

Above and Beyond

INDUSTRY EXPERTS EXTOL THE LONG-TERM VIRTUES OF METAL ROOFING AND CLADDING

by Luigi Benetton

CREDIT: ART GALLERY OF ALBERTA, 2010. PHOTO: ROBERT LEMERMEYER



Few trends have outlasted the use of metal on buildings. “The Romans used metal roofing,” notes Gail Read, marketing manager for Robertson Building Systems.

And the trend shows staying power. Many centuries-old churches, long-lasting government buildings and modern hockey rinks show significant amounts of metal on their walls and roofs.

Certain factors slow this trend down, though. For instance, homeowners shy away from metal roofing since it can cost two to three times as much as asphalt shingles. Steve Fox, general manager for the Canadian Sheet Steel Building Institute (CSSBI) understands the home buyer’s point of view. “When people move regularly, they may not realize the long-term benefits,” he says, adding that many buy metal roofing anyway for its looks and durability.

Owners at the other end of the ownership spectrum can better appreciate metal’s qualities. “For steep-sloped roofing, metal is the most cost-effective solution any time a building owner plans to own the building for more than a decade,” says Robert Anderson, metal marketing manager for Firestone Building Products. “The initial cost of metal roofing may exceed the cost of standard asphalt shingles, but steel and aluminum metal roofing will likely last several decades – typically twice as long as shingles – and copper and zinc roofing systems can easily last a century. For building owners looking at long-term costs, metal roofing is very cost effective.”

Such owners typically operate ICI (institutional/commercial/industrial) concerns. Gas stations, restaurants, retail stores, even some modern churches wear metal on

their roofs or exterior walls for protection, environmental advantages and esthetic value.

Yes, you read that right. Today’s metal roofs and cladding bear no resemblance to the corrugated “garden sheds” of yesteryear, and the industry is anxious to bury that perception once and for all.

Anderson admits that “esthetic options were somewhat limited in the past,” but he explains why metal deserves a spot on every designer’s palette. “Metal roofing can accommodate very complex geometry, and it is amazing to see the high level of quality craftsmanship contractors can achieve with metal.” Anderson notes metal’s popularity in interiors, thanks to trends like linear metal ceiling panels and corrugated panels used on interior walls for an “industrial” look.

“There is a wide variety of metal roof products to choose from,” Anderson says, “including standing seam metal roof systems, stone-coated metal shingles, metal tiles, and even metal products designed to look like wood shakes – and they are available in just about any colour.”

Above: Art Gallery of Alberta, Edmonton, Alberta.

Read’s observations jibe with Anderson’s. “Steel building systems appeal to architects and owners because they allow for cost-effective design versatility,” she says. “While most city buildings are a traditional rectangular shape, often the designer or even the site layout itself suggests geometric shapes, curved walls or other imaginative details.”

“A smooth integration between steel cladding and traditional building materials like glass, wood and stucco can provide even greater esthetic appeal.”

“Zinc has become popular, the ‘colour du jour,’” says Brian Hofler, executive vice-president for the Roofing Contractors of BC. “It goes that oxidized grey, a colour that lends itself to anything. It looks good with wood, stonework and other materials.”

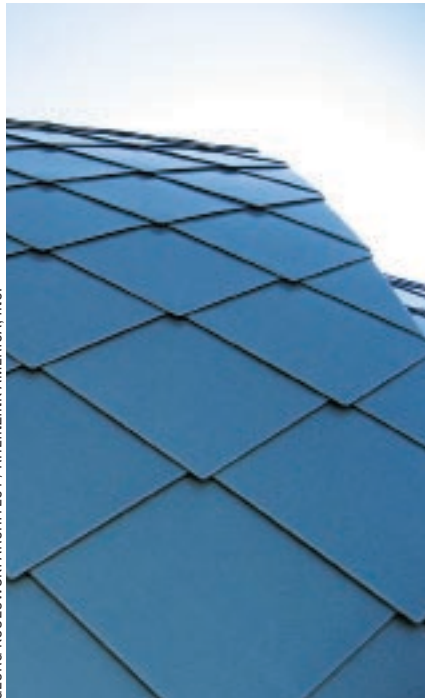
Architects and designers are getting the message. Metal now graces marquee projects like the recently completed Art Gallery of Alberta in Edmonton, and metal buildings are winning design awards.

“At the April 2010 Recreation Industry Awards of Excellence, Architecture Arndt Tkalcic Bengert received the 2010 Stephen Barr Award for Recreation Facility Design for the Leduc Recreation Centre in Leduc, Alberta,” says Read. “Robertson supplied two large buildings that serve as the new twin pad arena and a field house with two indoor playing fields.”

Not to be outdone, Blair Davies mentions the Ontario Association of Architects award that went to Teeple Architects Inc. for the 60 Richmond Street East Housing Co-operative



SHAI GIL PHOTOGRAPHY



GEORG KOSLOWSKI ARCHITECT / RHEINZINK AMERICA, INC.

Left: Architect: Teeple Architects. Project: 60 Richmond Street East Housing Co-Operative, Toronto. Right: Zinc roofing – Beacon Park, Sidney, B.C.

in Toronto (for which his company, Engineered Assemblies Inc. – Davies is the vice president – provided the building envelope, all fibre cement and the framing of the system).

Anderson outlines common choices among different metals. “The most popular metal roofing and cladding material is coated steel,” he says. “It’s the least expensive architectural metal, it’s strong and it’s readily available.”

But it’s not for everybody. “In coastal areas or other corrosive environments, painted aluminum would be a better choice,” Anderson says. “Aluminum is lighter and easier to work with. Also, it is more corrosion-resistant.”

Anderson also lists copper and zinc, noting their beauty and long service lives while admitting they have not caught on in North America.

Manufacturers play up metal’s durability by offering warranties that vendors of competing products usually can’t. Warranties of 35 years or longer are not uncommon for metal building products. There is one caveat, though. Like any other component of a building, metal roofing and cladding must be properly installed to perform according to expectations.

“Poor quality training can result in bad installation or bad details,” Hoffer shrugs. “In the past, for some metal cladding or roofing, people just bought a truckload of material and banged it on. That’s what affects an industry, gives it a black mark.”

Suppliers seek to prevent this problem in various ways. Some insist that warranties hinge upon installation by manufacturer-trained and certified installers. Others simply handle installation themselves.

The holy grail: to make the products goof-proof. “The way we design our systems, it takes some know-how,” Davies admits, “but we try to make it installer-independent. We’re trying to design it so that an average labourer, sheet-metal worker or carpenter can install it.”

That’s a tall order given factors like naturally occurring thermal movement. “As with any cladding materials, metal will expand when it gets hot and contract upon cooling,” Anderson explains. “If metal building materials are designed and installed properly, this thermal movement can easily be accommodated in almost any situation. Only when design or installation errors occur could metal’s thermal movements be seen as a disadvantage.”

Not that alternatives to metal don’t have weaknesses. “Metal is replacing other technologies since people are learning, for instance, that big slabs of prefab concrete are a waste, cost a lot and don’t last as long as a rear-ventilated rain screen,” says Davies.

“Even though the cost of metal elements might be higher at the construction stage, the lower life cycle cost will more than offset the initial investment,” says Anderson.

“Governments are demanding buildings that will last 100 years,” says Davies. “If you walk around a city and see buildings that are failing, they were largely built since 1960. The buildings that still perform are 100 years old.”

Davies offers older University of Toronto buildings as examples, then adds: “We can’t afford to build buildings with walls three feet thick.”

Builders in places like California and British Columbia, who seek to

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protect buildings from the threat of forest fires, look to non-combustible metal materials. “We even sell steel studs,” says Fox, adding that in certain areas insurers give builders a break on insurance against fires that occur during construction of metal buildings.

“Many metal systems have Class A fire resistance ratings and Class IV impact resistance ratings,” Anderson says.

Metal roofing and cladding bring plenty of LEED credibility. For example, Anderson mentions the LEED for Durable Building Credit MR 8 (Canada 2009). “The building shell design intent is 50 years,” he says. “Metal components enter consideration because of the long-term service life.”

“Steel-clad buildings have 30 per cent or higher post-consumer recycled content which helps with LEED credits MR 4.1 and 4.2,” adds Read.

Where possible, suppliers situate rolling mills so the travel distance doesn't cost LEED points. Some companies

even fabricate components on site to reduce wastage and trucking costs. “You can manufacture what you need, you get the lengths right,” says Hofler.

Recycled content may have come from demolished buildings, since metal can be recycled without end. Few competing products can make that claim. “I have not seen an estimate for Canada, but it is estimated that 11 million tons of asphalt shingles are disposed of each year in the U.S.,” Anderson says. “No metal roofing should end up in a landfill; contractors and building owners are happy to recycle and participate in the readily accessible metal scrap market.”

That scrap metal market should stay vibrant since metal doesn't down-cycle. In other words, it does not degrade when recycled, which makes it infinitely recyclable.

Water that flows off metal roofs also doesn't get contaminated by the roofing material. Photovoltaic panels laminated to metal roofs generate energy for the building they cover. Easily made to reflect light, metal helps to lower a building's cooling costs.

“Unlike shingles and other materials, metal doesn't have to be white to be reflective,” Anderson notes. “Darker paints can be engineered with reflective pigments to reduce the urban heat island effect and lower cooling costs.”

“When the transfer of heat and cold is minimized, a building can make do with a smaller heating/cooling unit that consumes less energy,” Read adds.

Durability comes into play as well. “With a service life that stretches beyond a generation, metal is a truly sustainable material choice,” says Anderson.

Forces both within and outside the industry continue to make metal roofing and cladding more attractive options.

“Energy and building codes are changing, with more emphasis on thermal efficiency,” Read notes. “With continued emphasis on green construction and energy savings, insulated metal panel systems (IMPs) offer almost three times the R-value of traditional fiberglass insulation and will be seen as cost-efficient, easy solutions to achieving energy efficiency and LEED/energy code compliance.”

Manufacturers are also chipping away at the cost barrier. “Metal roofs and walls can be assembled quickly at the job site, allowing fast occupancy,” says Read. “Some industry estimates show time savings of as much as one-third that of conventional construction time.”

Construction expense counts as a point in favour of metal roofs and cladding, given how simple installation is for trained workers relative to traditional options. “Metal is less dependent on installer skill to make it perfect,” Davies says.

The CSSBI is taking measures to add to the talent pool. “We've created a website, *SteelRoofSource.com*, to attract contractors to do the work and show the public the applications and benefits of steel roofing,” says Fox.

The Roofing Contractors of BC is also encouraging people to join the industry. Hofler mentions a recruiting video to debut in 2011, development of a curriculum for a three-year architectural sheet metal program and the construction of a new training facility. “This particular industry has always been an offshoot of sheet metal,” Hofler admits, “but it is now recognized as a specialized career in itself.” ■



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