Spotlight on Chemical and Process Engineers

Chemical and Process Engineers are champions for ongoing improvement in the oil and gas industry. They examine how raw materials are transported or converted into other products, and improve the efficiency and economics of these processes. Chemical process engineering applies to most oil and gas operations, so there are many career options to consider.

Imagine working on oil sands projects that separate bitumen from sand and upgrading it to synthetic crude oil. Your work could also focus on applying technical know-how to improve production and water treatment at steam-assisted gravity drainage (SAGD) plants. Alternatively, you may develop new ways to remove moisture, contaminants, hydrogen sulphide and carbon dioxide from natural gas or reduce corrosion on equipment and pipelines.

Does the logic of a flowchart fascinate you? Do instrumentation diagrams and complex mathematical calculations intrigue you? Are you curious about thermodynamics, heat transfer, fluid mechanics and chemical reactions? If so, you may find your niche as a Chemical and Process Engineer!

Vacuum distillation unit. Courtesy of Syncrude Canada Ltd.

What do Chemical and Process Engineers do?

Chemical and Process Engineers design, configure, and oversee process improvements to equipment, facilities and pipelines. Your responsibilities could include:

- Performing process optimization studies and developing new designs
- Preparing calculations, specifications and drawings that conform with operational and regulatory standards
- Developing and maintaining design tools and databases
- Providing technical supervision during performance testing and tuning
- Analysing technical risks and recommending options
- Interfacing with other engineering disciplines

How do I become a Chemical and Process Engineer?

You will need a four year Bachelor of Science degree from an accredited college or university. Engineering programs in chemical engineering, computer process control and process engineering are most relevant.

You will also need a license to practice as an engineer. Provincial engineering associations are responsible for administering and issuing licenses. For more specific information about engineering qualifications and professional certifications, check out the following website: www.engineerscanada.ca.

The National Association of Corrosion Engineers (NACE) International provides certification programs about corrosion and corrosion control. More information is available at: www.nace.org. The International Society of Automation (ISA) offers a Certified Automation Professional (CAP) program. See details at: www.isa.org.

Information for foreign-trained engineers is provided on the Canadian Information Centre for International Credentials website at: www.cicic.ca.

What are the working conditions like?

Most Chemical and Process Engineers perform their work in office settings. Trips to field locations occur on occasion. Some engineers may work in operating plants and may be subject to noise and dusty conditions. Going into confined spaces, such as distillation columns or reactor vessels to perform inspections and climbing ladders is a possibility. Safety protocols are strictly adhered to in such cases.

Oil rich sand. Courtesy of Suncor Energy Inc.

Do I fit the bill?

Do you think you have what it takes to become a Chemical and Process Engineer?

- ❑ I am interested in applied mathematics, physics and chemical engineering.
- ❑ I like to experiment with workflows.
- ❑ I enjoy figuring out complex calculations and diagrams.
- ❑ I can successfully manage a project from start to finish.
- ❑ I have an aptitude for using specialized computer software.
- ❑ I am creative, imaginative and consider myself an idea person.
- ❑ I pay special attention to detail and accuracy and am not easily distracted.
- ❑ I am a good problem solver and think quickly on my feet.
- ❑ I am a great multi-tasker.
- ❑ I am quite versatile and can work on my own or with a team.
- ❑ I am good at clearly explaining technical things to others.
- ❑ I am interested in pursuing a university education that may require at least four or more years of study.
- ❑ I think a career as a Chemical and Process Engineer sounds exciting and I'm up for the challenge and adventure!

Quick tips and next steps!

- ❑ Visit career fairs and talk to employers who offer jobs and careers in this occupation. Check with employment centres, educational institutions, newspapers, petroleum-related magazines and the internet for information on career fairs.
- ❑ Choose a university that offers co-op engineering programs. These programs combine academic classes with practical work experience.
- ❑ Participate in *National Engineering Month* (www.new-sng.com) and *National Science and Technology Week* (www.cctt.ca).
- ❑ Review *Engineering Your Future – a Career Planning Guide in Engineering* at the Association of Professional Engineers and Geoscientists of Alberta website at: www.apegga.ca.
- ❑ Check out the P-Eng website at www.peng.ca for helpful information, including a section for students and Frequently Asked Questions.
- ❑ Review the *Generation-E Career Launch Handout* at: www.generation-e.ca.

Corrosion on pipe. Courtesy of Spectrol Energy Services Inc.

Want more info?

For information on other industry occupations check out **www.careersinoilandgas.com**.

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