



Shell element type with 5 integration points in thickness direction (top), Solid element type with 4 solids in thickness direction (bottom). On the right the result each.

Roll Forming - A Pure Bending Method?

As defined, roll forming is a pure bending method. On the shop floor, however, often massive forming occurs additionally, sometimes desirably, often undesirably. This hardly cannot be avoided, if a hem should be folded at the sheet edge with a few roll stands only. Other applications are: Desired sheet thickness modifications like e.g. forming a notch into the sheet or forming outer radii that are smaller than the sheet thickness. Deep drawing effects often occur undesirably, e.g. if two or more bending zones on one profile side are formed at the same time and the sheet edges are prevented to "flow" into the roll stand.

The designer wants to have a reliable prediction about the result of these effects; for this the finite element analysis (FEA) is particularly suitable. In doing so, between shell and solid elements can be selected. Shell elements are well suited for pure bending; the calculation is quick and effective. However, limits exist if massive forming occurs. In this case solid elements are better, the calculation, however, needs more time.

In the new release of the popular roll form design software UBECO PROFIL the designer can select between shell and solid elements dependent on his application. The software creates the simulation model for the FEA system LS-DYNA automatically. In case of solid model, selection among 2, 4, 6, or more elements in sheet thickness direction is possible.

These and more new functions will be shown on the Blechexpo exhibition Nov. 03-06, 2015 in Stuttgart/Germany: Hall 7 Stand 7508 (EFB joint stand). See also the FEA system LS-DYNA at the same stand, presented by DYNAmore. The new release will be available from December 2015. Get more info from: UBECO GmbH, Baarstr. 121, D-58636 Iserlohn, Germany. Phone: +49-2371-9771-0, FAX: +49-2371-45550, E-Mail: info@ubeco.com, Internet: <http://www.ubeco.com>

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