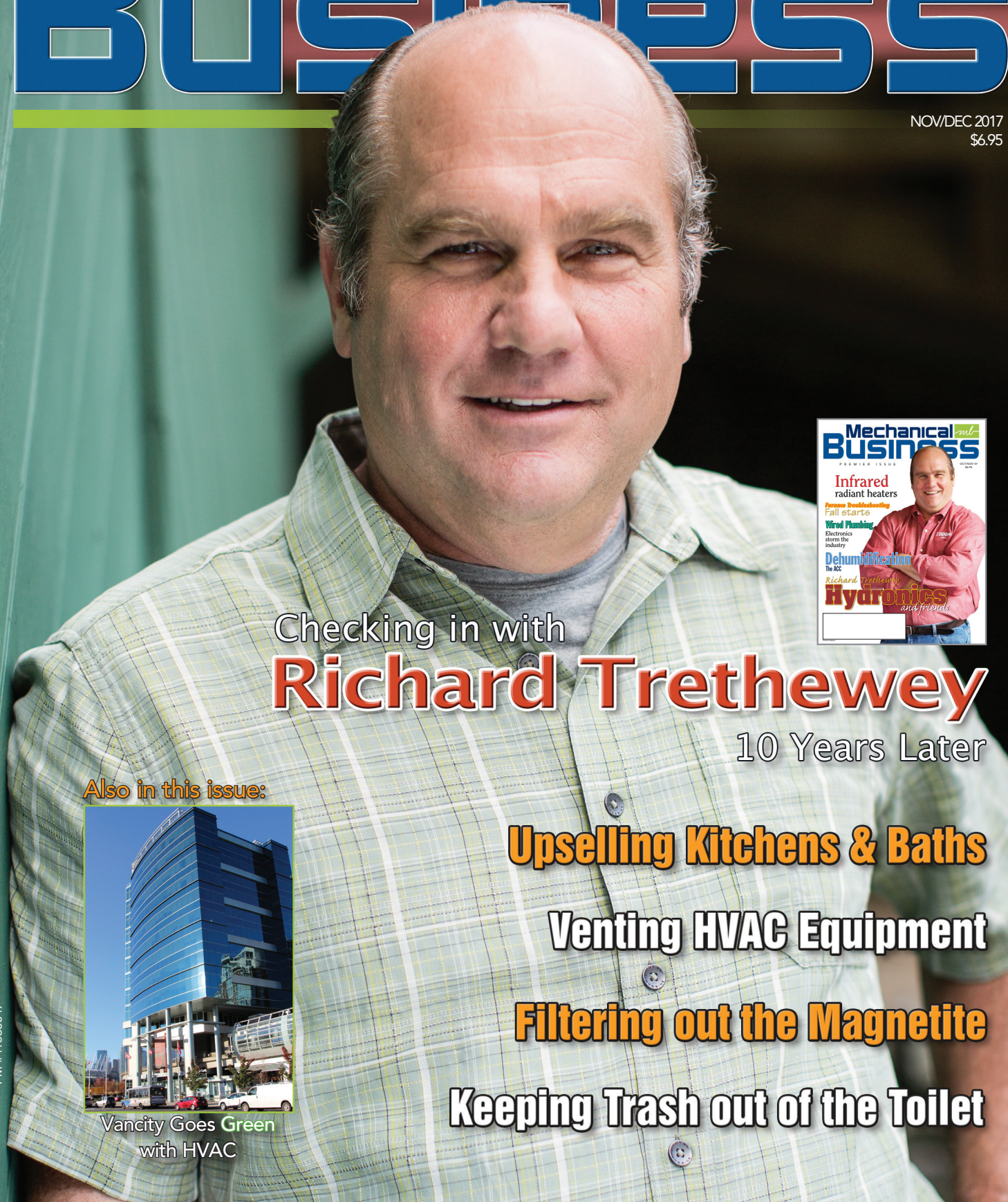


# Mechanical BUSINESS

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Checking in with  
**Richard Trethewey**  
10 Years Later



Also in this issue:



Vancity Goes Green  
with HVAC

**Upselling Kitchens & Baths**

**Venting HVAC Equipment**

**Filtering out the Magnetite**

**Keeping Trash out of the Toilet**

PM #41536047



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# VENT it RIGHT

## LOOKING up the CHIMNEY

Older furnaces were generally natural draft appliances, and were often installed toward the central areas of homes. With so many homes featuring finished basements, retrofitting with direct venting may present a challenge to the finished spaces. It may be impossible to avoid disrupting existing walls and ceilings, unless you are able to determine that using a dormant chimney is a viable option.

Where the use of a dormant masonry chimney is an option, it can be used to exhaust flue gas in a vertical elevation. The vent pipe must be sized as per the appliance manufacturer's installation instructions, and installed as per the vent pipe manufacturer's installation guide.

Fresh air intakes may also be installed within existing unused chimney spaces providing acceptable spacing and clearance is obtained at the termination, as per the appliance manufacturer's requirements.

With the cold weather of winter upon us, certainly some of those old mid-efficiency furnaces that customers have been pleading with you to keep running for "one last season" have decided that this will in fact be their final season, meaning a mid-season replacement project for you.

Eying up a new high-efficiency furnace offering greater efficiency and comfort to your customers is not without its challenges. However, venting should be one of the first considerations on your checklist as you work through updating their HVAC system.



### Pro Tip

Consideration should be given to obtaining an air-tight or water-tight seal as required at the chimney exit to prevent entry of water, snow, moisture or cold air.



## Hit the BOOKS

There are two primary sources of information that will prove invaluable when it comes to changing out a furnace. The first is the latest version of the CAN/CSA B149.1 Natural gas and propane installation code. This document, like all other codes and standards, is revised from time-to-time, and you need to be using the most recent edition.

It contains information that is intended to provide for safe, reliable and high-quality installations, as well as information about the placement and spacing of vent termination.

The other document to review is the installation manual that comes with the brand and model of appliance being installed. The manual will contain guidance for sizing of the vent line. This will be based on the actual length of venting required, plus an additional length accounting for friction losses in any 45- or 90-degree bends in the line. The longer the total length, the larger the vent size must be.

The installation guide, along with proper training from the vent system manufacturer on the proper installation of their product, can help ensure that you successfully install the venting for the appliance.



# Compliance in Canada

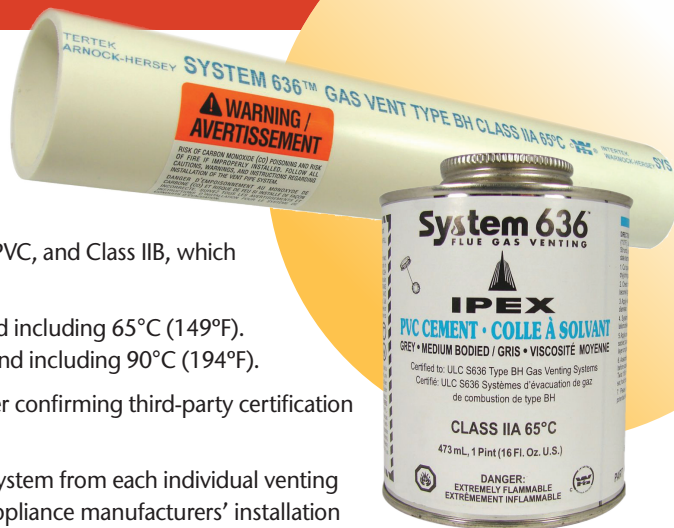
Venting systems for furnaces in Canada must be ULC S636 compliant. The furnace manufacturer will specify which category of S636 venting is allowed for their appliance. The two most common categories for residential furnaces are Class IIA, which uses ULC S636 PVC, and Class IIB, which uses ULC S636 CPVC.

ULC S636 PVC venting systems are suitable for temperatures up to and including 65°C (149°F). ULC S636 CPVC venting systems are suitable for temperatures up to and including 90°C (194°F).

For a system to be compliant, piping and fittings must contain a sticker confirming third-party certification to ULC S636.

Products need to be installed as they were tested and certified – as a system from each individual venting manufacturer. PVC and CPVC material may be combined as per the appliance manufacturers’ installation instructions, or as long as the installation is being upgraded from a PVC minimum requirement to CPVC. However, the ULC S636 standard does not permit mixing of product from different manufacturers.

This also means that only the certified primer and solvent cement provided by the venting system manufacturer may be used to solvent weld joints of each brand of vent pipe and fittings. The vent pipe manufacturer’s installation guide for solvent welding must be strictly followed to ensure joint integrity at all times and to avoid possible failures.



## Calculate the heating load

When replacing older HVAC equipment, the first step is to start with a load calculation, or heat loss calc. Once you know the BTUH requirements of the building, which may be considerably different from the load that the old equipment was (likely improperly) sized for, you can decide on an appropriately sized furnace. This may result in a considerably smaller furnace than what was previously installed. This could be the result of gains in furnace efficiencies over the past 20 to 40 years, or because of changes in how heating loads are now calculated.

### Did you know?

To ensure safe and reliable installations, always review the appliance manufacturer’s installation instructions and vent system manufacturer’s installation guide along with your local building code requirements.

## VENTING best practices

Venting should always be as direct as possible, with a minimum number of fittings. The maximum vertical rise or horizontal run of vent pipe in a single vent installation will be in the vent pipe manufacturer’s installation guide, and these should never be exceeded.

To ensure a solid solvent weld, the pipe must be cut square. A diagonal cut will reduce the fusing area in the most critical area of the joint.

After cutting, be sure to remove all burrs from both the inside and outside of the pipe with de-burring tool.

Failure to remove burrs can scrape channels into pre-softened surfaces, create hang-ups inside surface walls, or inadvertently plow cement out of the joint during assembly.

Any shavings remaining in the line after cutting will adversely affect the operation of the appliance, especially for the combustion air intake line.

The runs of intake and exhaust pipes for terminations through a side wall or a roof should be installed with minimum clearances to not allow the re-circulation of exhaust fumes. Consult the appliance manufacturer’s and vent system manufacturer’s installation guide.

Combustion air intakes should not be located within six feet of a dryer vent outlet hood, or the inlet or outlet of another appliance. The exit points of gas venting pipe must be more than three feet from an opening into another building, and snow height must be considered as well. Venting should terminate one foot higher than the average snow accumulation. To ensure safe and reliable installations, always review the appliance manufacturer’s installation instructions and vent system manufacturer’s installation guide along with your local building code requirements.

All horizontal sections of the venting system must be installed with a slope not less than a quarter-inch per foot down towards the appliance. This will allow for the collection and removal of the condensate generated inside the line.

