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think about building



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OC NEWS Feature



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**Genesis® Technology and KML Building Solutions,
changing the way Builders think about building.**

By David Kazlovskis
OCNews Staff

Builders are making a fundamental shift in how traditional homes, townhomes, apartment buildings, hotels, schools, and

care facilities are built. The numbers are of seismic proportion and the epicentre is located just west of Toronto in the city of Cambridge, Ontario.

That's the home of GenesisTP, a world

leading building system innovator and software development company, and KML Building Solutions, a licensed manufacturer and installer of Genesis® light-steel building systems in Ontario.

Both are responsible for the change, and have proven how recent technological advancements have made the mass-customized manufacture of structural light-steel

framing, a reality. Genesis® is a unique technology and build-process that has given builders and designers alike a new perspective on how much more efficient the building industry can become,

while improving quality, reducing the risks of construction, and at the same time, make a significant contribution toward environmental preservation.

Genesis® is a "Total Framing

Solution" that includes the engineering, manufacturing, and installation of fully integrated light-steel framed structures. Each residential and light commercial structure is engineered and custom manufactured into large pre-assembled wall sections, floor sections, and roof trusses. The framing sections integrate mechanical and electrical access holes, exact window and door openings, built-in structural supports, and a wide variety of sub-sheathing products and insulation systems.

Genesis® is a high volume "non-modular" building system that poses no restriction on architectural design. It's also 100 per cent compatible with all standard building products and finishes, noted Joe Aprile, vice president of Genesis® technology division. It's a process that allows builders and architects complete freedom in the buildings they design and the finishes they choose to complete them.

Genesis® utilizes galvanized light-steel framing members to build the complete structural

framework of residential and commercial buildings up to five storeys - a concept that until recent years was unheard of. To construct a 100 per cent light-steel framed (LSF) structure, many things must take place. Firstly, it must be engineered. Part 9 of the Ontario Building Code requires that cold-formed steel design comply with Part 4 of the Code and CSA S136. This requires that the structural design must be performed by a professional engineer who is licensed in the province of Ontario. Another, and the most crucial element of constructing an LSF structure, is the alignment of members, the transfer of loads from the roof down to the foundations, and snug connections that bottom-out precisely. For these reasons, software plays a very important role in the design and manufacture of LSF structures. It would be

extremely difficult and time consuming to construct an LSF structure stick-by-stick, on site. The Genesis® process eliminates cutting, and performs all welding in the factory, prior to arriving on site, resulting in a very clean and efficient installation process without laborious tasks and special equipment.

Although Genesis® competes head to head with wood framing, its many advantageous attributes allows it to compete with masonry block, and poured-in-place construction as well. Structurally, Genesis® can replace any of these traditional systems and offer huge productivity gains. The concrete & mortar-free attribute of the system eliminates the need for costly winter protection or prolonged curing time. This is a big benefit to builders who



typically encounter scheduling issues when faced with adverse weather conditions.

Although in

its inception Genesis® aimed at resolving the shortage of skilled site labour, other market drivers became

apparent and equally important, including the environment, builders' predictability, and the rising soft costs

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of construction. Other growing issues such as indoor air quality and fire safety are also driving the growth of this technology.

Genesis® offers both Builders and Consumers compelling advantages.

The most significant "Builder Advantages" are speed and quality of construction and cost saving opportunities. Since every component is engineered, manufactured and installed by certified Genesis® installers, builders can reduce their co-ordination efforts and streamline their entire rough-framing process. Builders also appreciate the choice of either "supply only" "complete turn-key service" where the contract includes on-site installation. Either way, GenesisTP engineers inspect the progress of the installation and provide final review letters to the builder and building officials. Builders are also becoming much more interested in the huge environmental advantages of Genesis®. Genesis® is a truly green sustainable building product and build process. It features cold-formed steel

materials by Dofasco that are certified by Environment Canada's Environmental Choice program. The green EcoLogo reminds the construction industry that Genesis® is one of the most environmentally responsible structural building systems

Genesis® can build industry standard assemblies that have been tested and approved by agencies such as NRC and ULC

Over the last several years a multitude of economical FRR and STC rated assemblies have been made available. This has

in the factory, job sites become much less cluttered, cleaner, and safer for the tradesmen to work. A sequenced delivery process reduces storage requirements and increases site mobility.

The non-combustible light-steel materials utilized by

Utilizing Genesis® Technology, KML has provided a wide range of residential and commercial projects throughout Ontario. In fact, since 1995, KML has provided over 18,000 LSF structures in Ontario - a monumental achievement recognized worldwide.

The Kaitlin Group, Solmar, Aspen Ridge Homes, and Eastern Construction.

Genesis® LSF offers consumer advantages as well. Builders often promote the "Consumer Advantages" by way of marketing and promotion.

Consumers are drawn to the superior quality, safety, and health benefits of a Genesis® framed home.

The idea of having a fire resistant structure that doesn't shrink or warp over time is very exciting. It's also reassuring to know that a Genesis® framed home is engineered to meet higher building codes and withstands the effects of hurricanes and earthquakes. Steel framing is non-toxic and allergy free and does not off-gas like lumber products. In fact, the Asthma Society of Canada recognizes steel framing made from Dofasco steel as part of a healthier indoor air environment.

Termites don't have a chance at destroying the consumer's home and the steel, protected by a "Galvalume" galvanized protection coating, will not rust. Allowing consumers to make a choice



available. To put this into context, it takes an entire acre of woodland to construct one single family home. The same Genesis® framed home would require the recycled steel extracted from eight scrap cars.

allowed builders and architects to achieve required fire and sound ratings without the need for concrete products or multiple layers of gypsum. Since Genesis® is a "no-waste" process that is pre-assembled

Genesis, reduces the risk of construction fire dramatically. The North American insurance industry is beginning to recognize the benefits of LSF, and as a result is offering significant discounts.

KML has provided Genesis® solutions to some of the top residential and commercial builders in Ontario, including Ledcor, Urbancorp, Tridel, Mattamy, Hady, PCL, Daniels,

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toward environmental responsibility is also an added advantage. Like the sudden growth in demand for hybrid vehicles recently made available by major automobile manufacturers, steel framing will soon become the "socially acceptable" home to own.

Although Genesis and KML have been building LSF structure since 1995, it is not a new concept. Residential light-steel framing has been around for over 60 years. Unfortunately, the technology to cost effectively produce steel frame structures was not possible. The tooling and coatings were not adequate and the computer technology was not available at that time.

Technology is the driving force behind Genesis® and its success in the Ontario market. Its unique software systems, unique build process and innovative light-steel framing products have allowed GenesisTP and KML to become the world leaders in light-steel building technology. GenesisTP has developed two major software applications; FRAMEBUILDER, a powerful steel framing design package, and GEM, a revolutionary production management system. Both pieces of software have enabled KML to increase productivity and improve turnaround by over 500 per cent.

"Our progress hasn't stopped for a second. In fact, although we have made huge

leaps in development, we haven't even scratched the surface of the possibilities for this technology," says Aprile.

Besides the software, GenesisTP is also developing new processes and machinery to help increase capacity and throughput. GenesisTP has recently developed and is

currently implementing a completely new manufacturing and assembly process at KML's facility in Cambridge, Ontario.

The new assembly process will be a

semi-automated C4 will be the production line world's first named C4. Genesis®



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custom manufacturing line for the mass manufacture of engineered LSF wall and floor panels. C4 will increase KML's Cambridge capacity by over four times. This will be another monumental achievement just in time to meet the burgeoning demands of Ontario builders.

GenesisTP develops new and innovative light-steel products. Their latest project is the co-development of a revolutionary, long span, floor framing system that will be light-weight and fire resistant. The product will change how builders and designers think about floors forever.

The revolutionary floor

system is undergoing final approvals at the NRC and ULC laboratories, and will be unveiled to the

industry early this year. Stay tuned!

The "Research and Development Team" at GenesisTP

includes industry experts such as ; Reinhold Schuster, the world renown expert who recently retired

Form Steel Code for China; Ken Richardson, former Director of Fire Risk Management for the National Research

SkyDome. With names such as Schuster, Xu, Richardson and Strickland, GenesisTP has attracted some of the world's most renowned minds to maintain its position of leadership in the research and development of leading-edge, light-steel framing technology.

"Our intent was to take the traditional wood framing approach that has characterized home building for almost two centuries, and improve it dramatically," said Aprile. "We wanted to reduce the skill levels required to frame, replace poor quality softwood lumber with higher quality galvanized steel, and move as much of the build process away from the construction site as possible. Genesis[®] achieves all of this and more."

"Structural light-steel structures are complex in design, yet can be manufactured and pre-assembled in a factory with basic labour. The most critical aspect of constructing LSF structures is alignment of members, and achieving proper



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as head of structural Engineering at the University of Waterloo (U of W) and who represents Canada on the International Standards Organization (ISO) Committee for the design of cold-formed steel structures; Lei Xu, who also teaches at U of W and is authoring the Cold-

Council of Canada (NRC); and Mike Strickland, former Head of Product Development at CanAm, a professional engineer who possesses more than 28 years of design/manufacturing experience involving complex structures, including the retractable roof at Toronto's





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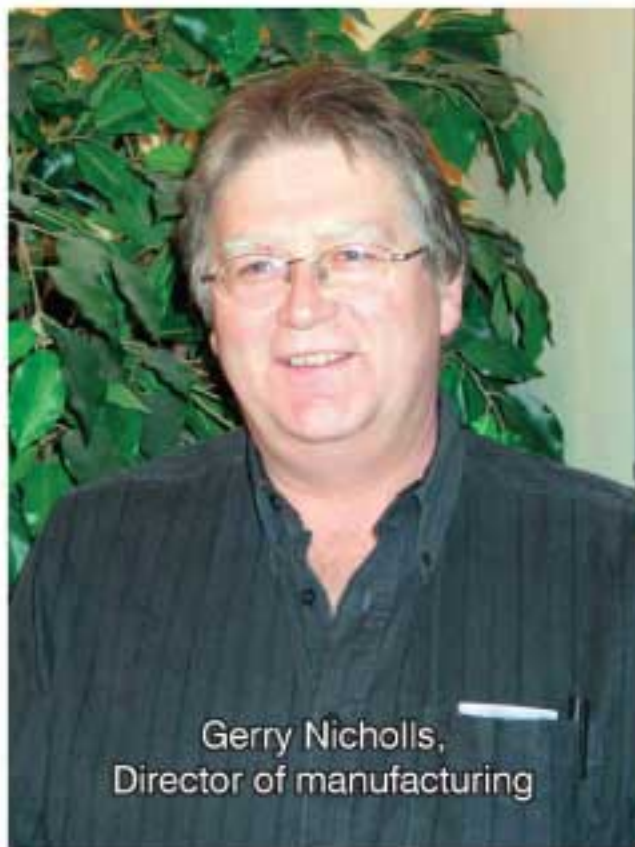


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Gerry Nicholls,
Director of manufacturing

compressions. The only way to accurately and efficiently construct a light steel-framed home on site is to pre-design and manufacture it in a controlled factory environment, but that takes software," he said.

"Believe it or not, back in the mid '90s, it took up to three months of engineering and design to produce shop drawings for the

framing of one single home," he recalls. After their first three years of development, Aprile and his team of in-house designers and engineers reduced the time required for engineering from three months per home, to only six weeks.

"It was a landmark achievement, but there was still a long way to go," Aprile said. "In 1999, GenesisTP

pooled resources with a Guelph-based CAD software company. Within two years of co-development and major customization to the software, we were able to reduce our engineering time further, to about three weeks. Unfortunately, we reached the software's plateau yet

would be a raw light-steel framing engine without unnecessary bells and whistles."

This in-house development, which culminated at the end of last year, allowed the Genesis team to unveil software that has narrowed engineering time for a new residential home down



had not achieved our goals. We wanted more. We wanted further efficiency gains, built-in intelligence, rule-driven design, and supplier integration. These were software features that just did not exist, anywhere."

"It was a major turning point in GenesisTP history, when we decided to establish our own in-house software development team to begin the programming of what was planned to be the most powerful framing software ever created. The name we chose for this software was FrameBuilder, which describes exactly what it does. It builds frames. The package

to five days. That's a fully framed two-storey home complete with about 300 shop drawings for order and manufacture.

"This was indeed a huge achievement. An achievement that would be responsible for bringing structural-grade galvanized

steel framing into the mainstream of modern construction techniques. This technology has allowed KML, our licensees, and authorized manufacturers, the ability to serve the market and scale their operations accordingly."

"Six or seven years ago, builders thought we were embarking on the impossible. Because they knew what was required to achieve this, their biggest concern was how? How will you design my models? Won't this take too long? What happens if you can't

deliver? Will my sub-trades charge me more? Over the last four years, these discussions and concerns have changed. The questions we get today are how much will I save and how fast will it go up? The simple answer is we have become extremely cost competitive and in fact are offering builders many opportunities to reduce their costs even further."

GenesisTP also developed a second piece of unique software, named GEM (Genesis Enterprise Manager).

GEM software monitors and manages the Genesis® process



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systems will be most appropriate and most economical to frame the particular structure. A cost estimate, detailed scope of work, and an outline of potential time and cost savings is then provided.

Genesis Engineers and Technologists are capable of designing light-steel structures to conform to any specification or building code in the world and provide their clients with back-up information and support, including tested fire-rated assemblies, and thermal and sound assemblies. They also provide structural information such as member sizes, gauges, and maximum

spacing requirements. The information is delivered in drawing form to supplement the customer's architectural drawings when applying for municipal approvals.

"At project start-up, each home or structure is modelled by FrameBuilder according to the engineered design, detailing, and the client's needs. The virtual framing process allows

Genesis designers to identify and resolve discrepancies before we get to the site. Once the third framed model is completed, shop drawings, materials lists, and assembly diagrams are generated

automatically. Drawings include all information required to build the walls, floors, and roof of each project.

"FrameBuilder software allows us to design a wide range of structures that contain thousands of components. For example a typical 2,000 sq. ft. home contains up to 4,000 individually specified light-steel components, requiring over

from start to finish.

"Before we get into what GEM does, let's describe the Genesis® process in detail."

Every project starts with a design analysis. This review and assessment will determine which



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20,000 pieces of data (such as dimensions, length, gauge thickness, knock-out (hole) patterns, etc.) to allow for pre-manufacture."

"Most would think it would be virtually impossible to design and manage all of this data in a cost effective manner. It practically is, unless you have the software and management systems in place to track the information."

Authorized manufacturers, like KML, are also utilizing these technologies. MSF International of Vaughan, Ontario, became a Genesis® authorized manufacturer in mid 2004. MSF is producing walls and floors for several projects in the GTA and is undergoing phase one of GEM implementation.

As the Genesis® demand



grows and expands throughout Canada, the US and international markets, more and more authorized manufacturers will be required to meet the demands.

"GEM software is integrated with our suppliers and allows us to control and monitor the entire production process from design, to material order, to manufacturing and shipping, to installation on site," Aprile

explained.

"GEM imports CAD data from FrameBuilder, places orders with our suppliers, generates bar codes and labelling, and produces employee ID cards. Employees are swiping panels as they are being produced, allowing KML to closely monitor the progress of their jobs, measure performance, and track every detail of the process.

"If, for example, Aspen Ridge Homes calls KML and wants to know where they are

on Lot 24 at MacLeod's Landing, we can tell them exactly where each and every component is in the build process, including when it was assembled, which transport trailer it is on, or tell them the status of any component of the building, at any stage of the manufacturing process. This powerful tool has become crucial to operating their business and providing their customers with accurate information."

KML offers builders the choice to install their own

framing package or take advantage of its "turn-key service" where the entire framing package is delivered to the job site and installed by Authorized Genesis® Installation companies. KML Project Managers manage projects from start to finish.

"Since sixty to seventy per cent of the home-building process takes place in our factory, we can significantly lower labour costs typically associated with

conventional framing on site," Aprile stated. "Since little of the actual building process takes place on site, the final product goes up faster, and poses less risk to the builder.

There are no window openings to configure, fewer discrepancies to resolve, and less demanding skills required to build. Installers simply connect panel 'A' to panel 'B' with self-tapping screws and a standard cordless screw gun. This eliminates the risk of a construction fire that could be caused by from welding, and of course other tradesmen's work."

The Genesis® Authorized Installer base is growing and currently includes companies such as Steel-Tech, Niveau Construction, Pro-Steel and Margold Contractors.

"A fundamental difference between Genesis® and typical framing outfits is that GenesisTP is legally



KML Building Solutions

required to perform ongoing inspections and provide final review letters to ensure the framing is installed according to the engineered design. This provides our clients and local building departments with the reassurance that the structure was built in accordance to the OBC and all structural design requirements."

"Examples of Genesis® technology in action include the Liberty Village housing development located at King and Strachan, in the heart of Toronto. KML was contracted by

Ledcor Construction, for The IBI Group to engineer, manufacture and install all 670 units," noted Aprile. KML began erecting the Georgian-style condominium town homes at Liberty Village last year. Expected completion date is this spring '05.

KML is also manufacturing and installing the townhomes at McLeod's Landing, in Richmond Hill, for Aspen Ridge Homes and 60 freehold

townhomes with detached garages for Remington Homes at Roselawn Villa, in Toronto. There are many other projects that mostly include multi-family townhome developments and light commercial structures but what stands out is the fact that in 2004, KML penetrated the hotel construction market when it completed a new hotel for Marriot Hotels, in Whitby. Manga Hotels, a Canadian hospitality and development company,

contracted KML, in conjunction with Chamberlain Construction, to build the new facility utilizing Genesis® light-steel framing. KML began construction in January 2004, and in fewer than 10 weeks, the entire four-storey hotel was fully erected. "We were very impressed with the speed. Building with KML's steel framing solution was definitely faster, and gave us a big advantage over the winter weather," said David Toor, president and CEO of Manga Hotels.

"The Genesis® wall and floor system featured a unique advantage in that the structure

could be fully erected without having to pour the concrete floors in between storeys," Aprile added.

To see more projects go to KML's website: www.genesisbykml.com

Although developed in Canada, Genesis® building technology is applicable to most building markets around the globe. In fact, Genesis® is already used to build residential and commercial structures in South Carolina, Florida, Iran, Spain and other parts of the world. In the last five years, there has been a sudden boom in international interest for light-steel construction technology.

Earthquakes, hurricanes, termites, and

skilled labour shortages are the main drivers.

"The Canada Mortgage and Housing Corporation brings people from all over the world to see our advances in light steel framing, and when it's time to showcase Canadian technology, they use our building sites," Aprile stated. "The most rewarding aspect of it all, is that it's all happening right here in Ontario."

For more information about KML Building Solutions, or to inquire about products and services, call 519-653-2159 or visit KML's web site at www.genesisbykml.com.

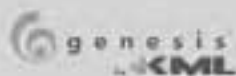
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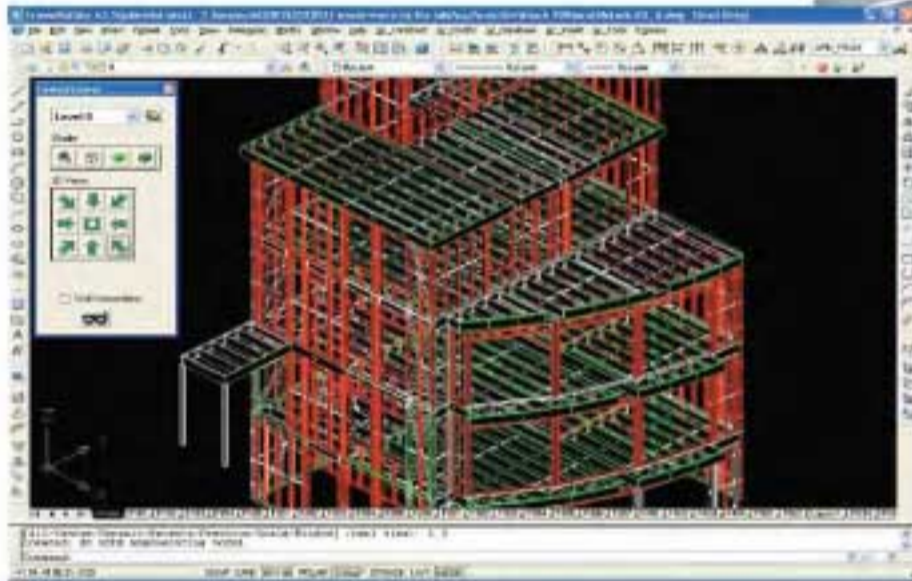
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