



Fantech Solution for Meeting IRC M1503.4 Earns Favor in Pacific Northwest

Some mechanical contractors are willing to sidestep a few building codes in order to keep a builder happy and on budget. Bob's Heating and Air Conditioning is not one of them, especially when the code impacts homeowner safety. That's why the Washington state contractor has made meeting the newly adopted IRC M1503.4 a priority, even though it hasn't always been easy.



IRC M1503.4 makes it imperative that homes with kitchen exhaust fans capable of exhausting 400 CFM or more be equipped with make-up air systems that replace the exhausted air. Specifically the Code states:

Exhaust hood systems capable of exhausting in excess of 400 cubic feet per minute (0.19 m³/s) shall be provided with makeup air at a rate approximately equal to the exhaust air rate. Such makeup air systems shall be equipped with a means of closure and shall be automatically controlled to start and operate simultaneously with the exhaust system.

It's an extra expense, which homebuilders regretfully have to pass onto homeowners, but it's one that could also save lives. Without a make-up air system,

operation of high volume kitchen fans (common in homes today) can create a negative pressure and cause "back-drafting" of hazardous combustion products from vent/chimney systems, including carbon monoxide into the living spaces.

Doug Quinn, General Manager of Bob's Heating, is well aware of the fact that not all jurisdictions in Washington state are up-to-speed on the code and the absence of a make-up air systems often gets overlooked by the code official – either knowingly or unknowingly. According to Quinn, that's no excuse for the omission.

"We do work in just about every jurisdiction up and down the Puget sound region. Just because one jurisdiction is overlooking the requirements doesn't give us the right to overlook it. The whole idea of that code requirement is health and safety," said Quinn.

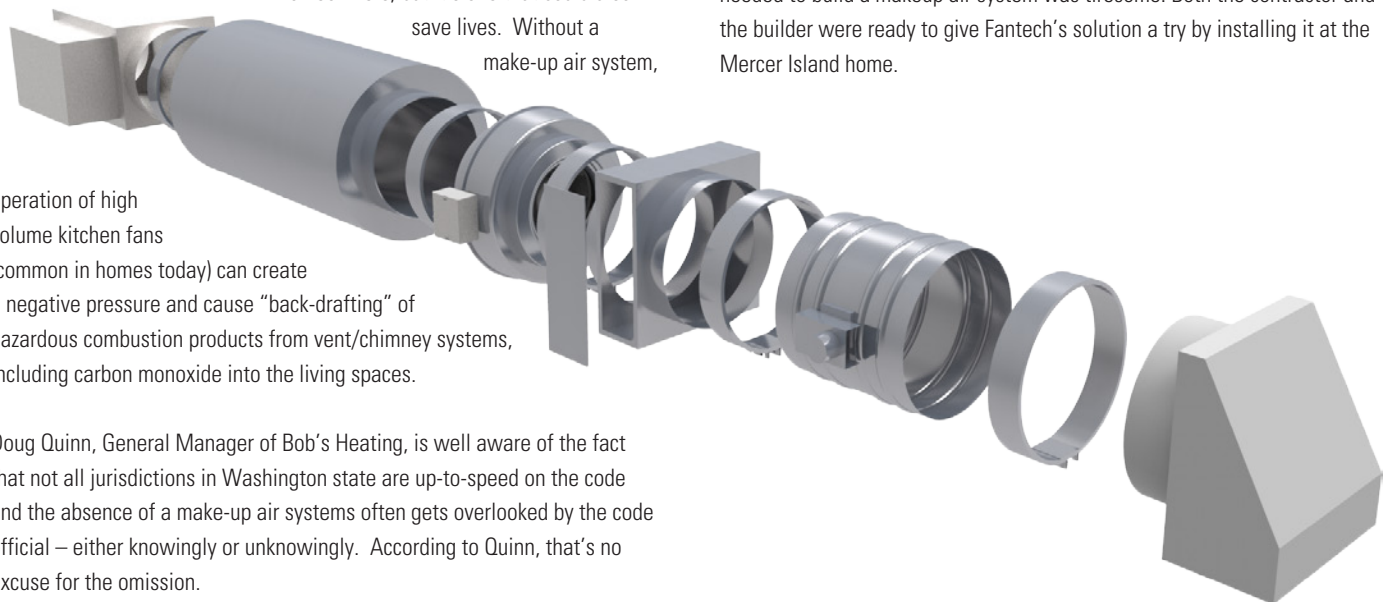
It's a point that that Bob's Heating and JayMarc Homes, a builder of fine homes in the greater Seattle area agree on.

"Not many homeowners understand what [the Code] is for, but as the builder we understand and we try to explain the purpose and the benefits to the homeowners," said Jeremy DeBoer, site supervisor for JayMarc Homes.

DeBoer worked with Bob's Heating on the mechanical HVAC installation at a new spec home on 90th Ave in Mercer Island. Like many homes on the island, the home had a commercial-sized range and exhaust fan. In the past, Bob's Heating had always designed and built the make-up air system from individual sourced components. It was tedious and time consuming. But the contractor and the builder decided to try something new on this Mercer Island home: A fully packaged exhaust makeup air system by Fantech.

A Truly Balanced Make-up Air Solution

Bob's Heating had been searching for an alternative solution for meeting IRC M1503.4. Sourcing the components (fan, heating coil, controls, sensors, etc.) needed to build a makeup air system was tiresome. Both the contractor and the builder were ready to give Fantech's solution a try by installing it at the Mercer Island home.



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How the Fantech Makeup Air System works

Fantech's makeup air system goes into action as soon as the kitchen exhaust fan is activated and is only energized during fan operation. The control package includes a transducer that measures the current that the exhaust fan is drawing and uses that information to regulate the volume of make-up air. So no matter how much air the kitchen hood is exhausting, the makeup air system is bringing in the exact same amount of fresh air.

This air can be delivered into the kitchen near the exhaust appliance or it can be ducted into the return air duct of a forced air/ heating system located elsewhere in the home. The inline duct heater and shut-off damper are also controlled by the Fantech control. The heater tempers the make-up air as needed during the heating season.

During the set-up procedure, the installing contractor follows a few simple steps that "teach" the control system what current is associated with the minimum and maximum exhaust speed on the kitchen fan. Once the controller has this information, all future operation will be based on some percentage of that range, but always in exact concert with the exhaust fan itself.

This set-up provides for a completely balanced air pressure inside the home during operation of the exhaust fan. This is the recommended mode of operation. However, some builders may prefer a slightly positive or slightly negative pressure inside the home – sometimes as a means to minimize migration of moisture through the walls of a home. The Fantech make-up air solution can accommodate these operational preferences as well.

The Fantech system is modular, so it can easily be easily configured to fit the layout of any home. In the case of Mercer Island, the primary components (makeup air fan, duct silencer, inline duct heater, etc.) were located in the garage. The supply air duct was installed above the ceiling so that makeup air would be supplied into a large 3 story-foyer where the grill would be obscure. The system is quiet and it's automatic, operating only as needed whenever the variable speed kitchen fan is exhausting air.

Countrywide Game Changer for Meeting Code

HVAC contractors across the country have been on the lookout for a solution like the Fantech air system, according to Curt Kanemasu of Cascade Products, Inc., a HVAC/R manufacturers representative in Washington and several other northwestern states.

"Contractors have been asking us for something that would help them meet the make-up air code ever since it started being enforced in the Seattle area," said Kanemasu, who helped coordinate the first applications of the Fantech system. "Now contractors all across the country are in the same position because the code is starting to take hold every where."

Doug Quinn, who would rather his firm spend its time installing equipment rather than sourcing components, was impressed with the product's overall capability and how easy it was to install at the Mercer Island home.

"I'm not aware of any other exhaust make-up air solution that allows the flexibility to automatically adjust the makeup air CFM and preheat the incoming air. The installation went pretty darn well so we are encouraged."

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