

winners & sinners: flushing out the bad guys

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ENERGY



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A HOUSE THAT WORKS

NATURALLY

Kelvin Browne looks at a house designed to be energy efficient

For some, the idea of an energy-efficient home generates images of roofs covered in solar panels, heat pumps, ground source heating or wildly futurist technology. The fact is that while all sorts of technology can contribute to a home being energy efficient, design does too. If a home is planned with energy efficiency in mind, it can be remarkably naturally efficient.

And smart design makes the most of current technology and maximizes your investment in it.

What kind of design is energy efficient? Most of the basics are things people did for hundreds of years and then stopped doing fifty years or so ago: siting a house to make good use of the heat of the sun and making sure breezes could help cool it; strategically

placing deciduous trees to shade the house in the summer and using coniferous trees as wind blocks; and helping the house be efficient by opening and closing doors and windows to naturally regulate temperature. As well, designers are remembering what many cultures have done for centuries, using a building's mass to store heat. For example, the thick walls of an adobe house absorb heat in the day and keep the house cool. Then, at night when the temperature drops, it will release this heat and keep the house warm.

"The fundamental mistake people can make is to assume you can tack energy efficiency on to a house," says Graham Smith of Altius Design Studio (you can see some of Altius Design Studio's work at their Web site www.altius.net). "If you want a typical traditional design, you likely start with a home that isn't naturally energy efficient. No amount of technology, including insulation, can compensate for this."

What Smith points out is that if you insist on a traditional house and plunk it down on a site without modifying it to relate to its surroundings you are starting at a disadvantage. For example, all those big windows facing west with no trees to shield the sun means that you are likely to resort to expensive and energy-wasting air conditioning to make your home bearable in the summer.

Architect Martin Liefhebber, of Breathe Architects, is one of the leading exponents of energy efficient and environmental sensitive design (for details visit www.breathebyassociates.com). His design for a house in Port Perry demonstrates how smart design is the basis for energy efficiency, as well as a strikingly beautiful contemporary residence.

Here's how Liefhebber designed energy efficiency into this compact three-storey, birch plywood clad cube of 1700 sq. ft. The house can basically heat and cool itself with some backup provided by solar heated hot water in the concrete floors.



OUTSIDE

- The home's windows are south facing to maximize passive solar gain in the winter.
- The green roof aids cooling through water evaporation in the summer and is part of the home's excellent insulation in the winter.
- The north face has no windows and insulation is optimized throughout with R40 in the walls and ceiling.
- Windows are triple-glazed and are treated with a coating to allow optimal light entry—light in winter and reflection of heat in summer.

INSIDE

- The floors are high thermal mass concrete and they store heat during the day as sunlight heats the interior; the concrete then gives off heat at night.
- Dark floors and walls absorb heat better than light coloured ones.
- The spaces are open to allow light in throughout the house.
- In-floor hot water heating, for cold winters or low-light days, is solar powered.
- A stove with catalytic converter provides some additional heating.



HOUSE DESIGNED BY MARTIN LIEFHEBBER AND ASSOCIATES
KITCHEN CABINETS DESIGNED AND BUILT BY ALTIUS DESIGN STUDIO.