

A Better Way

MGO SYSTEMS WAS BORN OF A NEED FOR SAFER AND GREENER MATERIALS. BY JIM HARRIS

In 2010, MgO Systems founder and CEO Todd McKay discovered the materials used to build his house were highly flammable when his home burned down shortly before Christmas.

“Fortunately, it happened during the day; otherwise his family may have perished because they had less than 10 minutes to get out of the house,” MgO Systems CFO Jim Pendergast says. “There was nothing the fire department could do because it started in the garage, where there were a lot of flammable items; once the fire caught there, it raged.”

Following the fire, McKay – a businessman who had founded and operated several construction companies in Alberta, Canada – sought out ways to prevent such a loss from happening to others. He learned that plywood, particleboard and other conventional building materials contained high amounts of glue, formaldehyde and other petroleum-based substances.

“He wanted to find a better way to build,” Pendergast adds. “It didn’t make sense to him for people to be building houses, schools, hospitals, hotels and assisted living facilities with flammable materials.”



» MgO Systems found that magnesium oxide is non-flammable, mold and mildew resistant, and stronger than plywood or particle board.

A New Solution

McKay’s crusade to find safer building materials led him to investigate magnesium oxide-based boards.

“The advantage of magnesium oxide is that it is non-flammable, it is mold and mildew resistant, it is stronger than plywood or particle board, and it doesn’t off-gas like materials that are composed of a lot of glue or formaldehyde,” Pendergast says.

In 2011, McKay formed MgO Systems – named after the chemical symbol for magnesium oxide – to produce building materials composed of the compound. The company’s primary product, the C3 Engineered Building System, is a prefabricated building system that combines magnesium

oxide boards with an insulated core of polystyrene, lumber and/or steel studs.

“[Structural insulated panel] SIP technology is somewhat common, but typically people build panels using traditional materials,” Pendergast adds. “Likewise, MgO sheets are sometimes used as backer board for bathroom applications, but there are not too many people combining these two technologies into one.”

Increased Speed

The C3 system is commonly used on a building’s exterior; however, unlike other prefabricated systems, its use can extend beyond just vertical walls.

“Because of the materials we use, our

MgO Systems

www.mgosystems.ca

• *Headquarters: Calgary, Alberta*

• *Specialty: Building materials*

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– Jim Pendergast, CFO

C3 building systems can be used below grade in place of a concrete foundation, including as replacement for the concrete basement slab," Pendergast says.

C3 panels can also be used as roofing systems. The C3 building systems can replace typical roof truss systems by building a "truss roof structure into our panels, so homes can have a panelized roof with vaulted ceilings," he adds. "[The C3 building system] can make up an entire building envelope from the basement to the exterior walls and the roof."

C3 building systems' prefabricated solution can significantly increase construction speed. "We can put a building envelope for a 2,000-square-foot house up in three to four days, which is a lot faster than the way people typically build homes," Pendergast says.

Superior Performance

MgO Systems sells C3 building systems for use in residential and commercial construction projects. The C3 building system is fabricated in the company's plant using panelized architectural plans and then provided to general contractors, who install the systems.

In addition to being non-flammable and mold and mildew resistant, MgO systems' C3 building systems also offer better insulation value than conventional panels. "Our superior insulating value and energy efficiency results in a potential 30 percent reduction in heating and cooling costs over traditional construction," the company says.

MgO Systems' construction process also produces less job site waste, which is environmentally responsible while saving the owners money.

Another advantage of the C3 system is its sound dampening

qualities, which makes it ideal for shared walls in schools, hotels and multi-family buildings. The sound dampening qualities of the C3 wall system also extends to the external walls decreasing the noise pollution from the environment.

Next Steps

One of the first uses of the C3 Engineered Wall System was on McKay's new home. Since then, the system has been used in several single-family homes, multi-family residential projects and commercial buildings in Canada.

In 2016, the company broadened its focus from western Canada to offer its systems to contractors and owners in the United States. That year, C3 panels were used in the construction of a charter school in Charlotte, N.C. In 2017, MgO's panels were used to build a charter school in Tampa, Fla. Pendergast says the company is pursuing additional projects in the United States.

The company is also adding to its internal capabilities. "Since we started doing more business in the United States, we've added a lot of bench strength, including a LEED-accredited architect who is an expert in panel construction," Pendergast says.

A staff architect gives the company the ability to create proprietary designs for single-family "tiny homes" as well as schools and small hotels. MgO Systems also added operations staff to supervise the installation of its panel systems.

"Our production process today is about putting existing products together," Pendergast says, "As we move into the future, we are developing proprietary, next-generation products to enhance the C3 building system." ♦



» C3 building systems offer better insulation value than conventional panels.