

# teca News



## MESSAGE FROM THE PRESIDENT

Happy 2011!

A new year brings new work to TECA. Your Executive continues to push TECA to new heights with regards to training programs, new initiatives and value for your membership.

The CHT continues to move forward and it won't be long before this receives recognition by municipalities. Don't get caught without CHT certification or you may be limited in the municipalities you can work in. If you have been in the industry and have Quality First™ training, now is the time to take advantage of the transition challenge options. Details can be found on our website under the CHT tab. At minimum, find out what you need to upgrade to the CHT.

In my September message, I outlined four items that I wanted to accomplish in my term as your President so I thought that I would update you on my progress.

- 1** Grow membership by 10%: year over year at December 31 we have grown by 6% ;
- 2** Meeting outside of the Lower Mainland: we're coming to Victoria in April. Visit our website in March for information and to register.;
- 3** CHT acceptance: still a work in progress but we are getting closer;
- 4** TECA meetings: attendance is on the rise, December meeting 45 attendees/ October meeting 40 attendees.

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Quality First™ is TECA's respected brand of Forced Air, Hydronics, Ventilation and Principles of Airflow (Basics of Air) training courses, manuals and software. Our courses also form the foundation of the new provincially accredited Certified Heating Technician training program. For course descriptions, ordering manuals and registration forms, schedules and other information, please visit our website: [www.teca.ca](http://www.teca.ca) ■

Advertisements contained within *tecaNews* do not necessarily reflect the views of the association.



Dear TECA:

My name is Jeff and I am an employee of a heating company on Vancouver Island. We have been a member of TECA since 2004 and have benefited from the training you provide to improve the industry as a whole. We have been successful over the years in our bid to put out the best quality product we can. We try to educate anyone who will listen to us about proper installation and design and warn them against the pitfalls shortcuts and bad workmanship. I would be lying to you if I said it has been easy, it has not been easy. It has been a struggle and it continues to be. We lose more jobs than we close and it's not all because of price. Most jobs are lost because a customer doesn't believe you when you are the only contractor out of three or four bids providing equipment smaller than the rest. Even when you provide the design paper work, answer all the "why's" and provide the proof, sometimes, often, you can still lose the job.

I have some questions for the association:

- 1 What is going on in the industry today that will improve it in the future with regard to regulation in the HVAC industry?
- 2 What can TECA do about companies that are members of this association but do not abide by the code of conduct?
- 3 Is TECA working on providing education to the home builder or general contractor about what we in HVAC industry are trying to do and why?

I understand the fine line of a not for profit organization and the need of membership dollars to keep the doors open. The reason I ask is because I know companies who I compete with are TECA members and still do it "the old school" way.

We need general contractors to trust us, trust the people we train. They should be looking for certification. I bring this point up as I am in battle right now to gain the confidence of a general contractor.

Here is my example:

The guy builds a quality product and has been around a long time. He given us a crack at a renovation and a new construction project. On the reno project, once again of the four bids I am on the outside with 3.5-ton option with the others at 5-ton. We have asked him to go back a demand how the other justified their 5 ton option. Whether he did or not I don't know. I do know I have used TECA Quality First™ program for almost seven years and I am confident in my abilities to use it. We have not had one complaint in any new construction or reno project we have used it on.

**Editor**

Kim Savage, Executive Director, TECA

**Production**

Beyond Expectations Communication & Design Solutions  
info@beyondexpectations.ca

**Contributors to this issue include**

Andrew Dyck, Kathryn Fallis, LiveSmart, Terasen Gas, Collin Olsen, Paul W. Francisco, Brian Killins.

**New Copy and Advertising Deadlines**

April 10 • August 10 • December 10

**Advertising Rates** (also available online)

	TECA Member	Others
1/4 page	\$150	\$185
1/3 page	\$200	\$245
1/2 page	\$295	\$375
Full Page	\$585	\$750
Spot colour 1/2 page	\$345	\$455
Spot colour full page	\$720	\$900
Spot colour cover	\$800	\$1000

**teca 2010/2011 Board of Directors**

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- Gina Lego ..... Terasen Gas

I also know for a fact the other three bidding companies are TECA members. The general contractor even had a third party retired general contractor look at the project and he sided with the 5-ton application. I told the general contractor that I knew exactly how he came that conclusion and said he divided the square footage by 750 and he came up with five tons. The general contractor had no comment and I further told him that is how the others did it as

continued on page 3



## NOTES FROM THE OFFICE

## Membership Renewals

Membership renewals were sent to over 350 of our members at the beginning of December and thank you to the majority who have renewed promptly. If you have not had a chance to renew your membership, you may do so conveniently on our home page at [www.teca.ca](http://www.teca.ca). "Membership Renewal". Not a member of TECA and would like to become one? Please visit our web site and click on "Become a Member". There are many perks to membership and these continue to grow. You will receive a membership certificate package containing the 2011 login information to the "Members Only" section of our web site. If you have not had a chance to view this section of TECA's site, a wealth of information can be found in our audio and presentation folders as many of our speaker meetings have been taped for your perusal!

## TECA's Monthly Member Meetings

Mark Your Calendar - TECA's monthly Member meetings are not to be missed! Come out and enjoy dinner, network, benefit from a great speaker presentation and learn something new. We are excited to announce that we are bringing our April member meeting to the Victoria area of Vancouver Island where Bob Thompson, Sr. Codes Administrator for the Province of BC will be our guest speaker. For further information on meeting dates and guest speakers please visit page 10 of this edition of TECA News.

## Annual General Meeting & 3rd Annual Golf Tournament

TECA is hosting its 3rd annual golf tournament and AGM on May 31st at Redwoods Golf Course in Langley. We hope that you will be able to join us for this fun networking event. Registration forms will be forwarded to our membership.

## Have you Moved?

If you are certified with TECA it is imperative that you notify our offices of any contact information changes. We need to keep in touch with you to ensure your certifications are renewed and to notify you when the building code goes through significant changes that warrant upgrade training ■

### News and Views (continued)

well. This is the crap that's out there. I am really frustrated and looking for answers. I am willing to work at improving the industry. I am a refrigeration journeyman, Gasfitter B, and 3rd class Power Engineer. I tackle every situation the same way and apply this simple motto "if you're not part of the solution, you're part of the

problem". I would like to become more involved with TECA on a committee or so some other means and trust that my trade association is tackling these issues head on ■

*See page 15 for the response from the Executive Director.*

## Contact TECA



Call TECA's Association Administrator, Kathryn Fallis, for Membership, Training & General Inquiries:

### Phone

BC TOLL-FREE 1-888-577-3818

DIRECT 604-594-5956

### Fax

BC TOLL-FREE FAX 1-888-577-3137

DIRECT 604-594-5091

### E-mail

[training@teca.ca](mailto:training@teca.ca)

or [office@teca.ca](mailto:office@teca.ca)

### Mail

TECA Office

PO Box 73105, Evergreen RO

Surrey, BC V3R 0J2

### Office Hours

9am-4pm, Tuesday to Friday

Please note: Office visits require an appointment.

### Executive Director

Kim Savage

PHONE 604-596-0595

E-MAIL [execdir@teca.ca](mailto:execdir@teca.ca)

[www.teca.ca](http://www.teca.ca)

Register now for  
Winter/Spring 2011 training.  
Schedules on pages 10 & 11.

**NOT A TECA Member?**  
and would like the opportunity to tap into the restricted area on our website where a wealth of knowledge is stored? Please visit our web site at [www.teca.ca](http://www.teca.ca) to become a member or contact the administration office. See above for contact information ■

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# \$200 Training Subsidy

## TECA Quality First™ \$200 Training Subsidy Available to New Students†

The LiveSmart BC: Efficiency Incentive Program, which is administered and funded through a partnership between the Ministry of Energy, BC Hydro Power Smart, Terasen Gas, and FortisBC Power Sense, is pleased to offer a \$200 subsidy toward the registration cost for new participants in the Quality First™ Forced Air Guidelines, Hydronics Design and Ventilation courses. The LiveSmart BC program and the partner utility companies understand the importance of advancing installation expertise for energy efficient HVAC systems in BC. The subsidy is being offered on a first come, first served basis, and will be available to at least 100 registrants.

The subsidy is part of a larger initiative by the utility partners and LiveSmart BC to work with

contractors and their professional organizations to provide training, information and assistance to make their jobs easier and help them prosper in the growing green economy.

Please contact TECA at [training@teca.ca](mailto:training@teca.ca) for more information or visit [www.teca.ca](http://www.teca.ca) for full details.

LiveSmart BC is a partnership between the Province of BC's Energy Efficiency Branch, BC Hydro's PowerSmart, Terasen Gas and FortisBC's PowerSense programs.

†Due to funding parameters, the subsidized spots will be divided on a per capita basis around the province to ensure equal access. Note that the subsidy is for NEW students ONLY. Renewals and expiries are not eligible to access this subsidy ■

## Terasen to Launch Province-wide Contractor Program

Terasen Gas is soon launching a new contractor program, available to all natural gas contractor companies registered with the British Columbia Safety Authority (BCSA). This program is actually an extension of the existing Qualified Dealer Program which has been running on Vancouver Island since 1992. Once the program expands to all Terasen Gas service territories, we encourage you to join and take advantage of benefits like co-op advertising, training, incentive offers and collateral materials.

Look for the registration packages to be sent out in Spring 2011.

TECA has been in consultation with Terasen on this program, and of benefit to TECA-trained contractors will be the ability to highlight and note Quality First™ training credentials.

Details about the new contractor program will be posted on the Terasen Gas website in the Spring. For more information about the current Qualified Dealer Program for Vancouver Island, visit [www.terasengas.com/QD](http://www.terasengas.com/QD) ■

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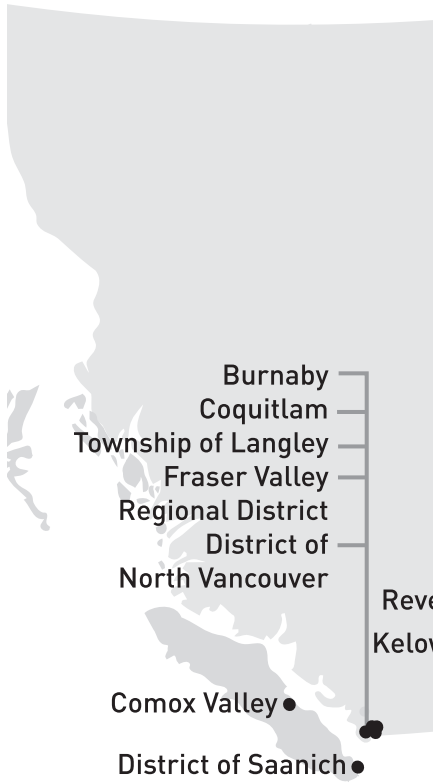
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## Quality **FIRST**™ REQUIRED



Municipalities & Cities that Require Quality First™ Paperwork

We are currently working on creating a list of municipalities and/or cities that require Quality First™ paperwork for one or more of hydronics, duct design, appliance selection and ventilation.

If you are aware of another jurisdiction that requires Quality First™, could you please advise the TECA administration office and we will follow-up to confirm.

To date we have the following areas on our list:

- Burnaby
- Coquitlam
- Township of Langley
- Fraser Valley Regional District
- Kelowna
- Comox Valley
- City of Rosland
- District of Saanich
- City of Revelstoke
- City of Nelson
- District of North Vancouver
- Regional District of Central Kootenay

## BITS & BITES FROM AROUND THE INDUSTRY



**CIPHEX WEST**  
November 3-4, 2010  
Calgary, Alberta

CIPHEX West attracted almost 3,000 industry delegates to the BMO Centre at Stampede Park on November 3-4. Attendants came from across Alberta as well as Saskatchewan, Manitoba, British Columbia, Nunavut and the Northwest Territories.



Exhibitors  
Andrew Dyck, President and  
Kathryn Fallis, Association Administrator  
TECA was awarded Honorary Sponsor

### Google Presentation

TECA was honoured to have three presenters from Google speak to our membership at our December meeting. Did you know that Google is so much more than just a search engine?

Are you taking advantage of what Google offers for small business? Do you feel (or are being constantly told) that you need to be online but don't really know what it means?

### Some useful Google links:

Practical, useful advice  
on writing ads that work:

[http://www.google.ca/adwords/  
smallbusinesscenter/](http://www.google.ca/adwords/smallbusinesscenter/)

Create a free listing in Google Places:

<http://googlesmb.blogspot.com/>

### Codes Released

2010 National Building Code of Canada, National Fire Code of Canada & National Plumbing Code of Canada Released

The 2010 editions of the following codes were released on Nov 29:

- National Building Code of Canada (NBC),
- National Fire Code of Canada (NFC)
- National Plumbing Code of Canada (NPC).

These codes are now available for purchase (printed formats, downloadable PDFs and online subscriptions). To order, please visit the NRC Virtual Store at:

[http://www.nrc-cnrc.gc.ca/eng/  
virtual-store/index.html](http://www.nrc-cnrc.gc.ca/eng/virtual-store/index.html)

### President's Message *(continued)*

Now, more than ever, it is very important to stay in touch with what is happening in your industry and TECA provides relevant and timely information through this newsletter and through our website. Remember to send in your renewal forms and attend our meetings to ensure that you have the latest information which will give you the edge as you work in this industry.

I hope that one of your New Year's resolutions was to attend at least one of our member meetings this year. For those of you that cannot attend, I hope that you take advantage of the ability to view the presentations on our website.

Recently, Kathryn and I worked in the TECA booth at the CIPHEX West show in Calgary. We signed up a couple of Alberta contractors during the show even though we do not operate in their province(yet), they were so impressed with our material that they wanted to learn more.

We received excellent feedback from many others and I was proud to be representing the efforts that have been put through by our many hardworking Board members.

Hope to see you at one of our upcoming meetings!

Respectfully

Andrew Dyck,  
President



REVIEW : SEASTACK SOFTWARE

TECA's Ventilation Committee: Graham Finch, David Hill, Terry Regier, Jason Rockson & Steve Savage

Every once in a while some really smart person writes a really simple useful piece of software. This is so simple even a Neanderthal like me can use it and learn from it. Yes, it's still great even though it only runs on Windows and not on my favourite new tool – the Mac. Collin Olsen from the Energy Conservatory - the Minneapolis Minnesota Blower Door people - has a winner here. He wrote the program for he and Paul Francisco's, University of Illinois, presentation at the 2003 Affordable Comfort Conference.

Why bother trying it out? For any of you who have taken Quality First™ Ventilation Guidelines, you may likely have those nagging questions that need answers. Cold chimney draft; positive and negative indoor pressures; affect of house height and outdoor temperature on uncontrolled air leakage both inside and out during the heating season. It even shows why floors get colder in three story houses compared to those of the same square footage built with only one floor. For example, did you know that a 50 cfm bath fan only 'exhausts' 27 cfm of heated air even when properly installed to exhaust 50 cfm?

Check out the software! We hope that you enjoy it, and like us, find your time well spent.

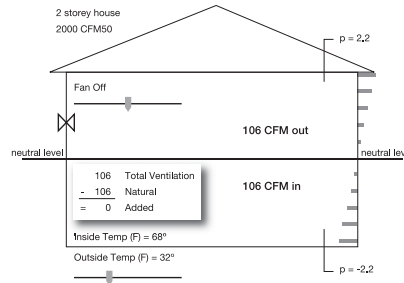
**Software Access**

On Teca.ca's website, under the "Members Only" section, you can download the very small 50KB program and enjoy at least 30 minutes of 'play'—varying house size, height, outdoor temperature, tightness, ventilation choices, exhaust vs. balanced (mechanically)—all the while learning about "House as a System."

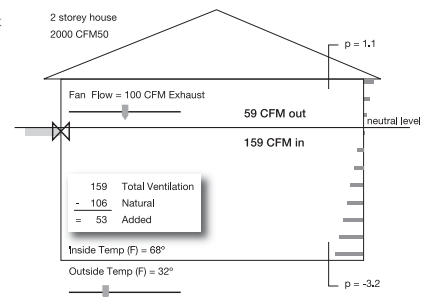
Please review the table 'keystrokes' to learn how to change the variables of the 'house' and see the effects.

*Software Credit*

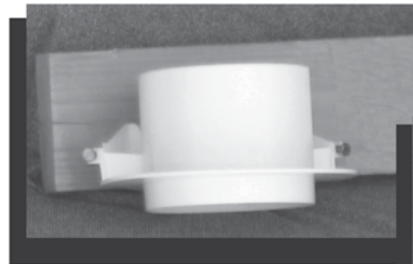
Primary Author: Collin Olsen | Co-Developer: Paul W. Francisco, School of Architecture, University of Illinois | Tech support: The Energy Conservatory, Minneapolis, Minnesota | Member of ASHRAE Standard's Committee 62.2 (Residential Ventilation) ■



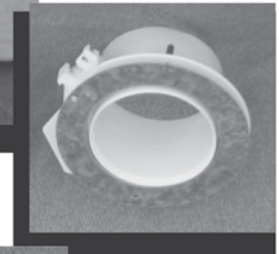
Sample diagrams created in SeaStack



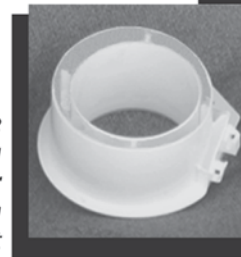
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## BC Building Code 2011

The TECA Ventilation Committee has been working with the advisory group of the BC Building Policy Branch. We have submitted a proposal which will be an upgrade from current minimums requiring continuous distributed ventilation.

TECA will be in touch with all of our current ventilation certificate holders on or before the draft has been adopted into the BC Building Code for 2011.

If you are a current ventilation holder and have moved, it is up to you to notify the TECA office of any contact information updates so that we can contact you with respect to any upgrade courses required ■



After two very successful golf tournaments TECA is looking for your help. We would like to set-up a golf committee and are looking for volunteers.

Mark Your Calendar for Tuesday, May 31 at Redwoods Golf Course.

If you are interested in helping out, please contact Kathryn Fallis, TECA's Association Administrator at [office@teca.ca](mailto:office@teca.ca) or call her at 604.594.5956.

## Canada's Energy Efficiency Regulations

# Higher Efficiency Requirements for Water Heaters

Bulletin on Developing Standards | June 2010  
Revised and New Regulations

The office of Energy Efficiency (OEE) of Natural Resources Canada (NRCAN) is proposing to amend Canada's Energy Efficiency Regulations (the Regulations) under which dealers in Canada would be required to comply with higher efficiency requirements for gas and oil water heaters and new reporting requirements for electric water heaters. For the first time in Canada, commercial water heaters and tankless water heaters will have minimum efficiency requirements. These proposed revisions would apply to water heaters that are imported or shipped across provincial boundaries for sale or lease in Canada.

The purpose of this document is to provide stakeholders with background information for meaningful consultation on the content of the new regulation before proceeding with pre-publication in the Canada Gazette. This bulletin attempts to address key issues

that may be raised. It is not intended to provide a definitive representation of the proposed regulation.

### Background

Water heating accounts for a large portion of residential and commercial energy use and has potential for significant energy and greenhouse gas (GHG) reductions.

NRCAN last updated the EE Regulations for electric and gas storage water heaters in 2004. At present in Canada, there are no energy efficiency regulations for commercial water heaters or for tankless gas water heaters.

Storage water heaters continue to dominate the market. Sales of residential water heaters in Canada are about one million per year, with approximately 80% as replacement and 20% going into new houses. Sales of commercial water heaters are about 21,000 per year

continued on page 11



**FEBRUARY**

SUN	MON	TUE	WED	THU	FRI	SAT
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28					



MEETING



COURSE



CONVENTION



GOLF TOURNAMENT

**FEBRUARY**

**Monday – Friday, February 7-11**  
*Quality First™ Hydronics Design Course*  
 BCIT  
 8:30 am – 3:15 pm

**Friday – Sunday, April 1-3**

*Quality First™ Forced Air Guidelines Course (Intensive)*  
 Kelowna  
 8:00 am – 4:30 pm

**MARCH**

SUN	MON	TUE	WED	THU	FRI	SAT
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27	28	29	30	31		

**MARCH**

**Thursday, March 3**  
*Member Meeting / Dinner*  
 Executive Plaza, Burnaby  
 5:30 pm  
 Guest Speaker TBA

**Saturday, April 2**

*Quality First™ Ventilation Guidelines Course*  
 Burnaby  
 8:30 am – 5:30 pm

**Thursday-Saturday, March 10-12**

*Quality First™ Forced Air Guidelines Course (Intensive)*  
 Langley  
 8:00 am – 4:30 pm

**Saturday, April 2**

*Quality First™ Ventilation Guidelines Course*  
 Victoria  
 8:30 am – 5:30 pm

**APRIL**

SUN	MON	TUE	WED	THU	FRI	SAT
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

**APRIL**

**Thursday, April 7**  
*Member Meeting / Dinner*  
 Victoria, Venue: TBA  
 4:30 pm  
 Guest Speaker: Bob Thompson, Sr.  
 Codes Administrator  
 Building & Safety Standards  
 Ministry of Public Safety & Solicitor  
 General, Province of British  
 Columbia

**Thursday & Saturday, April 14 & 16**

*Quality First™ Principles of Airflow (Basics of Air) Course*  
 Vernon  
 9:00 am – 4:30 pm

**Friday, April 15**

*Quality First™ Ventilation Guidelines Course*  
 Vernon  
 8:30 am – 5:30 pm

**MAY**

SUN	MON	TUE	WED	THU	FRI	SAT
1	2	3	4	5	6	7
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29	30	31				

**JUNE**

SUN	MON	TUE	WED	THU	FRI	SAT
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26	27	28	29	30		

**MAY**

**Monday & Thursday Evenings, May 2, 5, 9, 12, 16 & 19**  
*Quality First™ Forced Air Guidelines Course*  
 Burnaby  
 6:00 pm – 10:00 pm

**Thursday, May 5***Member Meeting / Dinner*

Executive Plaza, Burnaby

5:30 pm

Guest Speaker: Dave Pringle,

Ontor Limited

“Combustion Analysis” If you don’t test you don’t know.

**Saturday, May 7***Quality First™ Ventilation Guidelines Course*

Burnaby

8:30 am – 5:30 pm

**Saturday & Monday, May 7 & 9***Quality First™ Principles of Airflow (Basics of Air) Course*

Langley

9:00 am – 4:30 pm

**Friday – Sunday, May 13-15***Quality First™ Forced Air Guidelines Course (Intensive)*

Chemainus (Duncan)

8:00 am – 4:30 pm

**Tuesday, May 31***Golf Tournament &**Annual General Meeting*

Redwoods Golf Course, Langley

11:00 am tee-off

5:00 no-host reception

5:30 AGM

5:45 dinner

**JUNE****Saturday, June 18***Quality First™ Ventilation Guidelines Course*

Burnaby

8:30 am – 5:30 pm

**Higher Efficiency Requirements** (continued)

with about 13,000 gas storage water heaters and about 7000 electric storage water heaters. Commercial water heaters have larger storage capacity or greater energy inputs to meet greater hot water demands.

This bulletin outlines federal changes that are proposed for a variety of water heaters types. Some proposed changes coincide with future requirements in the United States.

This proposed amendment will have the greatest impact on the efficiency of gas water heaters, both residential and commercial. The efficiency of most residential fossil-fuel storage water heaters lies in the range of Energy Factor (EF) from 0.55 to 0.60. In 2008, the ENERGY STAR specification was introduced and this has led to increased number of higher efficiency storage models, up to EF 0.70 (non-condensing). Tankless gas water heaters with higher efficiency are making gains in the market, partly as a result of recent incentives and programs. Efficiency of most tankless models meets or exceeds EF 0.80 (non-condensing) and EF 0.90 (condensing). Most gas-fired commercial water heaters comply with the US minimum thermal efficiency of 80% and there are many condensing commercial storage models having TE or 92% and above.

NRCAN’s analyses show the proposed changes are economic over the life of the equipment.

**Product description**

For the purposes of the Regulations, water heaters include gas, propane, and oil-fired water heaters and electric water heaters. Storage and tankless (instantaneous) water heaters are included in this proposed amendment.

For all water heaters, the proposed amendment requires that CSA Plus 1200 be used as the methodology for reporting ratings (see table on page 18).

**Energy performance test procedures**

The test methods used to determine efficiency are:

- CSA P.3-04: “Testing Method for Measuring Energy Consumption and Determining Efficiencies of Gas-Fired Storage Water Heaters”
- CSA P.7-10: “Testing Method for Measuring Energy Loss of Gas-Fired Instantaneous Water Heaters”
- CSA C191-04: “Performance of Electric Storage Tank Water Heaters for Domestic Hot Water Service”
- CSA B211-00: “Energy Efficiency of Oil-Fired Storage Tank Water Heaters”

continued on page 18

Application Notes

# Zoning Variable Speed

The combination of zone damper systems and variable speed equipment are just the beginning of true energy efficiency for HVAC. Variable speed equipment is proven to save energy and can provide comfort advantage. However with only one central point of control, there is no ability to shut off unused rooms and contribute to inefficiency and energy waste. Yet zoning offers an energy-saving alternative: the ability to shut off rooms and only heat (or cool) the rooms being used or needing conditioning.

When designing the systems for HVAC, the ducts for each room

are sized based on the load and CFM requirements at design temperatures. The room can only be designed for one load at design conditions. However, how often is the system running at design temperature? Also there is no accounting for changing loads such as the amount of people, solar gains, shading etc. Zoning is the only way a system can automatically balance and compensate for constantly changing loads between rooms. Zoning provides the ability to divert air from less used zones or zones that temperature demands are already met to zones that need more conditioning.



## Same on the Outside – Better on the Inside!

Unico has taken their traditional air handler that for decades has enjoyed success in countless applications and made it a more intelligent, energy-efficient, and environmentally friendly unit. Features of the new Green Series such as the SCB (S.M.A.R.T. Control Board) and the new EC (Electronically Commutated) motor give Unico a Small-Duct High-Velocity air delivery system superior to any other in the industry.

The new **Unico System Green Series** air handlers, combined with the new S.M.A.R.T. Control Board and the new EC motor, will provide just the perfect amount of airflow whether cooling, heating or simply circulating air.

**Features:**

- Greater comfort in heating, cooling and circulation modes.
- Availability in both 120v and 240v
- Perfect solution for multiple zoning capabilities without by-pass dampers
- Greater efficiencies when paired with 2 stage condensers



### The new Unico System Green Series Small-Duct High-Velocity air-handler

The new **Green Series EC motor** is the heart of Unico's new air handler series. The variable-speed fan motor adjusts speed to provide a consistent flow of comfortable conditioned air with quiet operation.



The new **S.M.A.R.T. Control Board** is the brains of the new air handler series. Combined with the EC motor it provides the highest level of Indoor Comfort that a homeowner demands.



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While variable speed equipment can compensate for changing loads and design temperatures by switching to a lower stage and slowing the blower down, this still means air will go everywhere, and not only where it's needed.

The case for zoning variable speed equipment grows as homes and individual rooms become larger and the reduced airflow may not provide adequate circulation throughout the whole space. Even at design temperatures, zoning can still provide a level of comfort in a zone while still running on the first stage and lower blower speed as the load for the single zone more matches the equipment capacity at the first stage.

The amount of heating or cooling needed to condition a single zone is far less than the total capacity of the furnace and air conditioning. Heating or cooling a single zone or a any portion less than the full house even at design temperature can have the variable speed equipment working at a lower stage.

### Variable Speed Equipment

There are two type of variable speed equipment. The most common is the blower speeding up when the fan motor senses an increase in static pressure. The blower increases to ensure proper air flow through the unit to keep up the efficiency. This occurs when less than all of the zones call as dampers to zones not calling close. Closing off zones restricts the air only to

the open/calling zones. When the blower senses any restriction, its logic is to speed up to maintain CFM. Therefore a bypass is needed to take up the excess air and maintain the CFM required through the unit for maximum efficiency and to keep the system quiet. It is recommended that a motorized damper and static pressure switch be used to automatically respond to the changes in duct pressure more accurately than a barometric bypass. Barometric by-pass dampers are a very economical damper however do require some adjustment upon installation in order for proper function.

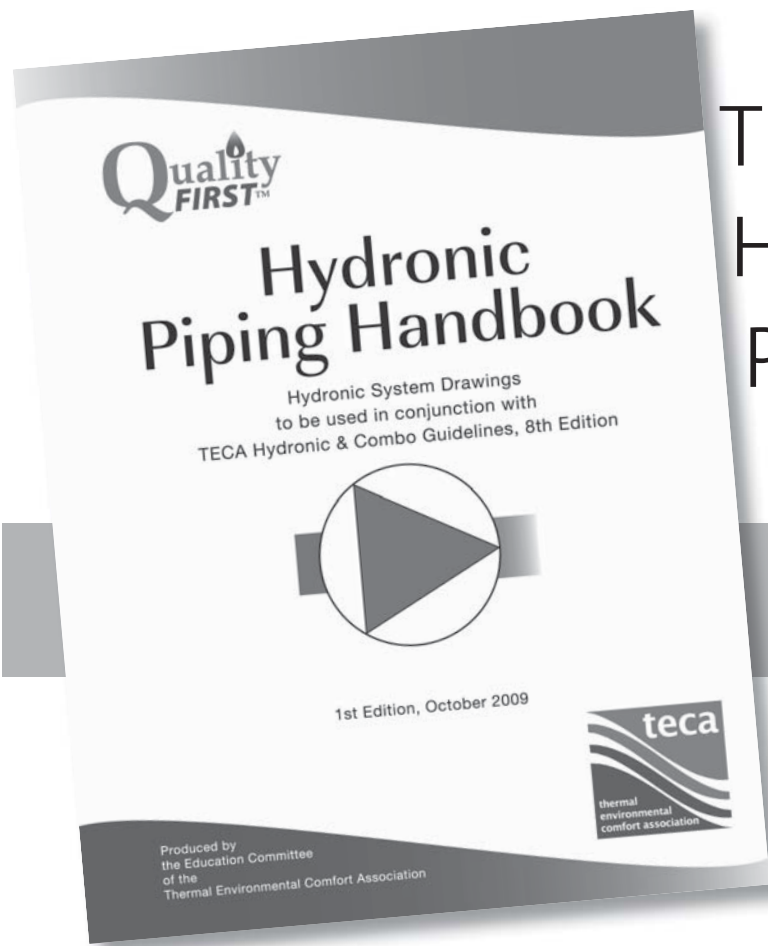
Using a static pressure switch to control a modulating bypass eliminates the need to adjust the bypass. The static pressure sensor upon an increase in static will start the bypass opening. As the bypass opens to relieve air the blower sees a lower pressure and remains low. As more zones open the duct pressure decreases causing the bypass to close down.

When bypassing air, there is always the concern of overheating or cooling the plenum. This is solved by using a leaving air sensor to protect the HVAC unit from overheating and going off on limit or from colder air recycling back into the unit and precipitating coil freeze up. Installing a leaving air sensor in the plenum protects against this by cutting of the heating or cooling if the plenum rises above (heating) or below (cooling) the limits set on the control panel. When the limit

setting is reached, all stages of heating or cooling are dropped. When the plenum temperature drops 10°F for heating or rises 10°F for cooling, the heating or cooling is turned back on. If multiple stages are in use, an internal timer on the panel resets and only the first stage is activated. If the calls still exist after the stage timing, the second stage will be activated until all zones and both stages are satisfied.

The other type of variable speed logic is the ability to slow the blower down on an increase in static. OEMs, who have their own zoning systems, have built this option into their furnaces/air handlers. This method of slowing the blower down is preferred for zoning in that virtually eliminates the need to bypass air as zone dampers close. This requires control over the heating and cooling unit in order to operate properly at reduced air flow. Often the HVAC is then cut to a lower stage in order to reduce the output to match the airflow. More often a leaving air sensor will be used to cycle off the HVAC, in order to prevent limit type conditions in the HVAC Unit.

Zoning and variable speed equipment should always be installed together as zoning most often lessens the load by only requiring heating or cooling for less than the entire home. Zoning helps use less capacity to only condition the zones that are calling, even at design temperatures. Zoning ensures the occupant the temperature they want... when they want it... and where they want it ■



# TECA Hydronic Piping Handbook

Available to purchase at  
[www.teca.ca](http://www.teca.ca) by March 1

on line!

The TECA Hydronic Piping Handbook drawings comprise a technical reference for regulatory authorities, designers, installers and other individuals directly or indirectly involved with hot water heating projects.

These drawings will aid in the understanding of how the boiler, piping system, heating equipment and associated components are arranged and used with residential, hot water heating systems.

This publication provides many more Hydronic piping drawings to be used as a supplement to the basic drawings included in the TECA Hydronic & Combo Guidelines, 8th Edition. This handbook contains several more piping systems than was possible

to include in the Guidelines, which show only basic primary/secondary and reverse return drawings.

This handbook not only expands on the existing Guideline drawings, but also adds other types of piping systems such as combination Primary with reverse return and direct return secondary systems, standard reverse return systems, and direct return piping systems. There are also new drawings showing specialty wall hung boilers, DHW heater Combo systems, and manufactured boiler piping system components.

When designing systems, the drawings shown in this handbook are to be used in conjunction with the TECA Hydronic &

Combo Guidelines, 8th Edition and the TECA Hydronics Systems Design Manual.

Note that even though there are drawings in this handbook that illustrate some radiant heating applications without the use of a mixing system, it is recommended in the interest of energy efficiency and conservation all heating systems should include the use of some type of an outdoor reset control to regulate water temperature regardless of the heat source used in the system.

The drawings in this manual are approved boiler room and system layouts and are intended for use by authorities having jurisdiction for inspections of hydronic installations ■



FROM THE EXECUTIVE DIRECTOR

## Response to Letter from page 2

Dear Jeff:

Thank you for taking the time to write TECA, making us aware of your concerns and posing us three questions. The items you articulate are often heard by the association from within the industry and I wanted to respond to you specifically and the industry more broadly.

**Question 1** What are we doing about regulations? TECA for the last 18 months has been actively lobbying municipal and provincial governments to make the heating trade COMPULSORY in some form. We see this as imperative to the future of the industry. The Quality First™

program and the Heating Technician apprenticeship are the building blocks of bringing this to reality. Ideas that we are working with are: an expansion of the checklist/paperwork system that would be required by all municipalities in the same form; third party inspections; and accrediting our Quality First™ contractors.

**Question 2** What about the Code of Conduct? Like, you we are very concerned when we hear about instances of member contractors not adhering to our Code of Conduct. When the grievance is documented, we follow up with the contractor in question to come to resolution.

However, as a voluntary membership, that is also not tied to the Quality First™ program directly, we can only operate on the “honour system” at this time.

**Question 3** Is TECA educating the builder/general contractor? Honestly, not as well as we could be doing and we know we need to do better. We welcome suggestions on how to build this area of our organization’s outreach.

I know this response will really only inspire more dialogue. I welcome any of our members to contact me about these issues or any others as we work towards to ever-increasing professionalization and quality in the industry ■

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> CSST Gas Tubing and Fittings, Underground Polyethylene Gas Tubing & Fittings



> Pressure Vessels and Storage Tanks



> Pressure Gauges and Thermometers



> Electric Hot Water Boilers, Wood Add On Hot Water Boilers, Oil Hot Water Boilers, Oil/Wood Combination Hot Water Boilers, Oil/Wood Combination Warm Air Furnaces and Wood Warm Air Furnaces



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 Phone: toll free 1-866-884-8833  
[terasengas.com/qd](http://terasengas.com/qd)



### Residential incentive programs

Program	Incentive	Deadline
Efficient Residential Storage Tank Water Heater	\$50 rebate plus \$50 SPIFF	Mar. 31, 2011
EnerChoice™ Fireplace	\$150 rebate	Mar. 31, 2011
Switch 'n' Shrink	\$1,000 rebate	Dec. 31, 2011
LiveSmart BC	varies	Mar. 31, 2011

For more information visit [terasengas.com/offers](http://terasengas.com/offers)

### Commercial\* incentive programs

Program	Incentive
Efficient Commercial Water Heater	rebate up to \$15,000
Light Commercial ENERGY STAR® Boiler	rebate up to \$1,495
Efficient Boiler	varies
Energy Assessment	free

\*Commercial programs are available in new construction and retrofit projects

For more information visit  
[terasengas.com/business/offers](http://terasengas.com/business/offers)

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Higher Efficiency Requirements (continued)

Minimum performance levels

WH type and size	Schedules	MEPS	Test method	Notes
Gas-fired tankless <250,000 btu/h	January 1, 2012 January 1, 2016	None EF = 0.80	CSA P.7	Reporting only from 2012 until 2016
Gas-fired tankless >250,000 btu/h	January 1, 2012 January 1, 2016	None Thermal Efficiency = 80%	CSA 4.3/ANSI Z21.10.3	Reporting only from 2012 until 2016
Gas-fired storage ≤75,000 btu/h input	January 1, 2013 January 1, 2016	EF = 0.75-0.0005 V <sub>r</sub> EF = 0.80	CSA P.3	
Gas-fired storage >75,000 btu/h	January 1, 2012 January 1, 2016	Thermal Efficiency = 80% Max standby loss = Q/800 + 110 (V <sub>r</sub> ) <sup>1/2</sup> Thermal Efficiency = 92%	CSA 4.3 / ANSI Z21.10.3	Commercial
Oil-fired storage <105,000 btu/h	January 1, 2012 April 16, 2015	EF = 0.59-0.0005 V <sub>r</sub> EF = 0.68-0.0005 V <sub>r</sub>	B211-00	Residential
Oil-fired storage >105,000 btu/h	January 1, 2012	Thermal Efficiency = 78% Max standby loss = Q/800 + 110 (V <sub>r</sub> ) <sup>1/2</sup>	CSA 4.3 / ANSI Z21.10.3	
Electric storage ≤12 kw and ≤454 litres	January 1, 2012	No change at this time.	CSA C191, plus additional standby loss test on cooled concrete base at 14°C	Additional reporting: • diffusion test volume • measured volume • standby loss tested on concrete base cooled to 14°C
Electric storage with >12 kw and ≥75 litres	January 1, 2012	Max standby loss = 0.30+27/V <sub>r</sub> (%/hr)	CSA 4.3 / ANSI Z21.10.3	Commercial

Note: V and V<sub>r</sub> are in litres.

## Higher Efficiency Requirements (continued)

- CSA 4.3 / ANSI Z21.10.3-2004: "Gas Water Heaters Volume III, Storage Water Heaters, with Input Ratings above 75,000 Btu per hour, Circulating and Instantaneous"

### The standards are available from:

Canadian Standards Association  
5060 Spectrum Way, Suite 100  
Mississauga ON L4W 5N6  
Tel.: 1-800-463-6727  
In Toronto, call 416-747-4000  
Web site: [www.csa.ca](http://www.csa.ca)

Some test methods are undergoing revisions. When changes to test methods are made, future amendments to the EE Regulations are expected to include reference to revised test methods.

### Effective dates

These requirements will be brought in over a period of several years in order to provide time for the industry to increase availability of higher efficiency models. This amended regulation is expected to come into effect from January 1, 2012 to January 1, 2016 as indicated in the table.

### Labelling requirements

As required now, all regulated water heaters must have

efficiency verification labels that indicate a third party has verified the ratings.

Efficiency labelling of water heaters is being considered.

### Verification requirements

Third party verification will be required on energy efficiency ratings (EF, standby loss, thermal efficiency), tank capacities (measured, diffusion test, and rated volume), standby power, and whether Plus 1200 has been used for ratings.

### Importing reports

A dealer who imports these products into Canada must include the following information on the Customs release document:

- Type of product
- Model number
- Brand name
- Name and address of the dealer importing the product
- Purpose for which the product is being imported (i.e. for sale or lease in Canada without modification; for sale or lease in Canada after modification to comply with energy efficiency standards; or for use as a component in a product being exported from Canada)

### Harmonization

The Province of British Columbia has recently introduced higher minimum

efficiency levels for water heaters and expects to advance those requirements further. Other provinces may also be planning to introduce regulations for higher efficiency for water heaters. The US DOE has recently published a final rule for water heaters with somewhat higher efficiency requirements for 2015.

The proposed changes as outlined above have significant differences from requirements in the US. The intent is to develop consistent requirements for all of Canada.

### Comments Sought

Initial discussions have taken place with water heating stakeholders. Those discussions will continue and this bulletin should generate greater interest with those stakeholders. A webinar will be held and notice will be sent to stakeholders.

### Comments/Questions

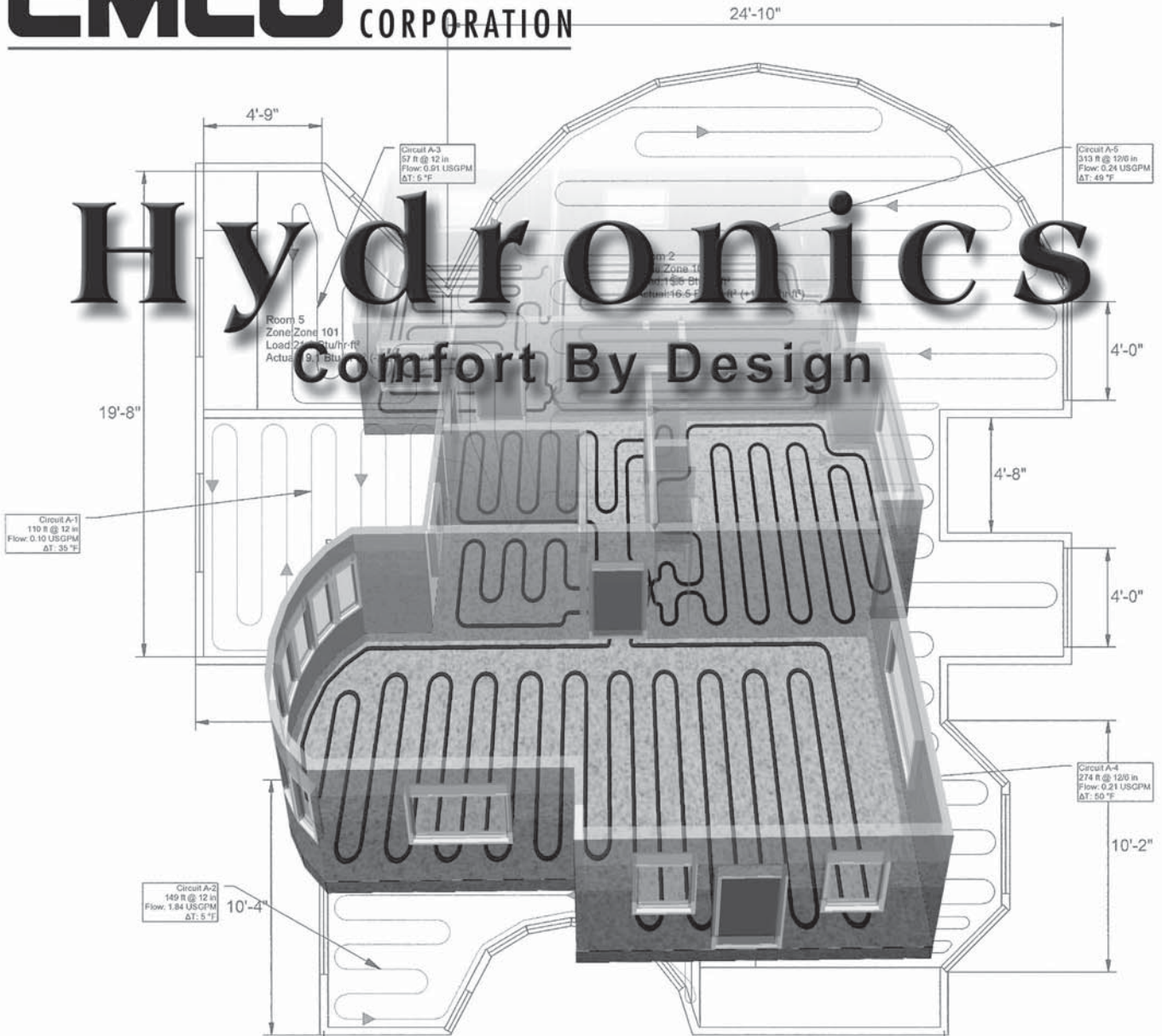
Any comments and questions should be forwarded to:

Brian Killins  
Senior Standards Engineer  
Office of Energy Efficiency  
Natural Resources Canada  
580 Booth Street, 18th Floor,  
Ottawa, ON, Canada  
K1A 0E4  
Tel: 613 947 8764  
[equipment@nrcan.gc.ca](mailto:equipment@nrcan.gc.ca)  
[www.oee.nrcan.gc.ca/regulations/home\\_page.cfm](http://www.oee.nrcan.gc.ca/regulations/home_page.cfm) ■

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