

STRUCTURAL BUILDING COMPONENTS MAGAZINE

August 2004

STCA Update

www.steeltruss.org

Light Gauge Steel Technology Advancements by Keith A. Lindemulder,
Residential Division Manager, NUCONSTEEL™

As the wheels of technological progress continue to turn in the residential construction marketplace, the light gauge steel industry keeps the pace.

All around us we see the continued evolution of technology in our everyday lives. Every day we see something that is faster, better or has more features than we had before and at some point we may decide that we can't do without it. If it's a new cell phone or computer system, most of the decision-making process centers around whether we can afford it.

This process takes on a whole new importance in the business world when words and phrases like "return on investment," "operating expense" and "productivity" are keys to the decision to use something new. Not only do we need to decide if it's affordable but it needs to create a sustainable improvement to the current system to be acceptable. Add to this the learning curve of incorporating a new machine or process into what already works and the chances of improving the system become even more suspect.

Advancement in technology can take many shapes and be packaged in several different forms. For instance, new computers or a new software package in the office can increase designer productivity or a new machine in the plant can move more material faster or easier than ever before. The holy grail of continuous improvement is developing a system where all the major systems and processes are essentially equivalent in capacity and are scaleable predictably. All too often we end up making a change in one location only to cause a major disruption somewhere else.

Perhaps one of the most rapidly changing technology environments today can be found in residential light gauge steel framing. In recent years we have seen the advancements in design and engineering, prescriptive design methods, significant improvement in fasteners, cost effective framing techniques and more recently, highly sophisticated roll formers driven by powerful yet lightweight software.

Starting in the office, design software quickly generates a 3D model of the structure to be built. Feature-based properties allow items which are used together to be linked together within the design. Doors and windows, for example, are dynamically linked to the wall in which they are installed so that changing the length of a wall still places the opening where it is needed. Design and engineering decisions can be made by using building code approved prescriptive tables and methods. Intensive engineering requirements specific to the job are no longer necessary.

Once in the plant, “robotic” servo technology coupled with stable and consistent raw material has enabled light gauge steel panels to be accurately assembled very quickly and without any cutting, measuring or even layout. The dimensional consistency of the steel members allows for the development of material handling and production automation impossible or impractical with most other raw materials. Real-time roll forming means the steel is kept in coils until it is needed for assembly—no work in process inventory and virtually zero waste.

Advancements in steel manufacturing technology allow for high quality, high strength steel to be produced entirely out of recycled material using significantly less energy than previously needed. Galvanized coatings on the steel for corrosion resistance provide projected lifespans of hundreds of years.

Various acceptable design methods allow many options such as hybrid steel/wood construction which can enable the component manufacturer to supply the most cost effective solution for any condition. Jobsite challenges are met with features such as specially located punch outs for the electrical and plumbing systems. Fastener manufacturers have even developed pneumatically driven pins which fit into air nailers currently used by the framer.

The cost of producing light gauge steel panels has finally been able to be reduced to a point where they can be very competitive in the market. The key has been the application of new technology to the entire process of designing, manufacturing and installing steel panels. In some cases sophistication has allowed simplification—and therefore removed manufacturing cost. In other cases, continued advancement has made what was impossible in the past reality today.

Future advancements will continue this trend. Current R&D efforts are sure to change the competitive landscape even more over the next few years. Costs will continue to go down, productivity will continue to improve and acceptance will continue to grow. If light gauge steel is already part of your operation, then you have been on this wave of growth and change. If you haven’t studied the merits of adding light gauge steel to your product mix, then perhaps it’s time to see just what technology can do for you and your bottom line.

Keith Lindemulder is currently the Residential Division Manager of Nucon Steel Corporation, a Nucor company. Mr. Lindemulder has more than 20 years of experience with automated systems, roll forming and building components.

[SBC HOME PAGE](#)

Copyright © 2004 by Truss Publications, Inc. All rights reserved. For permission to reprint materials from SBC Magazine, call 608/310-6706 or email editor@sbcmag.info.

The mission of Structural Building Components Magazine (SBC) is to increase the knowledge of and to promote the common interests of those engaged in manufacturing and distributing of structural building components to ensure growth

and continuity, and to be the information conduit by staying abreast of leading-edge issues. SBC will take a leadership role on behalf of the component industry in disseminating technical and marketplace information, and will maintain advisory committees consisting of the most knowledgeable professionals in the industry. The opinions expressed in SBC are those of the authors and those quoted solely, and are not necessarily the opinions of any of the affiliated associations (SBCC, WTCA, SCDA & STCA).