

### STCA Update

[www.steeltruss.org](http://www.steeltruss.org)

## The Future of Steel Truss & Component Manufacturing by STCA Staff

The building plans come in over the Internet and are automatically uploaded to a component design program. The design program automatically optimizes flow of loads through it and then the location of the structural elements to resist all applied loads. From there the program designs all the components to account for the loads on each individual element, how the flooring or roof is going to be applied, the planes that need to match up, and optimizes the structural design in the context of the manufacturing process.

Once the component design process is complete, it is collated with all other component designs in the manufacturing system and all are sorted by finished product due date and individual component type.

This data is sent to the plant where the following happens:

- Steel roll formers produce the shapes of steel needed for the component parts that need to be produced to maintain an even production flow through the plant. The thickness of steel to meet the structural member strength requirements is automatically selected by the computer from a series of coils that are available at the in-feed side of the roll former.
- All like specific steel member shapes are roll formed at the same time based on the specific section shapes and steel thicknesses needed to meet the structural performance requirements of the components to be made.
- Each shape is cut to length for the given component design it is being made for.
- Each shape is then transferred from the roll forming area to a component raw material storage area.
- The production process is optimized to produce as many like products as possible from the inventory of jobs to ensure both even flow production and customer needs.
- Each steel component is produced by having each required member automatically selected from the storage system.
- Each web, chord or stud member is sent to a manufacturing magazine where it is placed in the proper position to be automatically connected to the adjacent chord, web or stud members. The connection system uses screws, welding, compression fastening, or the connection system that best optimizes strength and manufacturing efficiency.
- This manufacturing process is no longer horizontal but vertical and is fully automated.
- At this point, all the tags are automatically applied to the members that need them.
- The finished component is then automatically stacked in a package that meets the customer's delivery specifications.
- A banding machine bands all the component parts together automatically in such a way as to minimize shipping damage.

- A crane picks the delivery package and places it in a properly sequenced storage area.
- The same crane is used to load the delivery trucks at time of shipment.
- All this is done in an even-flow production process so that the components produced are shipped the very same day to minimize the finished goods inventory and inventory storage requirements.

The only constraint to this model as our everyday reality is economics. Once labor gets too expensive or unavailable, automated mechanical solutions will become more viable. Computer-controlled technology and complex material handling are fairly routine. Just look at the automotive industry to see its significant use of robotics. Also, a car is far more complex in terms of integrated parts than a structural component will ever be. All it will take is a member of our industry to step out of the traditional approaches we have taken to the manufacturing process.

Continuing with the automotive industry analogy, one can quickly conclude that as the steel industry enters the construction market, its experience with automation may provide impetus for significant changes in the component manufacturing landscape. This may be one of the significant competitive advantages that the steel industry has. If so, the question is can this be exploited given the economics of our industry currently or in the future? What do you think?

We'd love to get the wildest futuristic thoughts running around in the minds of our members (even though it might be a startling experience to wander in the minds of some of us). Please take a moment to jot down some thoughts in an email and send them to [info@steeltruss.org](mailto:info@steeltruss.org) or fax them to us at 608/268-1033. We'd like to compile the dreams of our industry for all to contemplate, and will do so if we get at least 15 futuristic dreams.

---

[SBC HOME PAGE](#)

Copyright © 2003 by Truss Publications, Inc. All rights reserved. For permission to reprint materials from SBC Magazine, call 608/310-6706 or email [editor@sbcmag.info](mailto: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).