



Developing a Registered Refrigeration Plant Room Inspection, Maintenance and Readings Program

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Introduction

The first line of safety in an Ontario ice arena is having competent operators responsible for the maintenance and operation in the registered refrigeration plant room.

“Maintenance” means the inspection, testing, service or repair of a unit, equipment, plant or installation to ensure that it is safe and that it meets the requirements of its design and the Operating Engineers Regulation (OER); and “maintain” has a corresponding meaning. *Source: OER*

Persons responsible for the ongoing maintenance of the registered refrigeration plant room must be trained to identify potential threats to workers or public safety such as, but not limited to, increases in pressures, equipment wear and loss of fluids that may lead to a plant malfunction. Maintenance, inspection and readings should be set out by the registered refrigeration plants “owner” or “responsible person” if under 200hp (Unattended) or the Chief Operator in plants over 200hp (Attended).

“Attendance”, in relation to shift coverage, means the physical presence of a person for the purpose of mandatory shift coverage by an operating engineer or operator for the operation of the plant as set out in this Regulation and “attended” has a corresponding meaning.

“Unattended”, in relation to a guarded plant or guarded installation, means that the plant or installation may be operated, (a) Without the appointment of a chief operating engineer or chief operator, and (b) Without an operating engineer or operator on shift duty providing supervision. *Source: OER*

Governing Authority

Ontario’s Technical Standards and Safety Authority (TSSA) governs the primary legislative obligation to maintain a registered refrigeration plant room as set out in the Operating Engineers Regulation (OER). The OER is considered a minimum operational obligation to be met leaving how the plant is to be safely operated with the owner of the registered refrigeration plant. Ownership is identified on the TSSA plant registration certificate that must be posted outside of the plant room.

In an “attended” registered refrigeration plant it is the sole responsibility of the Chief Operator to set out “maintenance” to meet the size and design of the onsite equipment. The OHSA definition of competent person in attended plants is enhanced with the operator requirement to have and maintain a B-Certificate granted by TSSA.

Capability of the staff in an “unattended plant” is informally defined in Ontario’s Occupational Health and Safety Act (OHSA) as being a “competent person”.

The OHSA defines a “competent person” as an individual who (a) is qualified because of knowledge, training and experience to organize the work and its performance (b) is familiar with this Act and the regulations that apply to the work, and (c) has knowledge of any potential or actual danger to health and safety in the workplace.

It is the owner’s responsibility to set the competency level through an in-house training plan for those who will operate and maintain the registered refrigeration plant on their behalf. It is the Ministry of Labour that will ultimately confirm the owners’ level to compliance should an incident or accident occur.

Inspection and Maintenance of Registered Plants

Registered refrigeration plants are protected from overheating, operating without proper lubrication or exploding due to high pressures by a series of failsafe devices. This protection is referred to as being “guarded”.

“Guarded”, in relation to a failsafe device, means the controls and safety devices that safely limit the operation of the equipment that is being guarded to pre-set parameters, and that will cause an audible or visual alarm, or both, to the operator of the equipment, as the case requires. *Source OER*

Unattended (guarded) systems are designed to continually operate with little or no adjustment being required. However, unattended plants that have safety device failures or are operating in a manner that may be considered unsafe must be then controlled by qualified operators until such time that plant is deemed to be properly functioning. To intervene in any such situation the owner must have the plant regularly inspected by a competent person. The term “regularly” seems to be undefined

however, it is used to direct owners on the obligation to conduct as many inspections throughout the occupied period as required to ensure the plant remains safe and serviceable.

In attended plants, there is set specific operational requirements to be met. These obligations are overseen by the Chief Operator.

All registered refrigeration plant inspections and maintenance must be recorded in the plant log.

Log, Registered Plants

37. (1) every user of a plant shall keep in the plant a log in the form of a book or electronic log. O. Reg. 219/01, s. 37 (1). (2) Subject to subsections (3) and (4), the logbook shall be bound and constructed so that the pages are numbered and cannot be removed and shall be large enough to accommodate all the required entries. O. Reg. 219/01, s. 37 (2).

Most common mistakes surrounding log book use include:

1. Failing to train workers on how to effectively complete log book entries;
2. Failing to train workers on what "normal" plant readings might be;
3. Failing to make regular or complete log book entries;
4. Failing to provide log books that meet the requirements of the Regulations – use of loose leaf binder type log books should be avoided – log books must be bound, consecutively numbered and created for the exact recording purpose of the task;
5. Failing to complete an area at the front of the log book to identify workers names, signatures and initials;
6. Failing to use a standard date format – use one constant type style throughout the document – best to print month-day-year in full;
7. Failing to use full words to complete sections of the log book report – avoid the use of abbreviations whenever possible;
8. Failing to have managers regularly review log book entries – all too often entries are made identifying an issue but no follow-up occurs;
9. Failing to safely store old log books;

Regulations require that all plant room log books be stored for a minimum of 3-years; however, the longer an operation can prove they have been working to set internal standards the better chance to legally defend their operational activities and attitude if ever called into question.

Equipment Inspection

TSSA requires in unattended plants that a visual inspection be conducted to confirm the plant is functioning safely with any incidents, accidents, adjustments, repairs or maintenance to the plant being recorded. Additional operational information to be collected and logged is at the discretion of the plant owner. To assist owners of unattended ice arena registered refrigeration plant rooms, the ORFA offers the following industry best practices. An ice arena registered refrigeration plant room inspection should include, but not be limited to, "the general status of equipment operations". A review of the air quality and temperature in the plant room, all equipment gauges for pressure and temperature fluctuations, all equipment for fluid or noxious gas leaks, all equipment for excessive or an increase of noise levels and a dedicated approach to the day-to-day housekeeping, fire protection, and overall safety of the plant room.

Such inspections should occur:

1. At minimum every 2-hours when the facility is open to the general public, or
2. More often should any variation in normal operations in the plant room be detected; or
3. A minimum of once every 24-hours when the facility is closed.

All such refrigeration plant inspections should include plant gauge readings which are to be recorded in the plant log. With any variation in normal operational activities being immediately reported to the plant owner.

Unattended Plant Operator Training

TSSA advises all owners of registered refrigeration plants that entry into any plant room is a privilege that can be revoked. No unauthorized persons are to be permitted access to the plant room.

42 (c) The plant owner must restrict access to the unattended plant and to provide signs to this effect at all entrances. O. Reg. 219/01, s. 42 (1).

There is NO benefit of having untrained individuals who are unaware of the potentials risks and hazards in the plant room or who fail to understand the plants proper and safe function to enter and record operational readings. In fact, this type of approach could place the plants owner and/or facility management at risk of personal liability should a significant incident or accident occur under such circumstances.

“Training” means a formal and consistent process that is recorded and that includes technical guidance given to plant employees engaged in the operation, maintenance and service of a plant.

Source: OER

The ORFA Basic Refrigeration course is a time tested industry recognized professional development training course that introduces new operators or refreshes senior staff to the cycle of refrigeration, primary components of a refrigeration plant, failsafe devices and risks and hazards. It is considered an industry best practice to have all ice arena operators that perform registered refrigeration plant monitoring and/or maintenance attend this or an equivalent training program. This foundation of theoretical knowledge when supported by a workplace specific training program will assist plant owners in proving operator competency if called into question.

General Requirement for Compliance

Those responsible for the care and control of the registered refrigeration plant room must meet OER section 2. (1) that states: *“Every person engaged in an activity, use of equipment, process or procedure to which the Act and this Regulation apply shall comply with the Act and this Regulation. O. Reg. 219/01, s. 2 (1). (2) In subsection (1), “activity, use of equipment, process or procedure” includes, but is not limited to, design, construction, erection, modification, management, operation, service, maintenance and repair”.*

What Are Normal Operational Pressures and Temperatures

Persons responsible to observe the registered refrigeration plants operation and record their findings must have a working knowledge of the on-site refrigeration plant. At minimum they should be capable of understanding:

1. What if any equipment has an “automatic control” in relation to a plant, installation or unit, means that it is provided with devices and systems that can start, stop, restart and modulate the action of the plant, installation or unit without the intervention of a person
2. What equipment has a failsafe device? A “fail safe device” means a control or device that will stop the function of a unit where the pre-set operating parameters of the unit have been exceeded, sound an alarm and prevent restarting of the unit until the unit is reset by hand
3. What equipment has an optional manual controlling device? A “manual control”, in relation to a plant, installation or unit, means that the plant, installation or unit, is started, stopped, restarted or otherwise controlled by the intervention of a person
4. If in fact the equipment can be controlled remotely? “Remote control”, in relation to an installation, means that the operation of the installation is not controlled where the installation is located
5. Understand what equipment can be reset if shutdown due to high or low pressure or lack of adequate liquid. “Reset” means the manual resetting of a switch that allows the safety cut out control device to restart a unit or equipment that has been shut down on an alarm condition

Once the operator has a clear understanding of the noted operational information a workplace training program must be undertaken. A workplace specific training program should include but not limited to:

#	Operator Workplace Specific Training Plan
1.	Making the trainee aware of the associated hazards in the plant room which may include, but not be limited to, access restriction policies, emergency exits, electrical shock, equipment starting without warning, slip hazards, levels of noxious gases, excessive noise levels, required and limits of Personal Protective Equipment, MSDS, ventilation and air quality issues, fire and explosive dangers; further, it is paramount that all emergency action equipment/plans, contact information and PPE be stored outside of the plant room in a close/safe location
2.	Actively monitoring and reviewing all Acts, Regulations and general legislation that control ice facility plant room operations
3.	Able to identify all primary parts of the refrigeration systems and what basic function they serve; able to start, stop and test all refrigeration equipment
4.	Able to accurately complete log book entries
5.	Able to recognize worker and public safety hazards and be prepared to initiate a general facility evacuation and worker emergency rescue plan.
6.	Aware that untrained staff shall not be permitted to enter refrigeration plant rooms without proper supervision

Once complete, the trainee should be considered competent to safely enter the registered refrigeration plant room and conduct an inspection and log their observations. No authority should be given to make adjustments, repairs or conduct maintenance at this level of completed training.