



# Delivering comfort, with steam

Allen Haybarger is the president Canadian General Filters, Inc. He can be reached at [ahaybarger@cgfproducts.com](mailto:ahaybarger@cgfproducts.com).

Adding humidity to a home can vastly improve the health and comfort of inhabitants, and protect the home and contents from damage.

The dry air that accompanies winter can cause a variety of health issues, from dry skin, dry sinuses, and increased allergy and asthma symptoms to increased bouts of cold and flu.

It's also a time when a home can suffer. Dry air can cause cracks in expensive woodwork and drywall; chips in paint; damage to expensive artwork and musical instruments; and those annoying static shocks that can not only sting, but damage electronic equipment.

Homeowners do not have to suffer these effects. Fortunately, there are solutions, and steam technology is one of the most effective and clean ways of adding this humidification. Of course, as with any product, it pays to do your homework ahead of time to ensure a successful installation the first time.



## Approaching the homeowner

### Ask questions:

- Do you suffer from dry skin or dry sinuses in the winter?
- Does anyone in the home have allergies or asthma?
- Does your woodwork or drywall crack in the winter?

The role of an HVAC contractor has changed a great deal in recent years. Beyond looking at the HVAC system, homeowners look to you as an indoor air quality (IAQ) consultant, ready to discuss additional components that improve their comfort and health. With fall and winter on the horizon, now is the time to re-acquaint yourself with the benefits of humidification, and how to approach the discussion with homeowners.

Be observant. Look for cracks in woodwork. If a homeowner seems to blow their nose while you are there, or sneezes often, ask if they have allergies, and then talk about what a humidifier can do for them.

Share with them the fact that, for ideal health and comfort, the indoor relative humidity range should be somewhere between 40 to 60 per cent. Above or below that range can compromise health and comfort.

# Whole house vs room units

When dryness is experienced in a home, folks often purchase a room humidifier, but these are quite ineffective in remedying the issues. They also require regular filling and cleaning, can be noisy, and they take up valuable living space. Worse yet, they don't treat the whole house, so homeowners could end up with multiple units throughout their living areas.

There are a number of options for whole-house humidification, but steam humidifiers can be an attractive solution. They work automatically to regulate humidity levels, require little maintenance and are nicely out of sight.

Steam units work particularly well with larger homes, and offer clean humidification. Unlike evaporative models, they can provide humidification without requiring furnace activity.

Steam humidifiers can be a bit more expensive to install and maintain, but many homeowners feel the advantage of not having to run the furnace outweighs the additional upfront cost.



## Test the water!

An essential step in considering steam humidification is to test the water for conductivity. This is easily performed using a water tester that measures the microSiemens level. Water is measured in microSiemens per centimeter ( $\mu\text{S}/\text{cm}$ ). For a steam humidifier to work, the water test result should fall into the following ranges:

- ▶ 125 to 400  $\mu\text{S}/\text{cm}$  requires a low-conductivity (LC) cylinder
- ▶ 401 to 1,250  $\mu\text{S}/\text{cm}$  requires a regular cylinder

If the water conductivity is 125 to 400, select a low-conductivity model. If above 400, select a regular conductivity model. Most steam humidifiers offer a range up to 35 GPD, in regular and low-conductivity models. In order to get to 35 GPD you may require a unit that runs on 230V, which might require an upgrade to the electrical service.

Since steam humidifiers require conductive water conditions, do not use treated or softened water. And do not use water containing corrosion inhibitors, or any chemically or biologically contaminated water. And finally, do not use a hot water supply.

## How does steam humidification work?

Steam humidifiers use electrode or element technology that heats and evaporates water to generate the humidity for a residence. Electrode technology uses a pair of electrodes inside a cylinder which pass electricity between them to heat and evaporate the water. Passing electricity between electrodes requires water "conductivity." This is provided by sediment in the water through which the electricity travels.

Steam humidifiers aim to optimize cylinder life by minimizing the amount of water inside the cylinder, while at the same time maintaining humidity levels. Over time, sediment will collect on the electrodes, reducing conductivity. When the electrodes are fully covered, it's time to change the cylinder.



## How much humidity is needed?

A positive experience for the homeowner is easy if you perform the necessary steps prior to installation. First, determine Gallons Per Day (GPD). Each home requires a minimum GPD to reach and maintain desired humidity levels. To determine the specific GPD needed for a home, use the following calculation:

1. Calculate the total cubic feet of the home, including the basement.  
(Total Home Square Footage X Average Ceiling Height)
2. Calculate the load.  
(Total Cubic Feet X Desired Condition Factor) X 1.05 For Each Fireplace
3. Calculate gallons per day.  
Gallons Per Day = Load (lb./hr) X 2.88

Looking at an example of a 3,000-sq. ft. home with 8-foot ceilings and a fireplace, we see that we have 24,000 cubic feet. By multiplying the desired condition factor for 40% RH, and including the fireplace factor, we find the load to be 5.04 (24,000 X 0.00020 X 1.05 = 5.04). If we multiply by 2.88, we get a GPD of 14.52 to maintain humidity levels in this home.

Several manufacturers offer online humidity calculators that automatically calculate the steps above for you.

Condition Factor Chart

Indoor Air Temp °F	Indoor RH%			
	35%	40%	45%	50%
68	0.00015	0.00018	0.00021	0.00024
70	0.00017	0.00020	0.00023	0.00026
72	0.00019	0.00022	0.00025	0.00028