

Don't Risk Litigation

to get Quick and Easy Energy Savings



By Jeff Truman, PEng
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A TWO-YEAR payback – guaranteed. Tempting, isn't it? After all, what's to lose? How about increased poor indoor air quality, increased comfort complaints and potential lawsuits?

If you're still tempted, be very careful. That's our warning. Condominium managers are more and more often calling experts in to deal with well-intentioned energy saving projects that have not delivered the anticipated savings, or have created issues with building performance.

The answer, we have found, is usually in a cross-discipline approach where experts apply their building

science, structural engineering and property management expertise to present a balanced approach – one that can still deliver justifiable energy savings and a lower lifecycle cost of building operation – while taking care of fresh air requirements, related safety issues and occupant comfort needs.

■ Where the Risks are Greatest

Reducing the cost of providing makeup air by installing variable speed drives (known as VSD or VFD) is a typically attractive energy savings offer – usually made by the vendor of a particular technology.

In our opinion this is good technology that is often an effective solution, but only if the installation takes place in conjunction with a look at other factors. Most important is a review of how lower volume air supply will impact the overall stack effect of the building, air and smoke movement (during a fire), fresh air supply to individual suites and the consequent potential for serious, even legal complaints.

Installing such a measure without first auditing the overall air leakage performance of the building envelope will likely compromise your ability to guarantee minimum air supply to suites. It is also critical to ensure that the makeup air units themselves are capable of operating properly with a VSD/VFD system without compromising its safety or life span.

Designers think they can compartmentalize a building sufficiently to control airflow. This rarely happens in the real world of construction. In our experience as air sealing contractors, we often have to come in after the fact and retrofit and seal penetrations, doorways, elevator shafts and stairwells to achieve the compartmentalization and decoupling of floors where the designers failed.

Any HVAC system depends on the building envelope to achieve the balance that allows it to work cost-effectively and efficiently. If a building envelope is too leaky it increases stack effect and puts pressure on the makeup system. The fan units, typically on the roof, blow air down to the first floor and much of it is lost

on the way down. Meanwhile, stack effect is causing air to be sucked in through leaks at the bottom of the building. HVAC systems cannot balance that. At the top, stack effect means that makeup air system cannot provide enough.

Pressurizing corridors with supply air is a typical way to provide fresh air to suites. Highrise buildings require corridor pressurization as a safety measure in the event of a fire – designed to keep smoke from one suite from filling up the corridor and entering other suites and endangering lives. Depending on how the building was designed in the first place, it may not be a safety issue. It's still critical that you check first.

■ Build Tight; Ventilate Right

A word of caution. A tight building envelope delivers many benefits – greater comfort, more effective HVAC, lower energy bills – all of them delivered by the reduction of uncontrolled air leakage. This does not remove the need for proper ventilation to create a safe and healthy

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indoor environment. The pressurization of the corridor results in pressurization of the suites. ASHRAE standards require exhaust ventilation in kitchens and bathrooms to provide fresh air to maintain occupant comfort and health. This also helps draw in makeup air and expels damaging moisture and humidity. Good HVAC design creates a net outward pressure across the building envelope. This limits air infiltration, and associated moisture ingress.

Jeff Truman is working on a building with seriously leaky windows. It's a renovated loft building where they intend to install variable speed drives on the makeup air. They have cold complaints on the windward side and warm complaints on the leeward side – all caused by uncontrolled air leakage – which can't be solved until the exterior envelope and interior partitions are sealed.

Canam is about to start work on air sealing a Toronto condominium that is only two years old. Major condensation problems, including an inch of ice on the windows have already led one owner to threaten

a lawsuit. One consultant recommended cutting holes in the building to check the construction, but together Jeff and I took a holistic look at the building by mapping out the suites with problems and identifying airflows. Again, we found that windows were not tight, the corridor doors were too tight and that there was not enough makeup air on the top floor. We also found that occupants in some areas were home all day with their pets – causing excess humidity. Now that the management team understands the location and cause of the airflow problems, the experts have been able to create an air sealing and ventilation plan that will allow the makeup air system to do its job. ■

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Energy Retrofits Yield Tangible Savings

Today, condominiums are faced with rising common element fees, with utilities being number one, hence buildings are now taking a holistic energy savings review – where all aspects of a building have to be taken into account to achieve the desired improvements – Peel Condominium Corporation No. 260 on 8 Lisa Street in Brampton is a positive example.

Says property manager Leonora Frangella, RCM, "Our major energy retrofit on this 221-suite, 25-year-plus building was completed a year or so ago. Our utility costs were increasing, equipment was getting older, and we were getting a lot of complaints about comfort. When we investigated the option to replace the windows, we were shocked at what the cost would be. In consultation with our energy consulting firm (Terra Energy Management), we were excited at the recommendation that we could repair the windows at a fraction of the cost, which would provide us with a 7-year extension of life for the existing units. The repair would include, but not be limited to, extensive re-weather stripping.

"We were recommended to use Canam Building Envelope Specialists of Mississauga for window repair in all the suites and the other building envelope upgrades, including weather stripping and air sealing of common area doors, corridor doors, rooftop and shared facilities. During the work, we probably got zero complaints from the residents."

