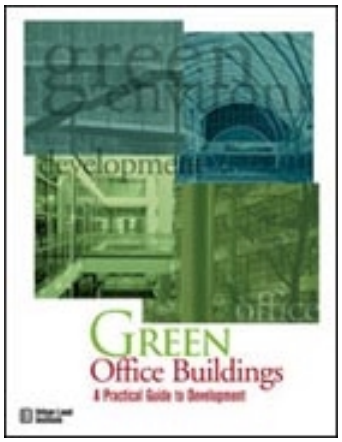
Building for the Future

With energy playing a larger role in building and design than ever before, we're realizing that this has just as much to do with health and the environment as it does with operations and the bottom line. Welcome to an era in which a building's energy productivity is a huge factor in business and global competition.

A recent study by the Energy Information Administration (EIA) states that the global industrial sector accounts for 27 percent of the total projected increase (57 percent) in the world's liquid energy demand between 2004 and 2030, surpassed only by the transportation sector.



Now that the U.S. Green Building Council's LEED rating system has become widely known and accepted, increasingly more builders' clients do not need much prodding to undertake the basic testing, or commissioning, of building systems to ensure that equipment has been installed properly and is therefore functioning optimally.

Basically, there are three major energy absorbers in the plant — electrical, boiler, and compressor/pump/fan systems. Of course, energy has just as much to do with the environment and health as it does operations and the bottom line.

Unknowingly, the architecture and building community is responsible for almost half (48 percent) of all U.S. greenhouse gas emissions annually, according to data from the EIA. Globally the percentage is even greater.

As such, the green building movement is gaining strength and, without doubt, will increasingly play a larger role in design and building.

According to the U.S. Green Building Council:

- Buildings consume 70 percent of the electricity load in the U.S.;
- The average LEED-certified building uses 32 percent less electricity and saves 350 metric tons of CO2 emissions annually;
- Buildings account for 38 percent of CO2 emissions in the U.S. alone;
- As populations and economies grow significantly over the coming decades, approximately 15 million new buildings are projected to be constructed by 2015 to meet demand;
- Buildings have a lifespan of 50-100 years during which they continually consume energy and produce CO2 emissions; and
- Over the next 25 years, CO2 emissions from buildings are projected to grow faster than any other sector, with emissions from commercial buildings projected to grow fastest — 1.8 percent a year through 2030.

Sustainable design is not a style so much as it is an approach in which the various inputs and outputs of the building are considered and optimized for the long-term health and well being of people and the environment around them.

To accomplish this, many factors need to be considered simultaneously and early in the design process so that the most eco-efficient patterns become intrinsic characteristics of the initial concept. Once these qualities have been woven — or integrated — into the preliminary design, they offer the architect elements that can be articulated if desired, much the same way an architect can decide to express or conceal the building structure.

Sustainability is for existing buildings, too.

For instance, major global banking institutions have committed $1 billion to finance the “green” upgrades of municipal buildings in worldwide cities such as New York, Chicago, Houston, Toronto, Mexico City, London, Berlin and Tokyo, The Associated Press recently reported (via ARCHITECT Online).

“The makeovers will include replacing heating, cooling and lighting systems with energy-efficient networks; making roofs white or reflective to deflect more of the sun’s heat; sealing windows and installing new models that let more light in; and setting up sensors to control more efficient use of lights and air conditioning,” AP explained.

Why all the change? In New York City, for one, the consumption of energy needed to operate buildings generates 79 percent of the city’s total carbon count.

Moreover, households use nearly one-fifth the total energy consumed in the U.S. every year, and of that energy, 50 percent to 70 percent is spent on heating and cooling, according to the U.S. Department of Energy.

According to Industrial Distribution this month, distributors serving the energy market and the government are especially optimistic about 2007. In fact, many expect sales to increase more than 10 percent this year and believe that housing and remodeling will bounce back.

What can homeowners, builders and business operators do to conserve energy?

Modest investments in energy-saving and other climate-friendly technologies can yield buildings and communities that are environmentally responsible, profitable and healthier places to live and work. You can start by being informed. The DOE online provides information, developments, trends and practical energy-saving tips.