

Inspection and Testing Technicians

Inspection and testing technicians are needed across energy sectors. They are responsible for inspecting, testing, and monitoring equipment and facilities used in the energy industry. Their tasks contribute to worker safety, public safety, and compliance with environmental, regulatory, and contractual requirements.

The inspection and testing technician career path often starts with getting experience working in the field or facilities in a trade or technician role. Field and facility experience gives you exposure to build your skills. The experience will help you to become familiar with working in and around energy sector equipment and facilities. Certificate programs focus on testing and inspection techniques for these equipment and facilities.

There are four usual types of inspection and testing technicians. Each type requires different certificates. These are non-destructive tester (NDT), welding inspector, boiler and pressure vessel inspector, and piping inspector.

The career will appeal to you if you already have some field experience in the energy industry. This is a career where direct experience in the field or facilities as a tradesperson, technician, or engineer sets you apart. You like math and are skilled at working systematically with tools and equipment. You are curious by nature. You see the benefit of following a set of procedures and routines. You are interested in learning as equipment and facilities change around you.

Established Energy Sectors:

[Oil and Gas](#)[Offshore Oil and Gas](#)[Oil Sands](#)[Energy Services](#)[Pipelines](#)[Refining](#)

Emerging Energy Sectors:

[Biofuels](#)[Hydrogen](#)[Liquefied Natural Gas \(LNG\)](#)[Carbon Capture and Storage \(CCS\)](#)

For energy sector definitions, go to [CareersinEnergy.ca](https://careersinenergy.ca)



What Inspection and Testing Technicians Do



Inspect Equipment

Inspection and testing technicians are responsible for testing a variety of equipment. This includes pressure vessels, pipelines, and storage tanks. Inspections are carried out using different tests, tools, and techniques to identify defects that would affect the safety and reliability of the equipment.



Develop, Maintain and/or Control Inspection Records

Inspection and testing technicians are responsible for a variety of necessary documents. These records are used to capture data during testing and for reporting test results.



Interpret Test Results

Inspection and testing technicians are trained to analyze their test results. Analysis of the test results may indicate that the equipment has no defects, that there is a need for further inspections, or that there is a need to create equipment repair or replacement plans. Regular follow-up assessments can be a strategy to ensure that the company's equipment and facilities are safe to operate.



Keep Up to Date on Testing Technologies and Methodologies

Inspection and testing technicians build on their knowledge of company processes. Taking additional training helps them keep up with testing methods and certifications.



Share Quality Assessment Results

Inspection and testing technicians communicate with a range of company personnel who will need to be aware of the test results and recommendations. They will communicate with field personnel, maintenance workers, engineers, project managers, etc.

Key Skills and Abilities Inspection and Testing Technicians Need

This chart shows skills, certifications, and personal attributes inspection and testing technicians need to enter and advance their career in the energy industry. Each occupation, job level, and responsibility will require a different mix of these skills and abilities.



Inspection and Testing Technician Careers in the Energy Industry

There are different types of education requirements for the inspection and testing technician career. Entry to the career generally starts with experience as a worker, tradesperson, or technician in the field or at plants. Further training and certificates may be required. Most employers provide on-the-job training and support to obtain additional certificates.

Career Level	Entry	Mid	Senior
Types of Jobs	Quality Control Technician/Inspector – Level 1	Quality Control Technician/Inspector – Level 2	Quality Control Technician/Inspector – Level 3

Education Levels and Areas of Study

Across the levels, specific certifications are required based on the type of equipment being tested:

- NDT Inspector
- Welding Inspector
- Boiler and Pressure Vessel Inspector
- Piping Inspector

Combinations of education and experience are supplemented by additional on-the-job learning and specialized certifications. All career levels may require any of the following education. Experience requirements cited for certifications can be reduced by having relevant education.

- High school diploma
- Certified tradesperson: boilermaker; millwright and industrial mechanic; steamfitter, pipefitter, and sprinkler system installer; welder
- 2-year college diploma (welding engineering technology, materials engineering technology, mechanical engineering technology)
- 4-year university degree in an engineering discipline

Transferring Inspection and Testing Technician Skills from One Energy Sector to Another

There are core skills and knowledge that all inspection and testing technicians need for their careers in all energy sectors and for all specializations.

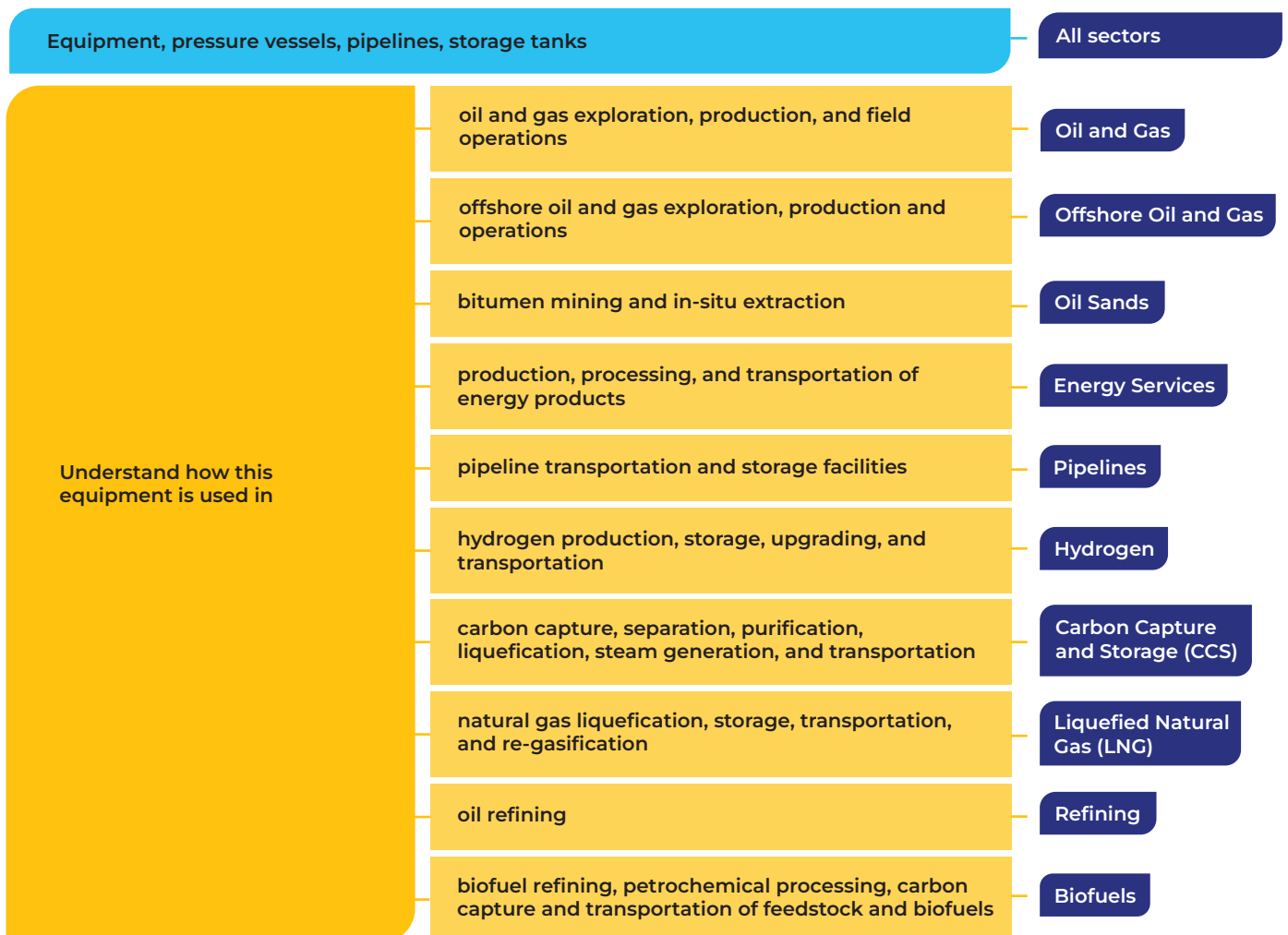
The following flow chart presents the core skills and knowledge inspection and testing technicians need as building blocks. Each energy sector uses the building blocks in different ways.

New entrants to an inspection and testing technician career can use the diagram to understand the building block skills needed to work in sectors across the energy industry. Experienced inspection and testing technicians can use the diagram to understand how each building block is applied across the energy sectors.

Skill: Knowledge of operational and maintenance processes for facility and equipment

Skill attributes

Sector



Skill: Knowledge of regulations, safety codes, and inspection forms for specific equipment and facilities

Skill attributes

Sector



Skill: Proficiency with tests, tools, and techniques to conduct inspections, identify defects, and determine the soundness of a material or components

Skill attributes

Sector

Selection of the testing method	All sectors
Use of the testing method to evaluate: <ul style="list-style-type: none">• Safety and quality of equipment, materials, and products• Compliance with federal and provincial regulations	All sectors
Proficiency with traditional and advanced inspection and testing methods	All sectors

Skill: Interpretation of inspection results to determine improvement steps needed for safety and compliance with regulations and specifications

Skill attributes

Sector

Using inspection results to prepare reports on compliance and integrity issues	All sectors
Communicating inspection results and issues with operations leaders and workers	All sectors
Providing guidance to find suitable solutions to compliance and integrity issues	All sectors

Skill: Ability to work with operations leaders and workers to obtain support for quality assessment results and recommendations

Skill attributes

Sector

Communicate inspection and test results to managers and supervisors	All sectors
Work with operations personnel to manage and implement inspection plans	All sectors
Provide direction on necessary actions to rectify compliance issues	All sectors

Career Outlook for Inspection and Testing Technicians



Projected labour shortages

The demand for workers is projected to be greater than the supply of available workers.

Source: Careers in Energy, National Labour Market Outlook to 2035



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