

MOVING INTO A SUSTAINABLE FUTURE

A growing raft of technologies is allowing us to create environmentally benign homes

It's coming: the day of the sustainable home. Technological innovations are moving us ever closer to homes that exert a soft footprint on the planet. Toronto Home asked builder Rose Barroso of Barroso Homes for her input on how to incorporate technologies into a custom-built home for environmental sustainability.

QUESTION: Rose, how can new technologies permit us to make our homes more environmentally sustainable?

ANSWER: With the constantly changing environment and technology, it's important to be environmentally aware, and we must be proactive. This means using less electricity and trying to eliminate products that have a negative impact on the environment. Although it's obvious that there are cost-effective ways to go green, some of them are forgotten because of cost or lack of education. Some improvements can easily be done immediately and be cost-free; others will take longer and require a larger investment.

Q: What are some of these technologies?

A: There are several:

- Radiant in-floor heating that transfers warmth from the floor directly to your body in addition to heating the air around you.
- A heat-recovery ventilation (HRV) system, which exhausts stale, polluted air and replaces it with fresh air. The exhausting air preheats the incoming fresh air to conserve valuable heat, which stays in the house.
- Geothermal heating and cooling systems, which pump, collect and transfer heat through buried pipes from the earth into a building. Ground-source heat pumps do not create heat through combustion; rather, they move it from one place to another, taking advantage of the earth's energy.
- Solar power generated by rooftop panels can supply power, and homeowners can sell excess electricity to local utilities. A meter hooked up to a homeowner's system measures electricity going both ways. During the hottest, brightest part of the day, solar systems can pump electricity back into the grid, lowering electricity bills.

All of these technologies can be used alone, combined, or in conjunction with a fossil fuel system to create a hybrid system.



Q: Which sustainable technologies particularly pique your interest as a builder?

A: All Tesla, all the time ...

An interesting comment by Elon Musk, CEO of Tesla Motors, puts the company's new philosophy into perspective: "The world does not lack for automotive companies," he said. "The world lacks for sustainable energy companies." Tesla Energy recently introduced stationary batteries, designed to wean the world off fossil fuels. While the creation of a battery may not seem like a world-changing event, it actually announces the beginning of an energy revolution that will remake the world. In the near future, power generation will become clean, reliable, global and low-cost.

Q: Which technologies are you incorporating into the houses you build?

A: We've put Tesla car-charging stations into all of our most recent builds, regardless of whether our forthcoming purchasers will drive a

Tesla. We ascribe to the idea represented by the phrase in the film *Field of Dreams* that "if you build it, they will come." We believe the best approach is to offer as much technology as possible.

Q: We are being told that within a generation, the internal combustion engine will give way to the electric car. What will homes need to accommodate this shift?

A: Electric vehicles are not a passing fad; they will increase in popularity. Canada has nearly 20,000 plug-in vehicles on the roads. If provinces meet their targets to cut greenhouse gas emissions, there will be more than 500,000 electric vehicles on the roads by 2020. In the future, cars will be able to interface with "smart" electric grids that convey the price of electricity moment-by-moment, so charging can be automatically engaged during periods of low overall demand. Preparing a home for the shift is easy: hire an electrician

to install a dedicated circuit conveniently near where you will park your Tesla or any other electric vehicle. To charge with the standard equipment, install a 240-volt NEMA 14-50 outlet.

Q: What do you see in the future in the way of environmentally sustainable technologies for the home?

A: A better tomorrow starts with what we do today. Tesla is accelerating the move away from fossil fuels to a sustainable future with batteries that enable homes to store sustainable and renewable energy, to manage power demand, and to provide backup power. Tesla Powerwall is a rechargeable lithium-ion battery designed to store energy in a residential setting for consumption of solar power. The Tesla Solar Roof complements a home's architecture while turning sunlight into electricity. Made with tempered glass, Solar Roof tiles are more than three times stronger than standard roofing tiles.

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