

Use of Plenum Boxes

The current CSA Z317.13-22 Guidelines for 'Infection control during construction, renovation, and maintenance of healthcare facilities' stipulate that construction air may be exhausted using one of the following methods, listed in order of preference:

- 1.1. Exhaust HEPA filtered air directly outside of the facility and away from intake vents (i.e. the gold standard)
- 1.2. Exhaust air may be temporarily ducted to the building exhaust system provided approval is given by a qualified engineer and the multi-disciplinary project team (MDT) (CSA Z317.13-22 Section 7.3.3.6.2)
- 1.3. Air may be recirculated into areas of the building occupied by Risk Group one or two if acceptable to the MDT (CSA Z317.13-22 Section 6.6.1.7)

Although the CSA Z317.13-22 provides several options for exhausting construction air, numerous healthcare facilities throughout the province have found consistently meeting these guidelines both logistically and financially restrictive. Challenges are most often identified within "high risk" areas located within the building core (e.g. operating rooms, medical device reprocessing) where air cannot be exhausted directly outside, or temporarily ducted into the building exhaust system. Air filtration boxes, commonly referred to as plenum boxes, have been identified as an alternate strategy for venting air from construction spaces when implementation of CSA recommendations is not considered feasible by the MDT. Deviations from the guidelines are not necessarily endorsed by CSA; however, the CSA does acknowledge that the MDT may need to consider alternatives to the standard IPAC preventative measures when all other options have been thoroughly explored and deemed unachievable. CSA has been approached about the endorsement of plenum boxes, however, are not actively pursuing inclusion in the guidelines at this time due to the absence of a clearly defined certification program.

Simply described, Plenum boxes are a rigid box, made of a non-porous, wipeable material able to withstand hospital grade disinfectants. The box has an air intake port, which receives HEPA filtered air from the construction Air Handling Unit (CAHU) via ducting, as well as HEPA filtered discharge port(s) to release air into the surrounding environment. The intent of the plenum box is to baffle the air discharged from the CAHU, reducing the channeled air from turbulent to laminar airflow, while also providing additional HEPA filtration.

The use of plenum boxes may be considered, as a last resort, when all the following parameters have been met:

1. Use of the plenum box to exhaust from the construction zone would only be utilized as a last resort when all other options outlined in the CSA Z317.13-22 have been deemed unachievable and has been documented and agreed upon by the MDT.

2. Material used in the construction of plenum boxes shall be easy to clean and disinfect (i.e. smooth and non-porous) and able to withstand frequent disinfection with hospital grade cleaning and disinfection products. Ease of filter changes are to be considered in design, and the box is to be cleaned and disinfected between every use.
3. The following are additional recommended minimum requirements for plenum boxes:
 - a. If a plenum box is deemed to be the venting solution for a specific project, the design and placement shall be in accordance with the requirements and design of the engineer of record.
 - b. Calculations by HVAC Engineer to dampen turbulent air depending on the size of the CAHU, or series of CAHs to avoid filter breakthrough.
 - i. Must have a means of detecting filter overload, filter efficiency and leak testing according to applicable engineering standards and standards set out in CSA 217.13-22 guidelines set out for CAHUs.
 - c. Plenum box shall be visually inspected daily, and their condition documented.
 - d. A documented process for changing of the HEPA filter – Similar to that of the CAHU.
 - i. Storage and maintenance for the plenum box shall be in accordance with the CSA Z317.13-22 guidelines set out for CAHUs.

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Interior Health would like to recognize and acknowledge the traditional, ancestral, and unceded territories of the Dākelh Dené, Ktunaxa, Nlaka'pamux, Secwépemc, St'át'imc, syilx, and Tšilhqot'in Nations where we live, learn, collaborate, and work together.