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Disclaimer

Every attempt is made to ensure the accuracy of the information contained in this brochure. I.B.A. Industrial Training is not responsible from any losses arising from any errors, which may occur.

The Career

An Operating Engineer is a skilled worker who operates and maintains the equipment in a power plant.

A power plant may include boilers, steam turbines, electric generators, motors, refrigeration and air conditioning equipment, control systems, water treatment and fuel handling facilities, emergency standby equipment and environmental protection equipment.

A power plant provides such outputs as electric power for light; cooling to condition air; make ice; steam for heat or for industrial processes.

In larger plants the Operating Engineer may function as a supervisor who directs others on the safe and efficient operation of a plant. Automatic control systems regulate massive equipment through control panels or programmable control monitor screens.

In smaller plants, the Operating Engineer may operate and maintain equipment, order supplies and generally assume full responsibility for the entire plant. There may be no other staff.

Much of the work may be manual: opening and closing valves, stopping and starting pumps, and water treatment plant.

Operating Engineers can expect to have year-round employment. In many plants, Operating Engineers can expect to work eight or twelve hours per day, in rotating shifts, on weekdays, weekends and holidays with days off on a rotating schedule. A common practice is to work one of three shifts, starting at 08.00h, 16.00h or midnight, with four groups handling these three shifts. This schedule permits three working groups while one group has days off.

The Act and Regulations

The occupation of **Operating Engineer** in Ontario is regulated by the **Technical Standards and Safety Act** and **Regulations** and is administered by the **Technical Standards and Safety Authority**.

Only those holding a current **Certificate of Qualification** issued by the Technical Standards and Safety Authority may be employed in plants, which must be registered with the Authority.

The responsibility for certification rests with the Technical Standards and Safety Authority.

For more information, refer to the Technical Standards and Safety Authority website under "Regulations" at www.tssa.org

Certificate Requirements

To receive a **Certificate of Qualification** from the **Technical Standards and Safety Authority**, an applicant must:

- 1 Successfully complete the required set of written examinations, administered by the Technical Standards and Safety Authority, for the applicable class.

As each examination paper is completed, the applicant will receive a Program Status Report from the Technical Standards and Safety Authority. Upon completion of the examination papers in the class, a final Report will be issued indicating all the examination papers that were successfully completed by the applicant. The Program Status Report is required in order to receive accreditation.

- 2 Complete Form 6 "Application for Certification of Qualification" listing qualifying plant experience.
- 3 Submit the required documentation and prescribed fee to the Chief Officer, Technical Standards and Safety Authority, for issuance of a Certificate of Qualification. The documentation includes the Final Program Status Report and Form 6.

These forms are available at **I.B.A. Industrial Training** for an applicant who completes the required Practical Time. If enrolled at **I.B.A. Industrial Training**, **I.B.A. Industrial Training will administer all necessary documentation.**

Practical Time Required

The required times of practical plant qualifying experience are listed below. The experience must be in approved plants, appropriate for each class. Fourth Class is the entry level.

Class	Prerequisite Certificate	Experience Time
Fourth	None	12 months
Third	4th Class	12 months
Second	3 rd Class	18 months
First	2 nd Class	30 months

Practical Time Reduction

The Fourth Class full-time course with I.B.A. Industrial Training has been approved by TSSA. This allows for a nine-month time reduction in practical plant qualifying experience for Fourth Class Certificate of Qualification.

These reductions include the time spent in the course plus an incentive for attending the full-time course.

Examination Requirements

The responsibility for certification rests with the Technical Standards and Safety Authority.

To receive A Certificate of Qualification, all the required SOPEEC examinations must be written successfully. SOPEEC means the Standardization of Power Engineers Examinations Committee. It is an inter-provincial group representing all parts of Canada, except Quebec, who set a common examination standard across Canada, to facilitate qualification in other parts of Canada.

An examination must be written for each Paper in one of the Classes listed on pages 10 to 13.

There are registration fees for these examinations.

The prerequisite certificate must be obtained before candidates can start writing examinations for the next class.

The examinations may be scheduled at the nearest Apprenticeship Field Office or at the Toronto office of the Technical Standards and Safety Authority in Toronto.

All examinations are 3.5 hours long.

Examination Requirements

There are two examination papers in the Fourth Class level and four in the Third Class level, each with 150 multiple-choice questions, except Third Class Part B Paper 1, which has 8 written questions.

There are six examination Papers in the Second Class and eight in the First class, each with 5 written questions.

Sample questions can be accessed under "Study Guide" at the SOPEEC website at www.sopec.org

Candidates must attain a minimum of 65 percent on each examination. A candidate who fails to attain the minimum acceptable standard on an examination will be required to wait two months (60 days) before being permitted to re-write the examination.

I.B.A. Industrial Training

I.B.A. Industrial Training, a Private Vocational School will deliver the theory portion of all of the Operating Engineer Courses and provide qualifying practical plant experience for the Fourth Class Operating Engineer Certificates of Qualification.

Recognition

The Fourth Class Course is recognized and accredited by the Technical Standards and Safety Authority.

This recognition allows for the reduction in qualifying practical plant experience indicated on page five.

Courses Offered

I.B.A. Industrial Training offers four Operating Engineering Courses:

Fourth Class

Third Class

Second Class

First Class

Methods of Study

Candidates wishing to write the Technical Standards and Safety Authority examinations can use one or a combination of study methods such as:

- Home study combined with tutoring arranged through **I.B.A. Industrial Training**.
- Attend full-time day classes at **I.B.A. Industrial Training**, gaining the reduction in qualifying practical plant experience indicated on page five, for the Fourth and Third Classes.

Courses are offered at frequent intervals

Examination Topics 4th Class

FOURTH CLASS

Part A

Applied Mathematics
Elementary Mechanics and Dynamics
Elementary Thermodynamics
Mechanical Drawings, Administration
The Operating Engineers Act, Codes
Workplace Hazardous Materials
Plant Safety
Plant Fire Protection
Environment
Materials, Welding
Piping and Valves
High Pressure Boiler Design
High Pressure Boiler Parts and Fittings
High Pressure Boiler Operation

Part B

Prime Movers and Engines
Pumps and Compressors
Lubrication
Electricity
Controls, Instrumentation and Computers
Boiler Maintenance
Types of Plants
Heating Boilers
Heating Systems
Heating Boilers and Heating Controls
Auxiliary Building Systems
Vapour Compression Systems
Absorption Refrigeration
Air Conditioning
Air Conditioning Systems

Examination Topics 3rd Class

THIRD CLASS
Part A - Paper 1 Applied Mathematics Applied Mechanics Thermodynamics Applied Science
Part A - Paper 2 Industrial Legislation Codes Boiler Calculations ASME Section I Fuels and Combustion Piping Electrotechnology Electrical Calculations Control Instrumentation Fire Prevention and Plant Safety Type and Arrangement of Industrial Plants
Part B - Paper 1 Boilers Boiler Control Systems Heating and Air Conditioning Feedwater Treatment Pumps Welding
Part B - Paper 2 Prime Movers Air Compressors Refrigeration Lubrication

Examination Topics 2nd Class

SECOND CLASS
Part A - Paper 1 Applied Mechanics ASME Code Section I Calculations Water Treatment
Part A - Paper 2 Thermodynamics Combustion Combustion Control
Part A - Paper 3 Boilers Piping Control Instrumentation Pumps
Part B - Paper 1 Heat Engines Steam Turbines Gas Turbines Safety
Part B - Paper 2 Compressors Refrigeration Air Conditioning Types and Arrangement of Industrial Plants Mechanical Drawing Industrial Legislation
Part B - Paper 3 Lubrication Metallurgy Electrotechnology Electronics

Examination Topics 1st Class

FIRST CLASS
Part A - Paper 1 Mechanics Code Calculations
Part A - Paper 2 Thermodynamics
Part A - Paper 3 Boilers Control Instrumentation Piping
Part A - Paper 4 Combustion Water Treatment
Part B - Paper 1 Thermodynamic Cycles Internal Combustion Engines Fire Prevention and Plant Safety
Part B - Paper 2 Metallurgy, Testing Power Plant Erection/Installation/Development Lubrication
Part B - Paper 3 Administration, Management, Budgets Air Conditioning Industrial Plants

Contacts

I.B.A. Industrial Training

Address: **400, Green Road,
Stoney Creek,
Ontario
L8E 2B4**

Location: Q.E.W. South Service Road between Centennial and Fruitland Road, at the North-East corner of South Service Road and Green.

Directions: From the Q.E.W. South Service Road, turn South onto Green Road. Take the first left (East) entrance to the northwest corner of the building.

Contact: **Ivan Bradaric**

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MAP

