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PLUMBING SYSTEMS AND DESIGN

## New Revit MEP 2012 Features for Plumbing Designers

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# Different Shades of Green

More than 40 years after the first Earth Day celebration, people are still debating what it means to be green. As construction professionals, we have an obligation to offer our own definition of what constitutes a green product.

Green means different things to different people. To some, green means turning off the water when you brush your teeth or throwing your soda can into the recycling bin at work (most of the time). For others it means owning a hybrid car, building a home on a brownfield, using a composting toilet, or purchasing 100 percent of your electricity from renewable resources.

Varying opinions on green and sustainability exist in society at large, and the varying opinions tend to be even more fervent in the construction industry. For some construction professionals, installing low-flow toilets allows you to check the sustainable box, yet others believe that meeting the green standard requires the installation of a rainwater harvesting system and a solar energy unit while considering the overall impact of the structure on the environment and its occupants.

As the major influencers in the plumbing industry, plumbing engineers and designers have a captive audience eager for you to weigh in and, more importantly, to demonstrate what it means to be green. How do you go about designating sustainable plumbing products in a responsible manner? Here are three factors you should consider when faced with specifying the latest sustainable materials.

## QUALITY

The first is quality. Building codes require all materials, including those that are green or sustainable, to meet certain standards, such as those by ASTM International. Cur-

rently ASTM has more than 30,000 members in 135 countries who work to improve product quality, enhance safety, and build consumer confidence. While assurance that a product meets a given standard is always important, it is extremely important for green and sustainable products, especially since most are new to the market.

Third-party certification is also vital in ensuring that any given product meets a specified standard. In the plumbing industry, NSF International is one of the most widely known and respected third-party certification providers. When a product is listed to a relevant standard, you can reasonably expect that the product is compliant with the standard.

## VALUE

Next is value. Close behind “sustainable” in the Construction Buzzword Top 10 List is “value engineering.” On the surface, value engineering is a sound process for evaluating the value of a given material or feature. If you define value as the ratio of function to cost, then you can logically conclude that there are two ways to increase value: by improving the function or by reducing the cost. However, the cheaper option usually wins the value engineering contest.

Much of the driving force behind value engineering is the worst U.S. economy in 70 years. The thrill used to be in the extras, but now it is in the percentage discount from the previous price. However, there are dangers in value engineering no matter the motive. These dangers include failure to account for function, the life-cycle of a product, hidden costs, and added complexity to the project. For instance, the upfront costs of using plastic pipe and fittings in place of cast iron may be appealing. However, when you consider all of the factors, you may learn that value

engineering to plastic may not make sense in some applications. If properly designed and installed, cast iron can be expected to last the life of a building, and in fact it is not uncommon for cast iron to be in use for more than 100 years.

## REGULATORY COMPLIANCE

Regulations and green building rating systems are the final factor to consider when choosing new, sustainable building materials. At a minimum, a product must comply with the prevailing building codes and government regulations. Numerous government initiatives are in place to encourage sustainable design and construction. By far the most prevalent green building standard in the United States is the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) rating system.

Created more than 12 years ago, the LEED rating system is constantly being improved to accommodate market readiness and new technologies. One of the major changes with the latest version, LEED 2009, is that each credit is now weighted according to the potential environmental and human benefits of the credit. The weightings are based on the EPA's TRACI environmental impact categories as well as data collected by the National Institute of Standards and Technology. Together, these two criteria calculate the environmental performance of a product over its full life-cycle. I encourage everyone to study the LEED credit weighting methodology as you develop your own definition of a green product by viewing the information on USGBC's website: [www.usgbc.org/DisplayPage.aspx?CMSPageID=1971](http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1971). The weighted credit system has increased the total possible score of a project from 69 to 100 points.

If you include the Innovation in Design and Regional Priority points available, the highest possible point total is 110.

Even more encouraging for the plumbing industry is that the current draft version of LEED 2012 no longer excludes plumbing products from the Materials and Resources credits. If this draft gets passed as-is in the fall of this year, plumbing pipe with recycled content will contribute to earning LEED points.

While not perfect, the LEED rating system provides a great baseline for sustainable project design, and its popularity is growing. In fact, the number of buildings that earned LEED certification in 2010 increased 73 percent over the previous year. This trend is astonishing, and we all can agree that it is likely to continue.

Besides the addition of the Regional Priority category, the points available for LEED 2009 for New Construction credits have changed. For instance, Water Efficiency (WE) has increased from five to 10 possible points. Some of these points could be the poster child for the proverbial low-hanging fruit. By installing a rainwater harvesting

system for irrigation, toilet and urinal flushing, and cooling tower makeup, you would likely capitalize on a majority of the available WE points.

Hopefully, considering these three factors along with LEED will help you navigate through the many environmentally friendly products on the market, including those manufactured with recycled content. By specifying products with recycled content, engineers expand markets for recycled materials, slow the consumption of raw materials, and reduce the amount of waste entering landfills.

When it comes to plumbing systems, engineers can specify cast iron pipe and fittings, thereby requiring the use of a product made from 95.59 percent post-consumer recycled content. A PVC DWV pipe is also on the market that uses recycled content. In fact, the specification used by the military services and NASA (Unified Facilities Guide Specifications) reads, "PVC pipe shall contain a minimum of [25][80] percent recycled content in accordance with ASTM F 1760." (Note: Engineers specify either 25 or 80 percent recycled content when using this spec.)

For more information, please view Division 22 of the UFGS ([www.wbdg.org/ccb/browse\\_cat.php?c=3](http://www.wbdg.org/ccb/browse_cat.php?c=3)).

As another example, engineers and designers can choose insulation and fiberboard made from recycled paper products. Also on the market are wall board and floor tiles that have been manufactured with recycled glass, roofing shingles made with recycled plastic, and structural framing that uses recycled steel.

While we all have different definitions of green, we cannot afford to look myopically only at one facet of a product or project. As the pioneering professionals in construction, we must ensure that our sustainable practices are grounded in quality, value, and regulatory compliance. Doing so will result in well-informed and client-focused decision making. **PSD**



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*Looking back on our  
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reminds us that we're a part  
of American history.*

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