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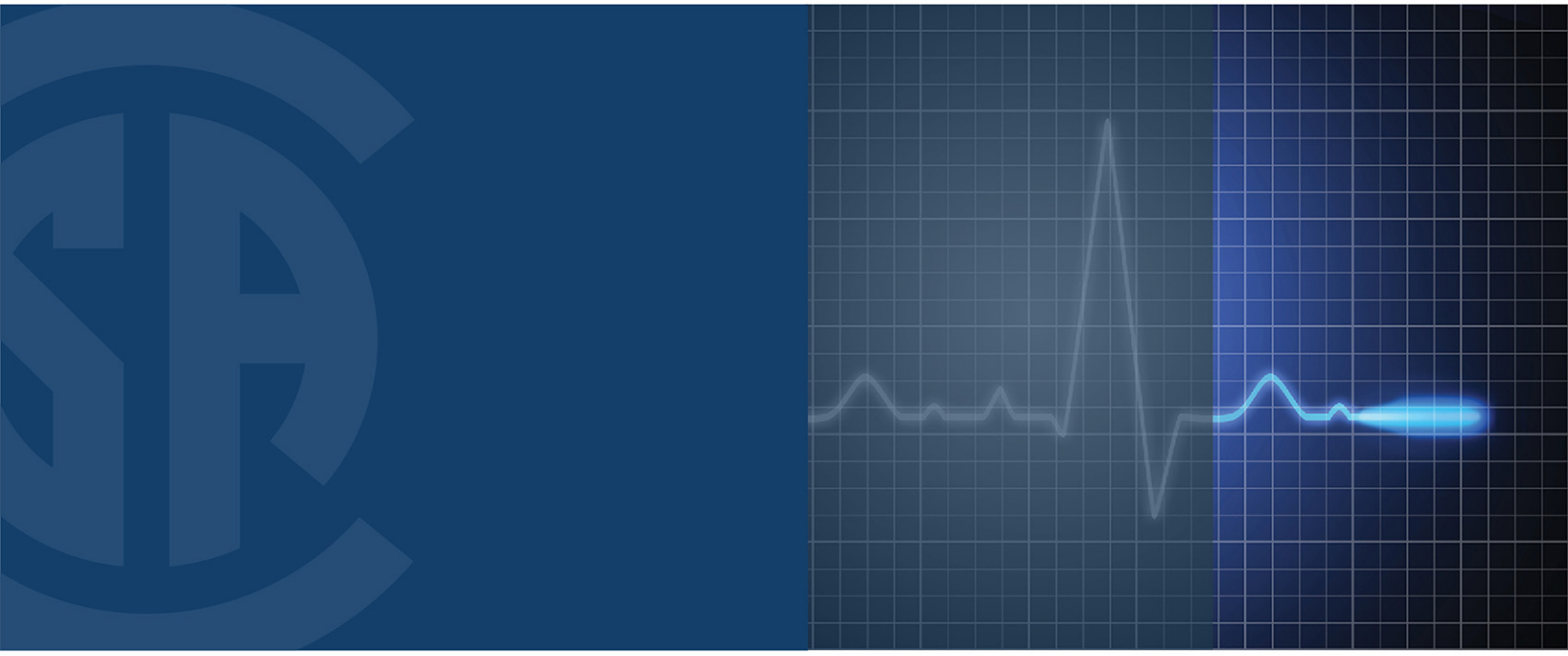
CSA Z317.2:19
National Standard of Canada

Special requirements for heating, ventilation, and air-conditioning (HVAC) systems in health care facilities



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Contents

Preface

This is the fifth edition of CSA Z317.2, *Special requirements for heating, ventilation, and air-conditioning (HVAC) systems in health care facilities*, one of a series of Standards on the design, construction, and maintenance of health care facilities and systems. It supersedes the previous editions, published in 2015, 2010, 2001, and 1991.

This Standard is intended for use by architects, engineers, planners, consultants, and health care facility staff to ensure the efficient planning, design, construction, and maintenance of HVAC systems. In addition to design and construction requirements, this Standard includes commissioning, operational, maintenance, and monitoring requirements for HVAC systems that will reduce the risk of transmission of infection among building occupants, including patients, staff, and visitors. Significant changes in this edition include the following:

a) clarification of HVAC requirements for rooms and areas used for similar or different functions, including more stringent requirements for areas in a facility used for more than one function;
b) additional guidance on HCFs providing services when outdoor conditions are extreme and when indoor conditions are outside of the HVAC design ranges;
c) information on areas with increased activity level potentially requiring a higher air exchange rate to maintain air quality;
d) enhanced electrical system requirements for control systems during loss of power to ensure continuity of systems;
e) revisions for HVAC system upgrades associated with renovations or additions;
f) expansion of requirements for chemical treatment of steam and condensate piping systems;
g) expansion of requirements for heating and cooling source redundancy;
h) additional considerations for the placement of outdoor intakes;
i) clarification for the location of duct-mounted humidifiers;
j) new provisions for flex ducting;
k) expanded requirements for audible and visual alarms for AIRs;
l) clarification on the use of non-aspirating diffusers in Type I areas;
m) alignment of inhaled anaesthetic and analgesic gas scavenging requirements with CSA Z7396.1;
n) a new clause on ventilation of normally unoccupied service areas;
o) clarification on placement of local heating or cooling units and water removal requirements;
p) guidance on catastrophic HVAC equipment failure in alignment with catastrophic event management in CSA Z8000;
q) new requirements for HEPA filter testing and performance verification;
r) clarification that HVAC system operation may be modified or operated in certain situations beyond the ranges specified in Table 1, in consultation with the MDT;
s) new HVAC design criteria for Whole body storage and Morgue viewing in Table 1;
t) expansion of HVAC design criteria for Scope reprocessing areas in Table 1;
u) expansion of HVAC design criteria for Treatment and procedure rooms for patients requiring airborne precautions in Table 1;
v) updated airflow direction requirements for the Operating room and Sterile core in Table 1;
w) updated examples of health care facilities according to class in Annex B; and
x) revised formulas and calculations in Annex C.

CSA Group acknowledges that the development of this Standard was made possible, in part, by the financial support of the governments of Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland and Labrador, Northwest Territories, Nova Scotia, Nunavut, Ontario, Prince Edward

Island, Québec, Saskatchewan, and Yukon, as administered by the Canadian Association for Drugs and Technology in Health (CADTH).

This Standard was prepared by the Subcommittee on Special Requirements for HVAC Systems in Health Care Facilities, under the jurisdiction of the Technical Committee on Health Care Facilities and the Strategic Steering Committee on Health and Well-being, and has been formally approved by the Technical Committee.

This Standard has been developed in compliance with Standards Council of Canada requirements for National Standards of Canada. It has been published as a National Standard of Canada by CSA Group.

Notes:

1) *Use of the singular does not exclude the plural (and vice versa) when the sense allows.*
2) *Although the intended primary application of this Standard is stated in its Scope, it is important to note that it remains the responsibility of the users of the Standard to judge its suitability for their particular purpose.*
3) *This Standard was developed by consensus, which is defined by* CSA Policy governing standardization — Code of good practice for standardization *as "substantial agreement. Consensus implies much more than a simple majority, but not necessarily unanimity". It is consistent with this definition that a member may be included in the Technical Committee list and yet not be in full agreement with all clauses of this Standard.*
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0 Introduction

Indoor air quality is an important health and wellness consideration, and is especially critical to the health of patients, visitors, staff, and occupants of health care facilities (HCFs). Inadequate indoor air quality can complicate patient care and recovery and negatively affect health and wellness. The proper design, installation, commissioning, operation, and maintenance of HVAC systems can decrease the risk of airborne transmission of organisms inside buildings and therefore the risk of healthcare acquired infections. Optimization of indoor air quality protects the health and safety of patients, staff, and visitors and supports positive clinical outcomes.

In addition, a well-designed HVAC system can help HCFs to meet their conservation objectives and promote the judicious use of renewable and non-renewable resources while delivering required comfort and safety for all building occupants.

1 Scope

1.1

This Standard provides requirements for the planning, design, construction, commissioning, operation, and maintenance of HVAC systems in HCFs. In general, these requirements are more stringent than those applied to non-health care facilities.

Note: *See Annex A for general guidelines on HVAC system design. Table 1 provides specific design parameters for HVAC systems.*

1.2

This Standard

a) specifies minimum values for certain parameters;
b) establishes the suitability of different design options;
c) establishes recommendations for zoning, controls, and monitoring; and
d) outlines best practice for energy conservation.

1.3

This Standard is not intended to preclude the use of design concepts and the adoption of installation, operations, and maintenance procedures more stringent than those specified in this Standard. In cases where clinical evidence supports additional measures to improve the safety and efficacy of HCFs, such additional measures should be considered in the design, installation commissioning, operation, and maintenance of the HVAC system.