



Certified Ice Technician (CIT) Recertification Course  
(Classroom/Online)

CIT Challenge Exam Syllabus

April 22, 2010

# Certified Ice Technician (CIT) Recertification Course (classroom/online)

## Challenge Exam Syllabus

The information used to create the CIT Challenge Exam and presented in the CIT Recertification Course (classroom-based and online) will address the subject matter at the same level of intensity and scrutiny as the information presented in the original three classroom-based courses (Basic Refrigeration, Ice Making and Painting Technologies, Ice Maintenance and Equipment Operations). The recertification information will:

- Review current theory, advanced principles and best practices
- Present the latest in technologies, techniques, tools
- Review current legislation and legal responsibilities
- Test the skills and knowledge of the participants to work competently as professional ice technicians.

The passing examination grade is 60%. For complete information on the CIT recertification process please visit

<http://www.orfa.com/designations/cit/recertification/index.htm>

## Module 1: Refrigeration Technologies and Resources

Subject matter to be covered includes:

### Unit 1: Basic Refrigeration Review

- Principles of Refrigeration
- Refrigeration Equipment Identification and Function
- Refrigeration Controls and Accessories
- Refrigeration System Operation and Maintenance

**Note:** Course participants must review the above Unit 1 topics on their own prior to attending the recertification course.

### Learning Resources:

- ORFA's Basic Refrigeration course binder learning materials
- ORFA's *Refrigeration Manual: Ice Rink Applications (2006)*
- ORFA Library – Guidelines/Best Practices <http://www.orfa.com/library/>

### Unit 2: Stakeholders, Legislation and Operational Tools

- Ministry of Labour (MoL) inspections and its increased presence in recreation facility operations

- Technical Standards and Safety Authority (TSSA) and refrigeration plant room operations compliance to the Operating Engineer Regulation (OER)
- Occupational Health and Safety Act (OHSA) – Employer and Worker Responsibilities
- Canadian Standards Association (CSA) Mechanical Refrigeration Code B52/05
- Ontario Boilers and Pressure Vessels Act 1990 and Refrigeration Plant Room Operations
- The Electrical Code and Housekeeping in the Refrigeration Plant Room Operations
- Operational Log Books and Refrigeration Plant Room Operations Gauge Reading

#### Learning Resources:

- ORFA Library – Guidelines/Best Practices <http://www.orfa.com/library/>
- TSSA – Boilers and Pressure Vessels - <http://www.tssa.org/>
- Ontario Boilers and Pressure Vessels Act 1990 - <http://www.e-laws.gov.on.ca>
- CSA – online store – Mechanical Refrigeration Code B52/05 - <http://www.shopcsa.ca/onlinestore/>
- Ground Fault Circuit Interrupter Basics - <http://ecmweb.com/>

#### Unit 3: Personal Protective Equipment and Emergency Preparedness

- Personal Protection Equipment in the workplace: worker responsibilities
- Emergency Planning: Procedure Manuals
- Ontario Fire Code
- Role of Safety Plans, Equipment and Devices in Refrigeration Plant Room
- Job Hazard Analysis
- Eye Wash Stations and Deluge Showers
- Self Contained Breathing Apparatus (SCBA)
- Confined Spaces and Refrigeration Plant Room Operations
- Incident Reporting in the Refrigeration Plant Room
- Mechanical Protective Devices: Gauge Glass Safety Devices and deadman spring return valves

#### Learning Resources:

- ORFA Library – Guidelines/Best Practices <http://www.orfa.com/library/>
- Centre for Occupational Health and Safety (CCOHS) – Emergency Showers <http://www.ccohs.ca/oshanswers/>
- Industrial Accident Prevention Association – [www.iapa.ca](http://www.iapa.ca)
- Operating Engineer Regulation (OER) – search “Operating Engineer Regulations (OER) – [www.elaws.gov.on.ca](http://www.elaws.gov.on.ca)

#### Unit 4: Environment

- Waste oil management: record keeping and proper disposal

- Geothermal advanced technology: alternative refrigeration systems
- Energy management: primary and secondary refrigerants, lighting systems, ice thickness maintenance

Learning Resources:

- ORFA's *Refrigeration Manual: Ice Rink Applications (2006)* –Chapter 6
- ORFA Library – Guidelines/Best Practices <http://www.orfa.com/library/>
- Environmental Protection Act – Ontario - <http://www.e-laws.gov.on.ca/>
- Natural Resources Canada – search “geothermal arenas”  
[http://recherche-search.gc.ca/sample\\_search](http://recherche-search.gc.ca/sample_search)

## **Module 2: Ice Making and Painting Technologies**

Subject matter to be covered includes:

### Unit 1: Ice Making and Painting Technologies Review

- Basic Facility Construction Methods and Inspection Requirements
- Dashboards and Shielding Systems
- Off season Maintenance and Ice-in Preparations
- Making the First Sheet of Ice
- White Ice, Markings, Lines, and Logos
- Humidity
- Other Ice Sports
- Outdoor Ice
- Energy Management

**Note:** Course participants must review the above Unit 1 topics on their own prior to attending the recertification course.

Learning Resources:

- Ice Making and Painting Technologies course binder learning materials
- ORFA Library – Guidelines/Best Practices <http://www.orfa.com/library/>

### Unit 2: Facility Challenges

- Ontario's Aging Infrastructure
- Mould in Ontario's arenas
- Understanding Artificial Ice Temperatures
- Locker Room Care and Control
- Automated External Defibrillator (AED)
- Protective Netting Systems for Arenas

Learning Resources:

- ORFA Library – Guidelines/Best Practices <http://www.orfa.com/library/>
- National Arena Census - <http://www.crfc.ca/database.asp>

### Unit 3: Ice Making and Painting Advancements

- Ice Paint Sticks and Mixing Paint Correctly
- Creating and Maintaining Outdoor Ice
- Curling Ice
- Sledge Hockey
- ORFA Ice Hockey Line Markings
- Ice Logos
- Energy Management

Learning Resources:

- ORFA Library – Guidelines/Best Practices <http://www.orfa.com/library/>

### **Module 3: Ice Maintenance and Equipment Operations**

Subject matter to be covered includes:

#### Unit 1: IMEO Review

- Ice Resurfacers Overview
- The Conditioner
- Snow Lifting and Storage Systems
- Ice Resurfacers Water Systems
- Ice Resurfacers Drive Systems (fossil fuel/battery/electric)
- Ice Resurfacers Fuel Safety
- Safe Operation of the Ice Resurfacers
- Facility Air Quality
- Ice Edgers
- Ice Maintenance Procedures
- Standard Ice Facility Operating Procedures

**Note:** Course participants must review the above topics on their own prior to attending the recertification course.

#### Learning Resources

- Ice Maintenance and Equipment Operations course binder
- ORFA Library – Guidelines/Best Practices <http://www.orfa.com/library/>

#### Unit 2: New and Old: Impacts on Ice Facility Operations

- Air Quality
- Ice Resurfacers Driver's Permit
- Ice Edger – New Operational Standards
- Laser Technology
- Ice Quality and Ice Taps
- Supervising in a Recreation Environment
- Protective Headgear for Arena Personnel
- Standard Operational Procedures

## Learning Resources

- ORFA Library – Guidelines/Best Practices <http://www.orfa.com/library/>

## Unit 3: Ice Maintenance Practices

- Operational Ice Maintenance
- Custodial Ice Maintenance
- Corrective Ice Maintenance
- Emergency Ice Maintenance
- Ice Edger Operations and “Bowl Ice”
- Hearing Protection for Arena Personnel
- Ice Resurfacer Operational Efficiencies

## Learning Resources

- ORFA Library – Guidelines/Best Practices <http://www.orfa.com/library/>