TEST OF METAL

The building industry takes notice of the advantages of metal roofing and cladding

by Luigi Benetton

Roofs and walls on an increasing number of buildings shun traditional materials in favour of metal. This is not a new phenomenon.

"You'll find metal used on roofing going back thousands of years," says Wes Brooker, marketing director for American Buildings Company, citing buildings in ancient Greece and many old churches still standing today.

Competitive products still adorn the lion's share of roofs and walls, particularly since architects and project owners understand the likes of bricks and petroleum-based roofing products better than the properties of steel, aluminum, zinc and other metals.

But the advantages of metal are making themselves more widely known in the building industry. "As our customers' businesses grow, we need to be able to provide products that can work with a theme or corporate image," says Rob Newton, regional sales manager for the cladding division of BEHLEN Industries LP. "Colours from one site to another need to match."

Case in point: Petro-Canada is betting on the colours its service stations now sport to last as long as the buildings themselves. The iconic gas station pared five or six different brands down to the one they use today. "Bright, clean, white, plus red being the corporate brand; those were things they were looking for in their rebrand," says Vlad Sobot, president of Sobotec Ltd., the company that supplied Petro-Canada with its new Alucobond siding panels.

"In the past, I think limited colour choices, paint applications and the quality of paint you could apply were the biggest hindrance to using metal," Sobot adds, "Now with kynar finishes, you can achieve an almost unlimited range of colours and brightness."

Of the two basic primary coating systems available for metal – silicone polyester and kynar/hylar – kynar fades much less than silicone. Colour accents can also rise above the walls. "With flat roofs, if you want colour on a building, you put it on trim or around the walls," Brooker explains. "With metal roofs and colours, you can get a steeper pitch and use colours that accent the building: a bronze, red or green roof – whatever you want."

RHEINZINK America Inc. chose to set its zinc material apart by adding a trace amount of copper. "The zinc corrodes quickly until it forms a patina and creates a series of differences in light between the copper content and the zinc content," says Georg Koslowski, RHEINZINK's director of technical services. "The light reflected from the copper gives the alloy a distinctive blue-grey colour."

Design possibilities also enter into the equation. "You can create unique, complex shapes in the manufacturing process that weren't possible previously," Sobot says.

"You can curve it, make all sorts of different angles, make sheets that go 100 feet without any seams," adds Brian Hofler, executive vice-president of the Roofing Contractors Association of British Columbia. "It's up to the imagination."

As an example, architects "wrapped" the zinc exterior of a Toronto hospital into the lobby via a window. "The exterior welcomes you into the interior," says Blair Davies, the sales and marketing manager for Engineered Assemblies Inc.

Toronto's Museum subway station, so named because it leads to the front doors of the Royal Ontario Museum, welcomes transit riders with hieroglyphics carved into the word "Museum" on the walls of the station.

"We did these in aluminum plate," says Dan Boyd, general manager and senior estimator for Ontario Panelization, which created the hieroglyphically enhanced signs.

Material choices originally included porcelain, which would have cost more. A newer option, aluminum composite panels, would have cost less. "It would look just as nice," Boyd claims, adding, "Composite has been emerging in the market over the last five years, and architects are starting to learn about it."

Purveyors of metal roofing and cladding emphasize its durability. "Steel roofs last, on average, 40 years with little to no maintenance, unlike gravel or tar roofs," says Meredith Perez, BEHLEN's marketing supervisor for roofing. "No extra material goes into a roof during its useful life."

Koslowski makes similar claims for zinc, crediting its durability to the patina formed during exposure to elements.

BEHLEN, recognizing zinc's benefits, sells Galvalume products for roofing and siding. Galvalume is a zinc-aluminum compound used to coat steel and act as a "self-sacrificing layer" against corrosion. "If the steel is nicked," Perez explains, "the zinc patinas to protect the steel."

Perez mentions another advantage: "When steel comes off a building, all of it goes into the recycling stream."

Steve Fox, general manager for the Canadian Sheet Steel Building Institute (CSSBI), seconds that claim. "Steel may be the only construction product that is recyclable without any downcycling," he says. Downcycling is the process whereby a material's properties downgrade after being recycled a number of times, to the point that it can no longer be recycled. "You can recycle steel products an infinite number of times without losing any of their physical properties," Fox says.

Durability and recyclability are but two qualities that make metal roofing and cladding desirable for projects

McDonald Drive Condominium project, Yellowknife, NWT, designed by Pin/Taylor Architects. Approximately 13,000 square feet of 0.8mm/22 gauge RHEINZINK Pre-weathered Blue-Gray material were used as cladding. Standard one-metre-wide rolls of RHEINZINK were top-hung from the structure with minimal cutting and crimping. Stainless steel washers and screws were installed loosely, allowing for expansion and contraction. Photos: Ihor Pona.

PHOTO COURTESY OF ENGINEERED ASSEMBLIES INC.

Clockwise from left: Eatonville Library, Toronto, Ontario, features RHEINZINK zinc cladding flat lock tile. Architect: Teeple Architects; John Kenyon Limited completed the re-roof of the Ancaster Old Mill, Ancaster, Ontario with Vicwest's Tradition 100 roof profile; insulated metal panels in Bright Red and Silver Metallic by Vicwest were chosen for the Dieppe Aquatic Centre in New Brunswick. Architects: Dan Haganu and Architects 2000; Max Bell Centre, Calgary, Alberta uses Roll Form Group's 3/4-inch corrugated metal in Richardson Yellow, Bright Red and Bone White (roof top enclosure).

aiming for LEED certification. The fact that metal roofs must have a slope makes them excellent for channeling water. "You can get LEED points if you bring water off roofs, into cisterns or holding ponds," Brooker says, noting that flat roofs aren't traditionally designed with drainage in mind.

Brooker adds "cool colour" technology to the LEED mix. Cool colours reflect more light than metals sporting traditional coatings. "You can have a dark green," Brooker explains, "reflecting 17 per cent of the light, but as a cool colour, it reflects up to 28 per cent."

Areas that experience high winds, like "hurricane states" and southern Alberta with its chinooks, see metal roofs work well. "If it's properly installed," Brooker says, "the whole roof will come off before any metal does."

For all its durability, metal is relatively lightweight. "You can use it on highrise buildings without adding lots of load to the structure," says Sobot.

Building professionals who specialize in institutional/commercial/industrial (ICI) projects likely know most of the benefits metal roofing and cladding products offer. Metal's reach within ICI itself, though, is expanding. BEHLEN's Newton notes that grocery stores and restaurants like Boston Pizza are putting metal on their buildings.

Experts agree that the choice to use metal dovetails with long-term ownership. "In the southeast U.S., about half of our roofing business is roof retrofits," says Brooker. "A school may be 30 or 40 years old and they replace the roof every seven to 10 years. Because of the longevity of the buildings, schools have gone to metal roofs."

Despite the innovative uses architects find for metal on buildings, many people still think of corrugated metal siding and its unattractive cousins when the possibility of metal is raised.In spite of a favourable total cost of ownership, the higher initial cost also deters some people. Metal roofs, for instance, can be twice as expensive to install as a traditional flat roof.

But that cost difference may be shrinking. "With speculation gone out of metal markets," Koslowski says, "we find metal is nominally 60 per cent of the cost from five years ago."

To overcome the initial cost hurdle, some manufacturers offer warranties that last 35 years or more.

Koslowski notes a third stumbling block, owing partly to increased awareness of metal roofing and cladding: "We don't have enough people who know how to use it," he says.

Faulty installations have inflated warranty claims since products didn't perform as advertised. American Buildings Company offers a contractor installation certification program (CICP) that Brooker insists builders must take. "If you don't take the course or pass it, you don't get the warranty. Thanks to the CICP, we've cut claims down to a tenth of what they were."

Several years ago, the BC Roofing Contractors Association established a steering committee and found that the industry lacked a training program to prepare installers. "Existing sheet metal programs focused on the installation of ductwork," Hofler says.

Two years later, in collaboration with the Industry Training Authority (ITA) of BC and Construction Industry Training Organization (CITO) of BC, the Association finished the curriculum for a three-year apprenticeship for installation of sheet metal. Housed in a huge enclosed structure, experts deliver training on a range of roofing work, such as steep, low-slope and two-ply systems. With the Level One pilot done this past spring, Level Two slated for this fall and Level Three scheduled for 2010, the program is on its way to producing trained installers.

PHOTO COURTESY OF JOHN KENYON LIMITED AND VICWEST

Davies particularly wants to address the perception of metal roofing and cladding. "Architectural cladding made from a variety of metals offers builders, architects and owners unlimited creativity," says Davies. "It's a range of materials, not just a set of products. People can do all sorts of really cool stuff with it." ■

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