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## GE Touts Net Zero, But Will the Real Net Zero Please Stand Up?

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General Electric's Net Zero Energy Home project unveiled this week highlights the rising branding power of "net zero" buildings. The laudable goal of making buildings produce as much energy as they consume is easy for consumers to understand and easy for companies to use as a marketing tool. But GE's emphasis on next-generation gadgets and gizmos risks masking the dirty little secret behind green building design — that the construction industry already has on hand, but has largely failed to deploy, the tools to make homes and other buildings much more energy efficient than they typically are today.

GE's three-pronged approach to net zero includes energy-efficient appliances and lighting, a management system for monitoring and presumably controlling energy use, and on-site power production coupled with energy storage. The management system is to be ready next year and the full package is slated to be pulled together by 2015. The new project is an initiative under GE's energy division, one of the tech giant's few bright spots in terms of profit this year.

But smart design features and building materials — such as passive heating and cooling, energy-efficient appliances, and super-insulating windows and walls — are already available today. Serious Materials, for example, has built a robust and growing business with its high-insulating windows. But perhaps most importantly, these relatively low-tech solutions almost always provide more energy reduction per dollar than on-site power generation (not to mention energy storage), and there's a good chance the same will be true of energy management systems.

The design approach known as Passive House, which relies on good insulation, a tight building shell, a low-tech heat recovery ventilator and other smart design features, has produced buildings that reduce energy use by up to 80 percent without the need for solar panels or other on-site power generation (though the designs sometimes rely on solar thermal systems for hot water). The fundamental difference between smart green building designs and GE's approach is the former's emphasis on energy efficiency over energy production and other high-tech gadgets. As Graham Irwin, principal of Essential Habitat Consulting in Fairfax, Calif., told me, "There are already tools to get us to net-zero energy. The emphasis should be on efficiency first."

Green design often means higher upfront costs, and an historically complacent public regarding energy use allowed the construction industry to continue with business as usual, even while better solutions were available. The limited embrace of green building design is now starting to change, however, as GE's push into smarter energy use highlights.

But GE is in the business of selling products, and you can't package and market a tight building shell. That's why products are the basis of its Net Zero Energy Home project. Still, the GE approach could prove more valuable with retrofits, where major architectural changes are often costly with an existing building. Even homes with the best energy-efficient design features must incorporate on-site power generation to achieve net zero. And there comes a point in every home when adding more insulation gives you less bang for your buck than a PV system, even with the high cost for solar power. But GE is hoping consumers choose its solutions first, retrofit or not, and its executives are banking that the simplicity of a one-stop solution beckons customers to the company's newest marketing tool, the net-zero home.

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