



SMALL COMMERCIAL

HEAT GAIN

HEAT LOSS

CALCULATIONS

MANUAL

2010 Edition

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Heating, Refrigeration and Air Conditioning
Institute of Canada

FOREWORD

The Small Commercial Heat Gain and Heat Loss Manual has been developed and published by the Heating, Refrigeration and Air Conditioning Institute of Canada.

Careful use of this manual should result in satisfactory selection of heating and cooling equipment for a designated commercial building. However, the end result is in no way warranted by either the Heating, Refrigeration and Air Conditioning Institute of Canada or any companies or any persons involved in the preparation or presentation of this manual.

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Heating, Refrigeration and Air Conditioning
Institute of Canada

2350 Matheson Blvd. East, Suite 101
Mississauga, ON L4W 5G9

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PURPOSE

This manual is intended to instruct members of the heating, ventilating and air conditioning (HVAC) industry on the proper load calculation technique required to determine the correct capacity equipment to heat and cool a building.

The manual is intended for industry personnel who have a good basic understanding of HVAC equipment and distribution systems. The content of this manual is generic in nature and based on good design principles and installation practices as referenced in ASHRAE standards and guidelines.

This manual is the reference document provided to participants who attend the HRAI Small Commercial Heat Gain & Heat Loss Calculations certification training program.

SCOPE

- a) The materials in this manual are designed for Small Commercial Heat Gain and Heat Loss calculations.
- b) The calculations can be used to select the unit capacity requirements for heating and cooling loads.
- c) “Small Commercial” refers to buildings that are used for commercial applications (non-residential only) that cover up to 3 stories and 600 square metres per storey.
- d) Accurate and comprehensive evaluation of space usage and requirements is necessary in order to determine calculation criteria.
- e) Instantaneous peak load calculations are used, deriving data from tables and charts to best suit the orientation, location, construction and purpose of the building.
- f) By referencing various ASHRAE, CSA, ANSI, Building Codes and other pertinent codes, regulations, acts and standards, calculations can be adapted to deliver the necessary parameters to meet the needs as required.
- g) Good design depends on good engineering principles and practices, coupled with experience and construction knowledge and details, making for equipment selection to provide comfort, economics of equipment selection and energy performance.