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Steel Trusses: Entry Point for Light Gauge Steel Components in Today's Marketplace

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Current market conditions, new software and manufacturing technology are making steel an increasingly favorable building material.

In the September/October issue of SBC Magazine, featured at the BCMC show in Phoenix, AZ, we discussed how technology plays a key role in realizing the huge growth opportunities of light gauge steel framing components and systems used in light commercial and residential construction. With market conditions favorable to steel's use in light commercial load bearing applications, building component manufacturers and fabricators are extremely interested in outfitting their operations to service the market with steel in addition to traditional materials. Technology is one important catalyst in making this happen, nearly overnight.

Companies are harnessing technology to streamline the process of designing and manufacturing cold-formed steel into building components. And most are focusing their efforts on steel trusses, the single biggest opportunity for light gauge steel framing. In just a few short years, the steel truss industry has quickly become a \$160 million per year industry, with an impressive 25 percent annual growth rate.

WHAT'S MAKING THIS HAPPEN?

The first light gauge steel trusses that met with any commercial success were developed in the early 1990s when lumber prices were skyrocketing and the homebuilding industry was taking notice of steel's attributes as an alternative to wood. But while steel trusses never made enough headway in residential markets, due to the extremely low price and easy accessibility of wood trusses, they were considered a good solution in light commercial applications. Much of the light commercial demand is in multiple occupancy, quasi-residential construction, where building codes require non-combustible materials.

In order to capture a larger market share in light commercial construction, several key elements should comprise a company's foray into light gauge steel trusses, including:

- An efficient steel truss profile
- Highly automated and efficient (man-hours and design) engineering software
- Automated truss layout software

- Efficient truss fabrication facilities

An efficient truss profile should be able to span large distances and be efficiently roll formed in a variety of depths and gauges. High strength to weight ratio (low cost), ease of fabrication, and simple shipping methods are critical. Additionally, an ability to design and manufacture an infinite number of truss geometries, and weak-axis strength are important attributes.

Highly automated and efficient engineering software (in terms of man-hours required and design time) is the next key element. Engineering software takes the input from the architectural drawings, and determines the required truss profiles, sizes the chords and webs, specifies the connections, and prints fabrication drawings. Manually compiling the trusses necessary for most roofs today is highly impractical due to the cost of man-hours involved. Even truss engineering software that doesn't automatically provide the truss profiles given certain architectural input are inefficient, causing lead times that lose market share, and ultimately making it difficult to be profitable in the truss business.

Automated truss layout software, quite often a part of the engineering software, is another key component to an efficient, profitable truss operation. From the truss profiles, layout software should generate drawings that show the truss profiles, locations of trusses used to frame the roof, and all connection and bracing details. These drawings usually have a bill of materials attached, and need to be certified by a structural engineer. They are then submitted to the building department.

A fourth element to successful truss business is the fabrication facility itself. Fabricators will want to be close to the market they serve, because freight costs and logistics can be an issue. Often very labor intensive, fabrication is becoming more and more automated, with streamlined processes that require less man-hours and machines that help speed the process. It is the precursor to the steel truss fabrication industry becoming a fully integrated, highly efficient component manufacturer, operating an efficient process incorporating design, engineering, fabrication and shipping, to produce a product that can compete in any construction market, commercial and residential.

WHAT MAKES THE STEEL TRUSS AN ENTRY POINT FOR OTHER LIGHT GAUGE STEEL BUILDING COMPONENTS?

Once efficiencies are adapted to bring economies-of-scale into play, steel truss fabricators will find themselves with a significant competitive advantage to offer other steel components, including floors, walls and other applications that when combined provide a total building solution in light gauge steel framing, for load bearing and non-load bearing applications. This is exciting for the steel framing industry. As technology is harnessed and adapted to market needs, the swift growth of light gauge steel framing systems is inevitable. Stay tuned...

With more than 20 years experience, Donald R. (Don) Moody, P.E., President and General Manager of NUCONSTEEL™ Corporation, a Nucor company, is an

internationally recognized leader in the light gauge steel framing industry. As a champion of the movement to accelerate the growth in use of light gauge steel framing in residential and commercial construction, he previously headed up the Steel Framing Alliance (SFA) in Washington, D.C., was president and CEO of Western Metal Lath, Inc. of Riverside, CA, and spearheaded the merger of the ML/SFA and MSMA into what is now the Steel Stud Manufacturers Association (SSMA). Don currently serves on the SFA Board of Directors, is chairman of the Commercial Construction Task Force, and was recently appointed chairman of the International Iron and Steel Institute's (IISI) Residential Working Group.

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