



## **Roll Forming Simulation with PROFIL and LS-DYNA**

FEA (Finite Element Analysis) simulation of the roll forming process can be achieved in a radically shortened calculation time if the correct simulation model (shell or solid) is selected, the appropriate number of CPU cores are available, and the FEA system is optimised. The software developers at UBECO, through close collaboration with the FEA specialists of DYNAmore, have successfully optimised the PROFIL roll form design and analysis system in order to get a short calculation time with stable operation.

The system has been demonstrated using an example of a bumper profile, shown in Figure 1: the profile was roll formed on a 20 stand roll forming machine by pure bending. As the forming is purely in bending, shell elements are the best choice for the model. The table shows the result: depending on the number of CPU's (4, 8, 16, or 32) total computation times between 8.5 and 3 hours are achieved. For comparison: if solids are used for the model and 4 elements are chosen in sheet thickness direction, the total computation time takes between 22 and 8 hours.

Compared with the past, today's solution times are significantly reduced. It is possible to modify a roll tool set several times, repeat the FEA simulation by using the time-saving restart at the modified stand, and optimize the result. Using the simulation, the roll tool designer can obtain a roll tool set that produces the proper profile with the required allowances.

These and more new functions will be shown on the Blechexpo exhibition Nov. 07-10, 2017 in Stuttgart/Germany: Hall 5 Stand 5500, joint stand with DYNAmore.

The new release of PROFIL will be available from December 2017. Get more information from the UK distributor, Dutton Simulation Ltd – email [trevor@duttonsimulation.com](mailto:trevor@duttonsimulation.com) or call 01926 732147 to arrange a demonstration.