONE043.html

http://www.cjthakkar.com/rheumatoid1.html



Biomedical Engineers: Design and Analysis

- Human Spine
- Dental Implants
- Prosthetic Finger Implants
- Hip Replacement
- Knee Replacement

I cannot Decide on my Major?

- Understand the unique features of all 5 streams.
- Project career trajectories of each stream.
- Determine which programs align best with your interests and passions.
- What would you like to do in 20, 10 and 5 years from now and work backward (reverse engineering).
- What would you like to be in 20, 10, 5 years and work backward.
- Are you creative? Do not waste your talent in mundane jobs.
- Do not specialize in narrow fields early on in your education.
- Your favorite subjects.
- Graduate studies

Small Sample of Job Opportunities

General Motors of Canada Limited

National Défense Defence Nationale

Transport Canada

Canada

ALCOA

DePuy
a Johnson-Johnson company

Ford

INSTRON

SIEMENS

CAT

NASA

Pratt & Whitney Canada
A United Technologies Company

BOMBARDIER

BOMBARDIER

WORLD AVIATION CORPORATION

ROLLS ROYCE

I hope that you have found this brief helpful!

Note: I gladly acknowledge the use of a few figures from the web in support of this presentation. I confirm that this presentation is not intended for commercial use but merely to help students select a stream in mechanical engineering.