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### Pulte Embraces Environments For Living®

One of the mainstays of the US economy over the past few years has been the housing industry. Low interest rates have fueled the market for new as well as existing homes. One of the main players in the new home market is Pulte Homes. In a number of their divisions in the south and southwest, Pulte has incorporated a program called Environments for Living® to ensure quality construction, efficient design and energy savings. The Environments for Living (EFL) program is sponsored by MASCO Contractor Services.

The EFL program has three levels of home performance - Silver, Gold and Platinum. All three levels include a thorough plan review, HVAC system “right-sizing”, and performance testing of completed homes. The entry level (Silver) program has at its heart a Heating and Cooling Energy Use Guarantee. This limited guarantee specifies that the energy used to heat and cool the home (as calculated in an Account Analysis) will not exceed a specified Guaranteed Usage. For the Gold and Platinum levels, the energy guarantee is accompanied by a comfort guarantee to the original homeowner that specifies that the temperature at the location of the thermostat will not vary more than 3 degrees from the temperature at the center of any conditioned room (within that thermostat zone).

In order to provide the necessary quality control to support the energy and comfort guarantees, the EFL program includes a rigorous performance testing component. Depending on the Pulte division, the home performance testers are either Pulte employees or 3<sup>rd</sup> party testers through MASCO Contractor Services. The testers randomly select 1 in 7 of each of the models and perform a series of inspections and tests. As the structure is being erected there is a framing inspection to ensure that the latest construction techniques are employed properly. This also helps to block air leakage paths that may occur in complicated structures. The tester then visits the house again during the installation of insulation. This is often a critical component, ensuring that insulation is installed without compression, voids or gaps and that the insulation is placed in the proper location for integrity of the thermal barrier. As the duct work is installed, a duct leakage test is performed using the Duct Blaster®.

As the interior reaches completion, the tester then completes an air tightness test using a Blower Door. For the Gold and Platinum levels, the house is pressure balance tested. Pressure balancing involves using a digital pressure gauge to measure the pressures from various rooms to commons areas while

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the house is at rest, as well as when the ventilation system is running. This last test ensures that air circulates throughout the house, even when interior doors are closed. Pressure balance problems can be corrected using a variety of means including multiple return air ducts, transfer grilles or jumper ducts from one room to another.

Because the houses are of such a tight construction, combustion appliances used in all three levels are either sealed combustion or power vented. Carbon monoxide detectors are used to ensure the integrity of the combustion appliances. Fresh air ventilation systems are also employed to help create an environment that contains less dust, fewer odors and remarkably comfortable temperatures.

Inspections alone do not ensure quality. For the EFL program to work properly, builders, as well as contractors and testers, receive extensive training. This training is provided by Advanced Energy Corporation (AEC) out of Raleigh, NC. AEC also provides follow-up support by reviewing all test results and making periodic visits to builders sites. In addition, MASCO Contractor Services has testers around the country that work to help train builders and contractors as well perform all of the tests needed to build an Environment for Living home.

The main benefit of EFL to the builder is that the training, rigorous plan review, inspections, and testing results in fewer comfort and structural problems. Fewer problems mean fewer call backs, reduced warranty costs and more satisfied customers. Another benefit is that recurring problems can be investigated by the performance testers and solutions developed so that built-in design flaws can be quickly eliminated.

For more information on EFL you can visit [www.eflhome.com](http://www.eflhome.com).

**TECLOG for Windows® is now available**

The Energy Conservatory's has recently updated it's TECLOG data logging program for Windows® based computers. TECLOG can monitor and store data from the DG-700 or APT's on-board differential pressure channels, and from the APT's differential analog voltage input channels (which can be connected to optional sensors including temperature, relative humidity, and carbon monoxide).

The TECLOG program has a large graphical display that allows you to observe the data as they are being collected and saved. The program provides easy control of data acquisition parameters such as pressure and analog channel settings, sampling rates and auto-zero intervals. Other TECLOG features include:

- quick graph zooming.
- a moveable measurement line for determining the precise numeric value and time of occurrence for individual data points.
- a statistics utility can be used with stored data files to provide basic statistical summaries for the entire file, or for a user selected portion of the data.
- event markers can be added to the data file to document changes in test conditions.
- the fan control feature allows you to control a Blower Door or Duct Blaster fan to maintain a constant test pressure, or a constant air flow rate during data collection.
- stored data files can be converted to ASCII (plain text) format for analysis in standard spreadsheet and statistical programs.
- a COM port test utility allows you to quickly evaluate communication problems between TECLOG and your DG-700 or APT.
- the new TECLOG program will also load data and configuration files created using our older DOS based TECLOG program.

TECLOG for Windows is available at no charge from The Energy Conservatory's website. Click on the *What's New* button and follow the link. If you would like us to send you the program on a CD, give us a call.

**Affordable Comfort Comes To Minneapolis**

Start making your plans to be at Affordable Comfort to be held at the Hyatt Regency Hotel in Minneapolis at the end of April. Affordable Comfort is the largest conference dedicated to advancing the performance of residential buildings. There is a lot to do and learn at Affordable Comfort. The core conference begins on Tuesday evening, April 27th with a Welcome Reception at the Mill City Museum, sponsored by The Energy Conservatory and Great River Energy. Sessions begin on Wednesday morning and continue on to Friday. Both before and after the core conference, additional classes, half and full day, will be offered. The exhibit hall will be open at various times from Wednesday through Friday. You will have the opportunity meet with vendors or take part in a contractor competition. For more information and to register, visit their website at [www.affordablecomfort.org](http://www.affordablecomfort.org).

## TECTITE Version 3.1 Updated With ASHRAE 62.2

The latest edition of our TECTITE Software (Version 3.1) will be available at the beginning of February 2004. The most significant change incorporated into TECTITE 3.1 from the previous 3.0 release is the use of ASHRAE's new Standard 62.2-2003 dealing with ventilation requirements for residential buildings. Standard 62.2 includes a requirement for whole building mechanical ventilation which is based on estimated occupancy and the building floor area (7.5 CFM per person plus 1 CFM per 100 square feet of floor area).

The new 62.2 Standard does provide partial ventilation credit for infiltration, which means that the required mechanical ventilation rate can be reduced and even eliminated in leaky houses. However, because the new 62.2-2003 Standard provides only partial ventilation credit for infiltration (compared to full credit under the previous 62-1989 Standard), the new Standard will require a house to be much leakier if infiltration alone is being used to meet the ventilation requirement. This feature of the 62.2 Standard will strongly encourage mechanical ventilation systems to be installed in many houses and will tend to discourage the reliance on infiltration alone as a ventilation strategy.

For example:

For a 1,500 square foot - 1 ½ story house with 5 occupants located in Minneapolis, MN

- Under previous Standard 62-1989, the whole building ventilation requirement for this house could be met (by infiltration alone) with a house airtightness level of 1,350 CFM50.

- Under New Standard 62.2-2003, this house with the same airtightness level of 1,350 CFM50 would be required to add 30 CFM of continuous whole building mechanical ventilation.<sup>1</sup>
- Under New Standard 62.2-2003, the whole building ventilation requirement for this house could be met (by infiltration alone) with a house airtightness level of 2,420 CFM50.

For a 1,500 square foot - 1 ½ story house with 5 occupants located in Charlotte, NC

- Under previous Standard 62-1989, the whole building ventilation requirement for this house could be met (by infiltration alone) with a house airtightness level of 1,765 CFM50.
- Under New Standard 62.2-2003, this house with the same airtightness level of 1,765 CFM50 would be required to add 30 CFM of continuous whole building mechanical ventilation.<sup>1</sup>
- Under New Standard 62.2-2003, the whole building ventilation requirement for this house could be met (by infiltration alone) with a house airtightness level of 3,175 CFM50.

TECTITE 3.1 displays the calculated mechanical ventilation requirements on the test results screen, and in both the customer and detailed reports. The TECTITE 3.1 program CD can be purchased for \$175, or you can upgrade at no charge if you have already purchased an earlier version of the TECTITE program. Contact us for more information.

<sup>1</sup> Intermittent fans can also be used, but they would have to deliver air at a higher rate during their run time. Standard 62.2-2003 also contains specific requirements for kitchen and bathroom ventilation fans – these fans can be incorporated into the whole building ventilation strategy.

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## Meet Collin Olson

Hello. My name is Collin Olson and I am staff physicist at The Energy Conservatory. No, that's not "staff physician". Just think of me as an engineer who prefers making up his own equations and, as a result, no longer has hair. I studied physics at St. Olaf College in my home state of Minnesota and then again at the University of Wisconsin - Madison. I have worked at TEC since 1994 in a variety of calibration, programming, research, and technical support capacities. My most important role is helping others use our equipment more effectively. This ranges from first-time blower door users to leading researchers. I like to work on ways to make our equipment more useful through design, research and software development. If you have some hair-brained measurement scheme or research idea I am the one who would love to hear about it. When not playing with fans and computers I also really enjoy playing basketball and playing with my kids (ages 2 and 5). I look forward to seeing many of you at the upcoming Affordable Comfort Conference in Minneapolis.

## Weatherization video set now on DVD

Over the years we have sold a series of tapes that help both weatherization crews and contractors understand more about investigating and solving air and duct leakage problems in a variety of residential structures. The tape set includes a 2 hour tape on Duct Leakage Diagnostics and Repair, a 39 minute tape that provides a comprehensive overview of air infiltration in Air Sealing Houses, a 53 minute tape that demonstrates high level weatherization in the Minnesota Case Study and a 37 minute tape on the use of high density blown cellulose in the Indiana Case Study.

We have now duplicated this set onto a single DVD-R. These are the original tapes just placed on a more current medium. You can view this DVD on most DVD home players and can also be viewed on most laptop computers that have a DVD ROM drive.

The original tape set, as well as the new DVD are available for only \$40. For more complete information on the contents of each tape, please go to [www.energyconservatory.com/support/support6.htm](http://www.energyconservatory.com/support/support6.htm).

## Upcoming Shows

The following is a list of industry tradeshow where TEC will be exhibiting. If you are in the area, stop by the booth and see some of the new products first hand.

Better Buildings Conference, Green Bay, WI, February 18 – 19 [www.ecw.org/betterbuildings](http://www.ecw.org/betterbuildings)

RESNET Conference, March 1 – 3, San Diego, CA [www.natresnet.org](http://www.natresnet.org)

Energy OutWest, April 5 - 9, Sacramento, CA [capps.wsu.edu/EOW](http://capps.wsu.edu/EOW)

Affordable Comfort, Minneapolis, MN, April 26 - 30 [www.affordablecomfort.org](http://www.affordablecomfort.org)

UPDATE



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