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The sustainable approach: Recyclable, energy-efficient steel offers unique

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With buildings representing approximately 40 percent of primary energy use globally and the figure expected to rise, energy savings are a top priority. As energy costs and consumption increase, builders face the challenge of creating more sustainable buildings.

By 2050, energy saved in buildings could help reduce more carbon dioxide emissions than the energy used to build them. This becomes an opportunity—and steel is an important part of the solution.

Construct with Steel

Recognized as a mainstay by builders, steel offers functionality, durability and strength along with a wide range of design options. Steel is provided in exact sizes, which helps reduce building site waste. When it comes to reusing old steel, it's easy to separate and move.

From an energy-savings and environmental perspective, the ability to create tight building envelopes is important. Creating a structure with steel helps reduce air loss, resulting in improved heating and cooling efficiency.

In residential use, steel-built homes experience exceptional heat and cooling loss protection with steel helps preserve natural resources. For example, a typical 2,000-square-foot (186-m²) home can save 10,000 gallons of water annually according to the Steel Recycling Institute. When using steel, only the equivalent of six scrapped cars are needed to produce the steel for the home.

Steel framing, for use in residential construction, contains a minimum of 28 percent recycled steel and has a long, reliable life. Building products made from ArcelorMittal steel can be credited, for example, with the resources credit aspect of the LEED rating system.

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An



excellent example of steel at work in construction is the Alberta Water and Environmental Science Building at the University of Lethbridge in Alberta, Canada. Completed in 2008, the architect selected steel cladding and light-gauge steel framing for this project because it required material that was easily available and ready to use, sustainable and durable, and cost-effective.

The AWESB serves as the administrative center for the Alberta Ingenuity Centre for Water Research and also functions and day activities handled in the space ensure the long-term safety, quality and sustainability of Alberta. The project included reflecting environmental responsibility, maximizing energy and water use, and being cost-effective, simplicity and geometric conciseness.

Light-gauge steel framing was used throughout the project: for exterior wind bearing walls and interior bearing walls, with prepainted galvanized steel cladding used on the two side wings of the building. Light-gauge steel framing and steel cladding allowed for faster installation than conventional framing and eliminated the need to heat and hoard during colder periods. In addition, prepaint minimizes time required and provides a high-quality finish.

The project was completed on time and on budget, resulting in an attractive, environmentally friendly building. The University of Lethbridge will be monitoring the functionality of the space and the energy costs to validate the design assumptions.

The Future

To speed up the pace at which energy-efficient practices and technologies are being adopted, the Business Council for Sustainable Development created the Energy Efficiency in Buildings project. As a demonstration of its commitment to sustainability in construction, ArcelorMittal recently joined 13 other companies in this project.

The project aims to transform buildings' energy use, stimulate innovations and encourage new business models, affecting market demand and the supply chain. Interestingly, the EEB project discovered that building professionals often overestimate the costs and underestimate the potential to reduce emissions. Identifying and shifting these behavioral barriers is a key factor in increasing action on energy efficiency.

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