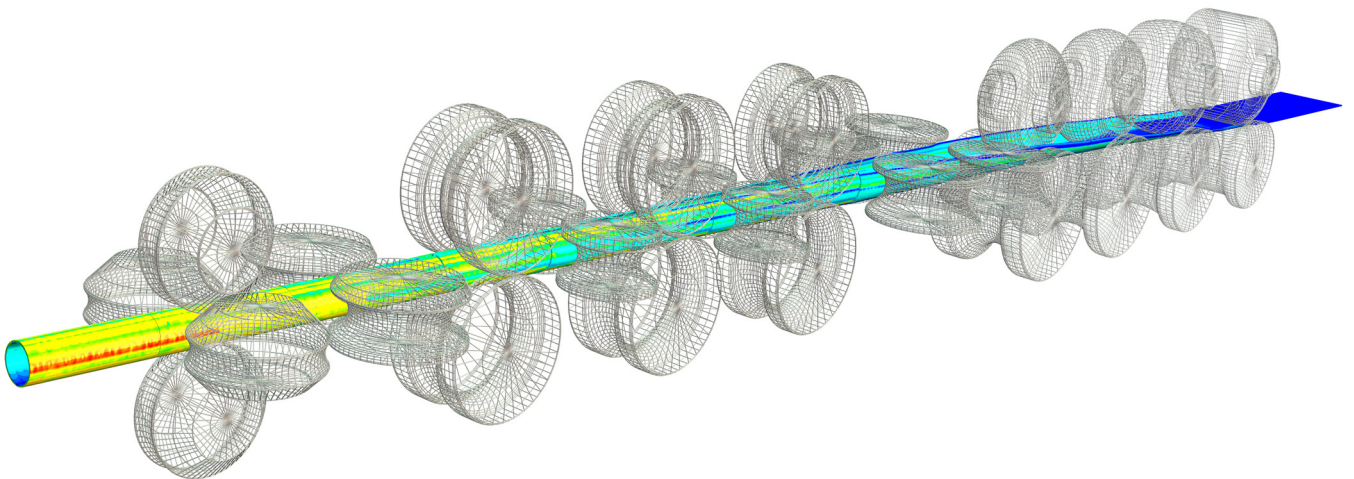


COPRA[®] FEA RF 2024.1



Release Notes

COPRA[®]
Finite Element
Analysis
for Roll Forming



COPRA® FEA RF

What's new in version 2024.1

With over 25 years of FEA simulation experience in research and industry, data M's specialists have been contributing to the continuous improvement of COPRA® FEA RF, our finite element analysis software tailored for roll forming processes. The new 2024.1 version focuses on elevating the user experience by introducing cutting-edge features, refining existing functionalities and increasing simulation efficiency.

IMPROVED

Simulations with Solid Shell Elements:

With improved support for Solid Shell Elements, roll forming processes can now be simulated even more efficiently. In this version, we have optimized the use of solid shell elements, allowing for successful simulations of roll forming processes while significantly reducing calculation times. Additionally, COPRA® FEA RF 2024.1 allows for the seamless integration of solid shell Elements into the design workflow, utilizing existing functionalities already available for Solid Elements.

This enhancement brings several key benefits:

Reduced Calculation Times: Solid shell elements offer faster simulations while delivering identical result quality, providing an efficient solution for your analysis needs.

Versatile Tool Utilization: Now, you can employ the same set of functionalities that were previously available for solid elements, such as automatic report creation, ensuring consistency and familiarity in your simulation workflow.

Restart of Simulation: Restart of simulations with modified rolls is supported. For situations where a change of mesh is required, conversion from solid shell elements to solid elements and subsequent restart is available.

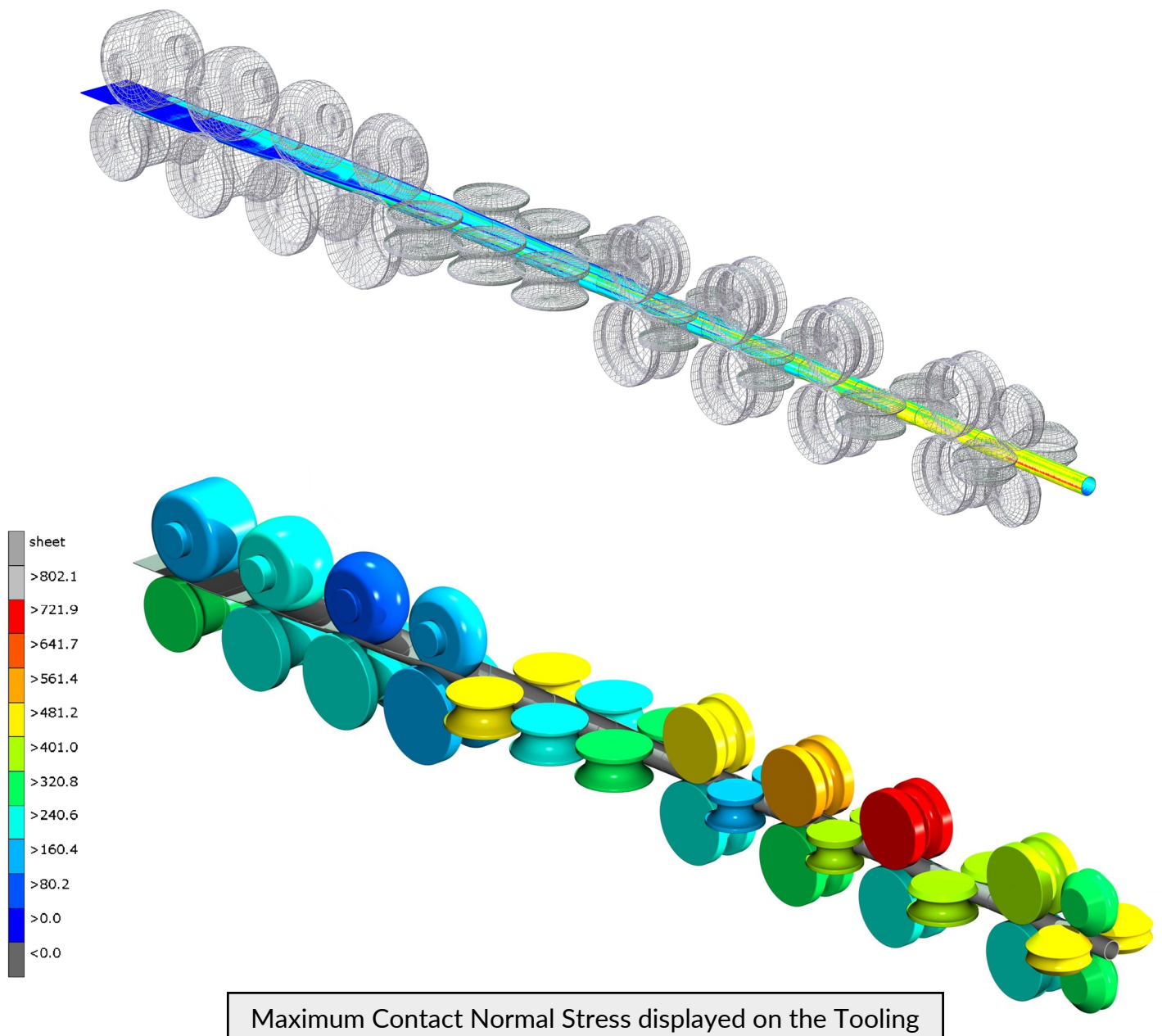
Upgrade to the latest version to take advantage of these improvements and streamline your roll forming simulations with solid shell elements.

NEW

Professional
Version**Comprehensive Overview of the Complete Roll Forming Line with RF Line Results:**

RF Line Results allows the user to have a look at the complete roll forming line, introducing a new way to analyze the results. In COPRA® FEA RF simulations, in order to reduce calculation time, only a portion of the metal sheet is simulated. As a result, only a portion of the roll forming line is filled with the metal sheet at a given time. This feature automatically gathers those portions and combines them, offering a more comprehensive view over the entire forming process. Additionally, tooling related results are displayed directly on the rolls.

Gain a holistic understanding of the entire process, identify potential issues, and optimize your tooling.



NEW

Export of Simulated Profile Results to Abaqus:

 Professional
 Version

Often roll formed profiles are not the final product. Instead, they are an intermediary product that still goes through further steps in order to reach its final shape. Accurate representations, including the forming history, of roll formed profiles in subsequent analyses allows for an improved design and simulation workflow. Results from roll forming simulations can be exported into an ABAQUS inp-file and used as a pre-state condition in ABAQUS simulations.

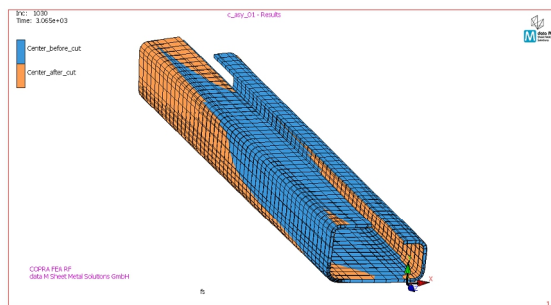
IMPROVED

End Flare Results in Automatic Report:

Expanding upon the end flare possibilities introduced in the previous version of COPRA® FEA RF, significant improvements have been in regards to the already existing end flare results available in the automatic report functionality.

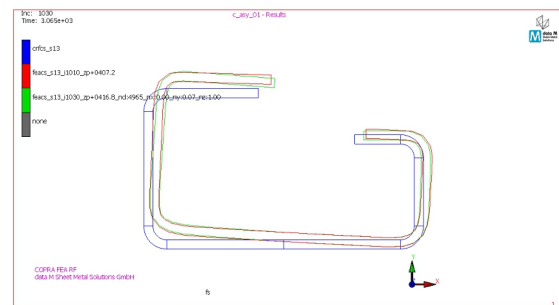
End flare results are now more detailed and accurate, offering users a refined view of the forming outcomes. Enjoy improved visualization and integration of end flare results into the automatic report, ensuring a clearer and more complete reporting experience.

Station 13 (S13)



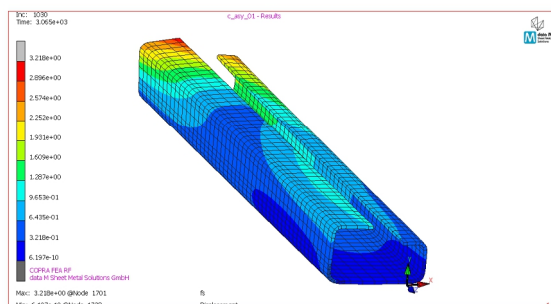
Station 13 (S13)

Freecut - Profile geometry comparison Cut vs Uncut (View: default, Orientation: Automatic)



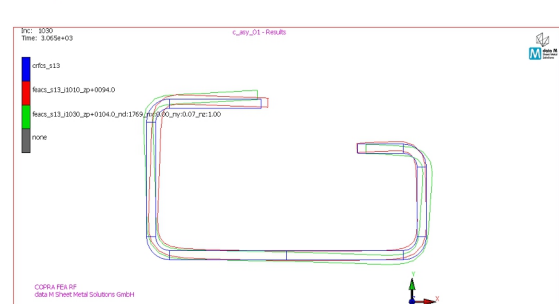
Station 13 (S13)

Freecut - Cross section before (red) and after (green) cutting at the leading end (View: default)



Station 13 (S13)

Freecut - Profile geometry comparison Cut vs Uncut - nodal displacement after cut (View: default, Orientation: Automatic)



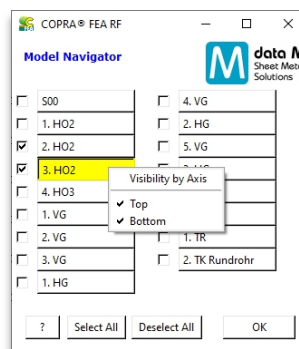
Station 13 (S13)

Freecut - Cross section before (red) and after (green) cutting at the trailing end (View: default)

IMPROVED

COPRA® Model Navigator Replaces Select Visible Stations Dialogue:

Navigate through your simulation seamlessly with the improved COPRA® Model Navigator. Now, users can easily move from station to station, show/hide specific stations, and toggle axes visibility per station using the right mouse button. This upgrade streamlines the user experience, providing more control and flexibility while preparing the simulation model and exploring the simulated roll forming process.



IMPROVED

Forces and Torque Represent Values for Whole Part in the Case of Symmetric Simulation:

Experience enhanced clarity in symmetric simulations as forces and torque values are represented for the entire part. This improvement ensures that users obtain a comprehensive understanding of the structural behavior, even in cases of symmetry, making analysis more insightful.

NEW

Strain Results Available in Local Coordinates:

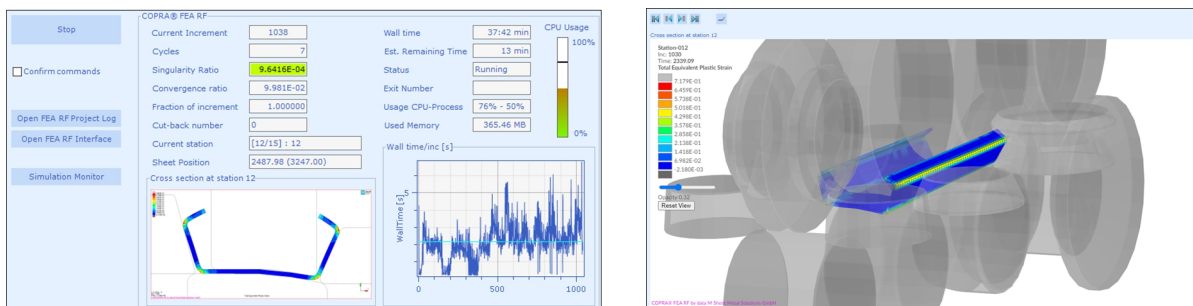
In this release, we introduce the availability of strain results in local coordinates. This enhancement allows users to analyze elastic, plastic and total strain values with respect to the local coordinate system (length, width and thickness directions). This new local representation provides a clearer and more easily understandable view of the sheet's behavior during the roll forming process.

NEW

COPRA® Process Control with Live Snapshot of the Last Formed Station:

 Professional
 Version

In COPRA® Process Control, the last formed station is visualized using with the new cross-sectional and 3D snapshot technology. As the simulation runs, this window provides a dynamic display of the last formed station, offering users a real-time understanding of the roll forming simulation current status. This visual aid is also available via Email, improving monitoring and accelerating decision-making during simulation runs.



Additional Developments and Notes

- + **Roll Forming Line Speed** -> *average line speed and designed line speed added to the plot*
- + **Plots Interactivity** -> *when hovering over a plot the corresponding curve name and values are displayed directly on the plot*
- + **Marc/Mentat 2023.3 Included** (also for COPRA® FEA RF WireRolling)
- + **Improved Software Stability and Usability**



data M Sheet Metal Solutions GmbH | Am Marschallfeld 17 | 83626 Valley | Germany | www.datam.de

FEA



data M
Sheet Metal
Solutions