



## Hydronics and Propane: Exceptional Comfort, Exceptional Energy

With infinite information accessible at the click of a mouse, consumers—many of whom are self-made subject experts on all aspects of home building—are coming to their builders expecting a higher level of conversation during the building process, particularly with matters of energy. “How much does it cost?” has evolved to “How much does it cost to operate, how efficient is it, and what’s the resulting carbon footprint?”

*Hydronics and Propane: Exceptional Comfort, Exceptional Energy*, a white paper released by the propane industry, serves as an advanced primer for builders and HVAC professionals in a time of savvy homeowners. The paper, available free online at [www.buildwithpropane.com/hydronics\\_white\\_paper](http://www.buildwithpropane.com/hydronics_white_paper) discusses the synergistic combination of propane and hydronics technology in detail, while outlining how propane-fueled heating offers the best of both efficiency and comfort in one system.

“Today’s builders have many options when it comes to heating systems,” says John Siegenthaler, P.E., principal of Appropriate Designs, a consulting engineering firm in Holland Patent, N.Y., and author of the white paper *Hydronics and Propane*. “There are hundreds of combinations of fuels and equipment for converting those fuels into heat. One of the most synergistic combinations is a propane-fueled hydronic (water based) system, one that’s tailor-made to the exact aesthetic, thermal, and budget preferences of the homeowner. Such systems provide unsurpassed efficiency in both heat production and heat distribution. They also deliver incomparable comfort that literally makes occupants forget it’s winter outside.”

Propane, in combination with “hydronic” heating equipment, can deliver superior comfort, lower fuel bills and reliable operation over many years. But its benefits and uses extend far beyond a single application. Propane can provide a whole home advantage distribution system through its use in supplying abundant domestic hot water, radiant floor heat, ceiling and wall heating, zoned space heating, hydronic snow and ice melting, and pool and spa heating.

Propane-fueled hydronic distribution systems also provide energy solution to builders who want to keep up with the surge in green building demands. No longer a niche market, green building has entered the mainstream and shows no signs of slowing down. According to the National Association of Home Builders (NAHB), up to 10% of new construction—an estimated \$60 billion worth—will be built green by the year 2010. Incorporating hydronic heating systems into their homes can help builders deliver on consumer desires for a green lifestyle.

Propane is one of the lightest, simplest hydrocarbons in existence, making it one of the cleanest burning fossil fuels. A home that uses propane for heating, water heating, clothes drying and cooking contributes 60 percent less carbon dioxide to the atmosphere than an all-electric home whose power is often generated at a coal-powered plant. And for those interested in water conservation, tankless water heaters can provide an excellent solution, saving the average American family 10-20% of its daily water use. In addition, 90% of the propane used in the United



*The Propane Education & Research Council was authorized by the U.S. Congress with the passage of Public Law 104-284, the Propane Education and Research Act (PERA), signed into law on October 11, 1996. The mission of the Propane Education & Research Council is to promote the safe, efficient use of odorized propane gas as a preferred energy source.*

States is produced domestically, reducing dependence on foreign energy suppliers as well as the transportation energy used to import foreign fuels.

But increasing energy efficiency through hydronic heating systems isn't just good for the environment; it's good on the pocket book as well. The ability to easily zone a hydronic system provides the ability to maintain unoccupied rooms at reduced temperatures versus occupied rooms. Reduced air temperatures decrease building heat loss and thus reduce fuel consumption. Some propane-fueled boilers can operate with efficiencies of 95%+ when combined with low temperature in floor distribution systems, again reducing heat loss.

Another way hydronic systems reduce energy use is in the electrical power demand of a circulator relative to that of a blower in a forced-air system such as used with geo thermal furnaces or heat pumps. With good design, it's possible to supply heat to a 2,500 square foot house with a circulator that consumes 80 watts or less of electrical power at full speed. By comparison, the blower in a geothermal heat pump of equivalent heating capacity could demand over 1600 watts—20 times more electrical power. Assuming each distribution system operated for 3,000 hours a year in an area where the current cost of electricity is \$.10 per kilowatt-hour, the blower would require an additional \$456 dollars per year for electricity relative to that required by the small circulator. Over the life of the system this would add up to thousands of dollars in higher operating cost.

Even with their increased knowledge on the technical sides of home building, consumers still demand overall comfort. Hydronic heating has long enjoyed a well-deserved reputation for providing excellent thermal comfort. Some hydronic systems provide this comfort by warming the surfaces within a room as well as the room's air. Such systems address the fact that providing true thermal comfort involves more than simply maintaining a room at a given air temperature. They release heat into spaces in harmony and balance with human physiological needs. Although it may not be apparent where the heat is coming from, many homeowners find the comfort is far superior to that provided by other systems.

For more information on the environmental, cost and comfort advantages of a propane-fueled hydronic distributions systems, or to download a free copy of the white paper, please visit [www.buildwithpropane.com/hydronics\\_white\\_paper](http://www.buildwithpropane.com/hydronics_white_paper) or contact Tracy Burleson at 202.452.8975.

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