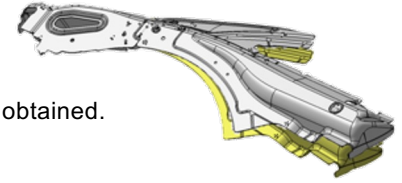




Product Data Sheet *Springback Compensator (R1)*

Springback Compensation (SBC) of Complex Sheet Metal Stampings – Problem Description

- Due to the elastic energy introduced into the workpiece during the forming of sheet metal parts, these deviate from the target geometry if the tools are not compensated.
- By SBC, the tools are modified in such a way that a dimensionally accurate component is obtained.
- However, the compensation process is very complex and fraught with many challenges:
 - The required component tolerances are very tight, at up to ± 0.5 mm.
 - The workpiece position is often not stable in one or more tool stages, resulting in fluctuating results due to non-reproducible shifting of the workpieces in the tools.
 - As a result of elastic shrinkage, the component becomes smaller than the tool. The global scaling of tools that has been common practice to date improves the situation, but does not deliver optimal results.
 - In addition, the compensation itself causes unfolding errors, which must be corrected (at least in part) in a time-consuming CAD reworking process.

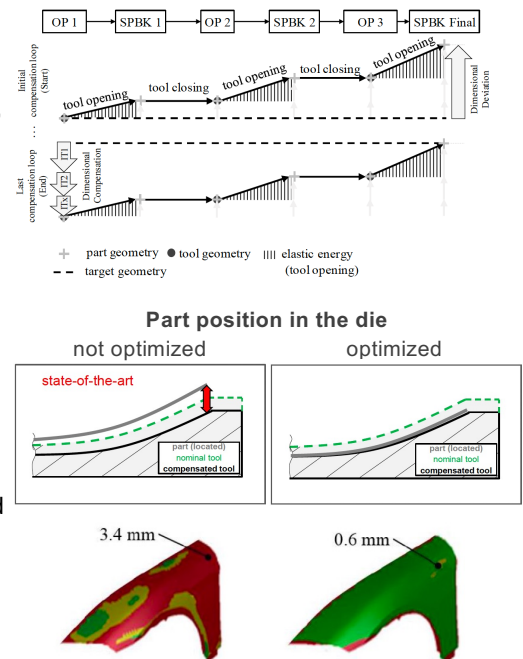


To date, the compensation process has not been standardized in many respects, making it difficult to plan in terms of workload and quality of results.

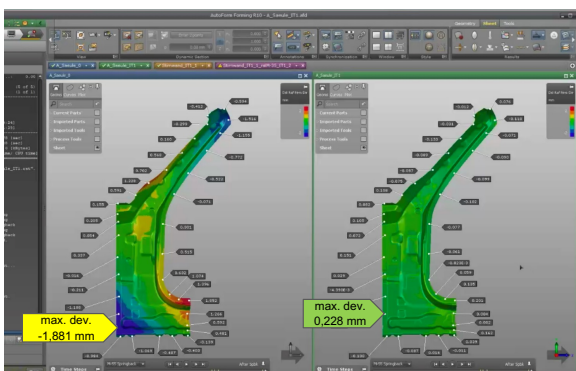
Product Features of the inigence Springback Compensator:

Highly integrated and automated software tool for springback compensation of complex sheet metal parts

- **Physical drawshell scaling**, so that the shrunk drawshell is locally and globally – nearly exactly – the same size as the target component
 - an indispensable prerequisite for a dimensionally accurate component and
 - an essential prerequisite for avoiding unwanted local deformations, which in turn cause the actual springback to differ from the simulated springback, resulting in the compensation not working.
- **Location optimized part position in the dies** ensures that the workpiece remains stable during each tool stage and that the final result is a dimensionally accurate component
 - an indispensable prerequisite for a repeatable stamping process and
 - an essential prerequisite for ensuring that only the physically unavoidable portion of springback needs to be compensated for, and not also springback that only occurs as a result of the workpiece being elastically forced into the subsequent operation.
- **True-in-size modification of the active die surfaces**, eliminating length and surface errors
- **User-friendly forced process sequence**, greatly reducing the likelihood of errors and ensuring high-quality results regardless of the user.



Application Example (A-Pillar)



Process:

Draw – Trim – Trim/Form – Trim/Form – Trim

- automated scaling and definition of the compensation strategy (gap between arriving part and receiving die surface < 0.55 mm)
- vertical dimensional deviation reduced from 1.881 mm to 0.228 mm in just one iteration
- workload 1-2 hours