You have the know how to transform materials to meet different needs. Lord Kelvin once said, the greatest advances in the world are due to the desire to turn knowledge of the properties of matter into some purpose useful to mankind. In the oil and gas industry, Materials and Metallurgical Engineers can do exactly that. They evaluate, study and develop materials and processes to manufacture well pipes, pipelines, pressure vessels and other products for use in operations. If you’re made of this stuff, this niche engineering discipline could be for you.

WHAT DOES THIS CAREER LOOK LIKE?

You’re intrigued by the ability to transform materials by shifting processing parameters, including applying heat. You may be in a lab working with microscopes or machines to test materials for various characteristics, such as material hardness or electrical conductivity. You’ll conduct studies to develop the perfect “recipe” to manufacture supplies and materials based on specific requirements for oil and gas projects. You help companies develop the right processes for the right materials to meet project parameters.

Often there is a new task or challenge to meet. You’ll collaborate with teams of technicians and other engineers to resolve corrosion issues or ensure the right designs and welding approaches are used to create sound, safe, and reliable structures and products.

WHAT WOULD I DO?

Your input is required from material selection and sourcing, to project construction through to repairs. You often find yourself playing the role of detective, talking to onsite technicians and asking a lot of questions to understand the root of material failures, such as corrosion of a pipe or how best to weld a cracked pressure vessel. Sometimes you find yourself interpreting engineering drawings to determine the best material selection. Other tasks may include:

- Supporting corrosion or materials-related investigations, failure analysis and total asset integrity management activities.
- Calculating and managing the remaining life of pressure boundary and rotating and static components by working as part of a team using non-destructive testing (NDT).
- Recommending and coordinating failure analysis testing when required.
- Conducting studies on the properties and characteristics of materials.

HEALTH & SAFETY TRAINING

- Standard and emergency first aid
- Workplace Hazardous Materials Information System (WHMIS)
- Construction Safety Training System (CSTS)
- Pipeline Construction Safety Training (PCST)
- H2S Alive
- Asbestos safety
- Fall protection
- Confined space entry
- Aerial lift training
- Respirator fit testing
What competencies do I need?

You’re very hands on, process-oriented and analytical. Starting with a deep understanding of chemistry, math and materials and engineering principals, you excel at your role by applying critical thinking and solid communication to collaborate on solutions with other members of the team. Your skills and knowledge includes:

**ENTRY LEVEL**
- Production and processing
- Engineering and technology
- Chemistry
- Systems analysis
- Quality control analysis

**SENIOR LEVEL**
- Mechanical
- Judgment and decision making
- Public safety and security
- Complex problem solving
- Operations analysis

What can I expect?

Materials and Metallurgical Engineers are often employed by consulting engineering firms, oil companies, mining, metal and processing and manufacturing companies. You’ll typically work in the exploration and production, oil sands and oil and gas services and pipelines sectors of the oil and gas industry. A standard 40-hour work week with some overtime required is the norm for this occupation.

How can I learn more?

To find out more about this role or other careers in the oil and gas industry, visit the Careers in Oil + Gas online tool at careersinoilandgas.com.

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