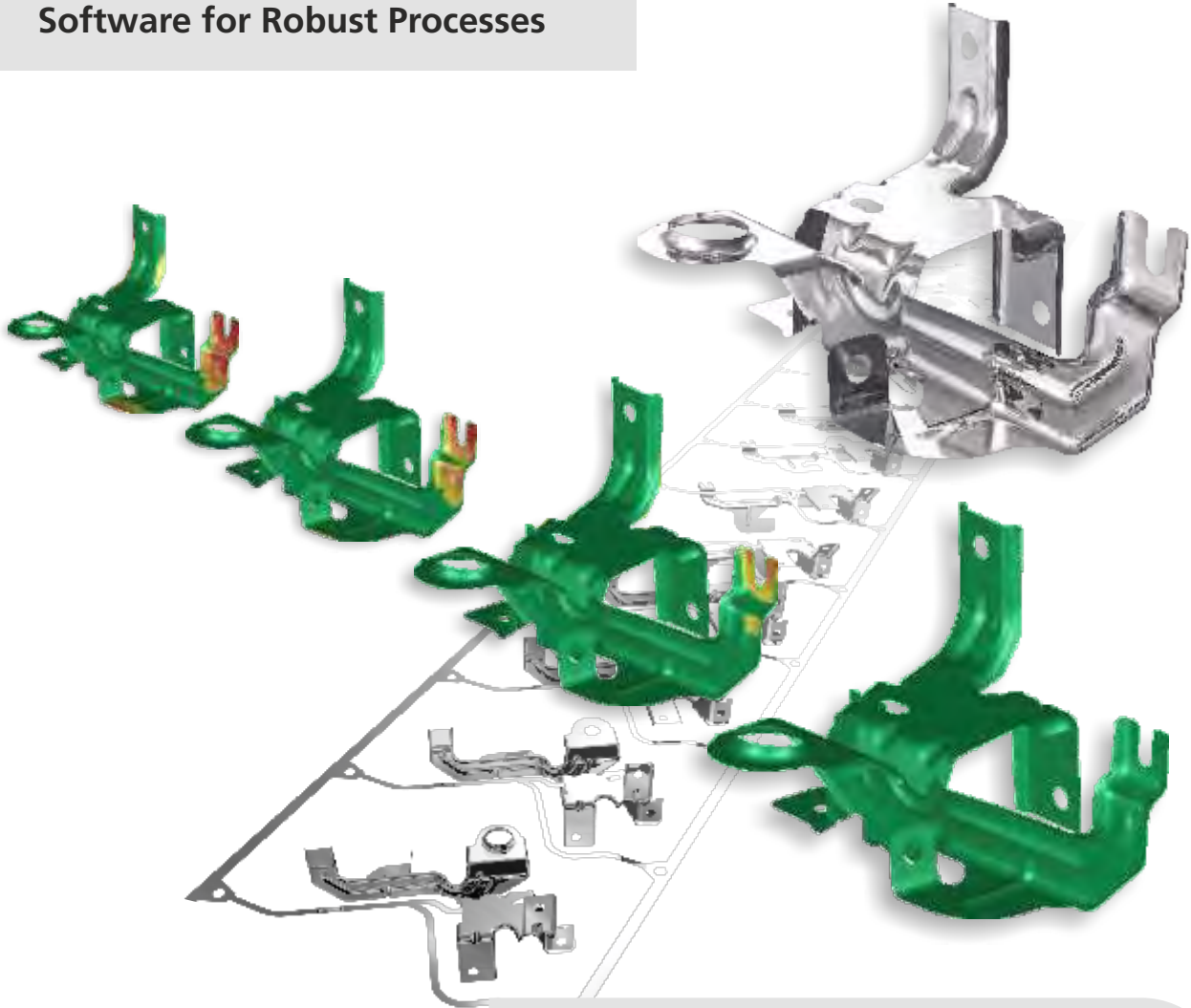


# AutoForm-Sigma<sup>®</sup>

Software for Robust Processes



- ▶ Determination of process capability and influence of parameter variations on production
- ▶ Efficient evaluation of appropriate correction measures for robust production
- ▶ Reduction of press downtime and reject rate
- ▶ Increased process efficiency and reduction of overall production costs



# AutoForm-Sigma<sup>®</sup>

## Efficient Correction Measures and Robust Progressive Die Stamping Process

AutoForm-Sigma enables users to design an efficient and stable progressive die stamping process. The resulting reduction in press downtime as well as reject rate ensure a cost-efficient manufacturing process. The software allows for effective parameter adjustments and elimination of unexpected interruptions during production.

Ideally, a progressive die stamping production is set up according to engineering and runs in a perfectly matched simulated environment. However, in reality, parameters in engineering are not as constant as commonly assumed. The reason for this is that in practice there are unavoidable and uncontrollable noise parameters which affect the process conditions.

Material properties can vary from coil to coil, even within the same coil. Lubrication, tool and sheet roughness as well as friction coefficient may vary as well. Press forces, and tool wear may also vary from stroke to stroke in the press.

AutoForm-Sigma takes into account the noise and variability that are inherent in the progressive die stamping process and provides a better reflection of the real state of manufacturing. With this software, the effects of noise and variability on the robustness of the progressive die stamping process are quantifiable and predictable. Engineers can easily select the appropriate correction measures in order to ensure a stable and reliable process.



Effects of variability on robustness



Noise in material properties



Noise in forming process parameters



Variation of springback due to noise

In addition, the software enables users to determine the Cpk process capability, which is an indicator for process stability and reliability. With AutoForm-Sigma, users can achieve their desired process capability targets through the most efficient and robust manufacturing process possible. Robust process definition is essential for the efficient production of stamped parts which meet quality standards. With AutoForm-Sigma, progressive die makers can validate a process quickly and accurately before the real manufacturing process begins.

The sensitivity analysis of control parameters, such as press forces or speed, carried out by AutoForm-Sigma enables operators to make effective adjustments that reduce both press downtime and part rejection rate.

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Publication SIB-PD-1-E



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