In the PROFIL basic version (without FEM) these 4 material properties are used:

Material property	is used for calculating the
1. **Point** of the stress-strain curve = Yield Stress with Strain 0	Stress of Band Edge. PSA. Spring Back
Young's modulus = Slope of the elastic line (Hook's law)	Spring Back
Density	Weight kg/m in the statics table
Ri/t = min. inner radius / sheet thickness	Column Stress (Str.) in the profile list window

All other material properties are used for the FEA simulation!

The material model of the **PROFIL FEA extension** is available now in the **PROFIL basic version**

What's New? – Rel. 6.3 64bit

New material model and new calculation methods

The material model of the **PROFIL FEA** extension is available now in the **PROFIL basic version**. These calculation methods have been modified and are based on data from the new material model:

Stress of band edge, PSA: The calculation is based on the yield stress, i.e. the start point of the stress-strain curve.

Spring back: The spring back now is calculated by using the Kalpakjian method. This is more precise vs. the previous Oehler method and gets it's data from the yield stress and the Young's modulus of the new material model.

Stress on the outside of the bending zone: The calculation is based on the entry **Ri/t**, i.e the minimum inner radius related to the sheet thickness. The user is warned about the danger of crack on the outside of the bending zone. This is important for high strength steel. If Ri/t is not given from the supplier, the limit can be calculated approximately by **PROFIL**.

If the user switches the units from **Metric** to **Imperial**, also all data of the material model are recalculated.

New material database
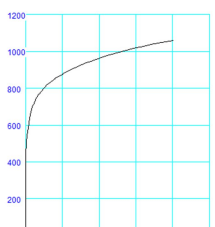

CR420Y590T-DP (thyssenkrupp®)

PROFIL contains a new material database with properties and stress-strain curves of the material suppliers **thyssenkrupp Steel®** and **SSAB®** (**DOCOL®**). These data come from tensile tests from the suppliers. Thus the user gets more precise results from the FEA simulation. The database will be extended soon with materials from further suppliers.

Scaling on high resolution monitors
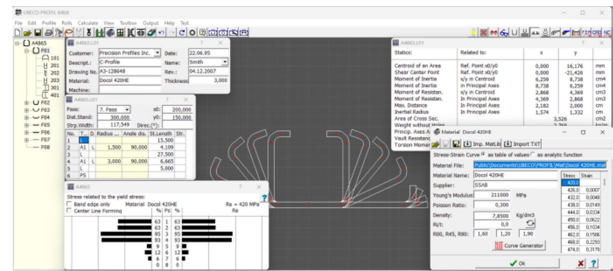
If the user sets a WINDOWS scaling >100% on a high resolution monitor in order to have the font better legible, the content of the **PROFIL** windows sometimes have been incomplete in the past. The problem now is solved; any scaling and any WINDOWS screen format can be set. Furthermore the screen font has been set to **Tahoma** that improves the legibility of small fonts.

FEA: New evaluation with strain at band edges
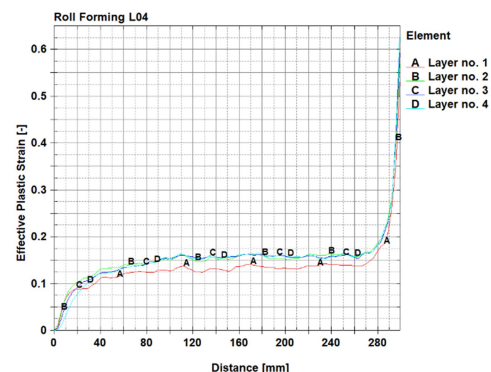
After running the FEA-Solver a Python script analyzes the result and shows the strain at the band edges of all stands in a graphic.

Further New Features

FEA Finite Element Analysis:

- The call of the material window has been moved to the button bar of the main window in order to make is available in the **PROFIL** basic version.
- Horizontal guiding the reference point of a symmetric profile also is possible now in case the profile starts with an arc segment at the reference point.

Roll Design:

- **Rolls, Move** and **Rolls, Extension** with overlap: Question **Move existing rolls?** If answered no, rolls can be stacked in special cases e.g. if a roll should rotate on a shoulder of an adjoining roll.

Calculate:

- The automatic trapezoidal profile forming also is possible now if the profile list contains arc types A2..4 or a radius 0.

File output:

- A dot in the path name also is possible now.

More info: **www.ubeco.com**