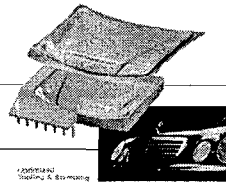


The

Automotive

Industry

Standard



AutoForm Version 3.2 New Features

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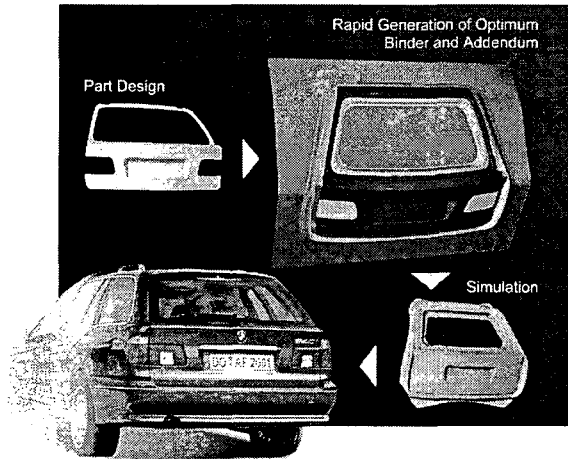
AutoForm: Our Mission

**AutoForm's Mission is to deliver
Innovation, quality, productivity and
Best-in-class support to our
Customers worldwide**

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AutoForm's Main Innovations

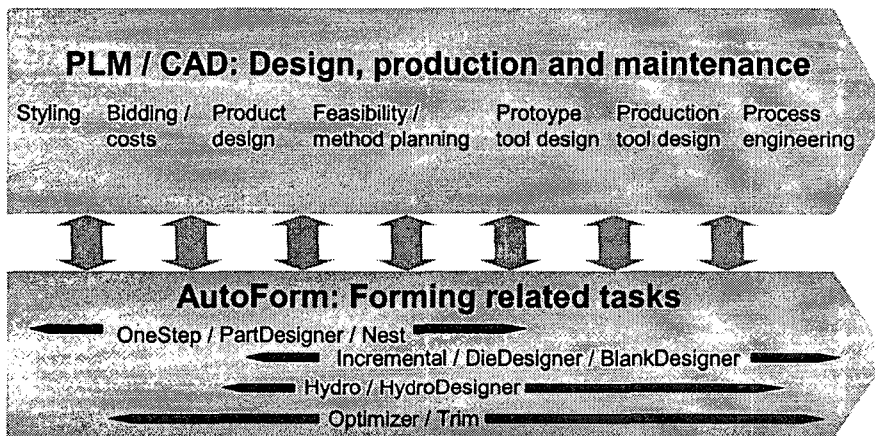


- Forming simulations in 2 hours instead of 2 days
- Tool concepts in 1 hour instead of 1 week
- What next?

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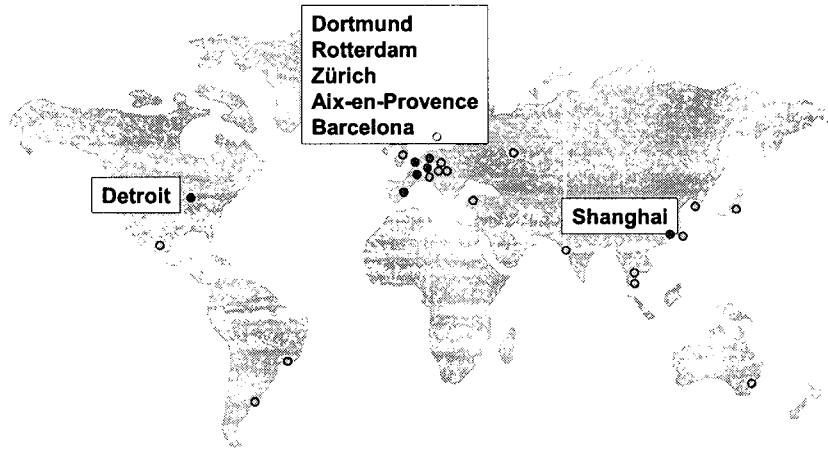
The AutoForm Vision



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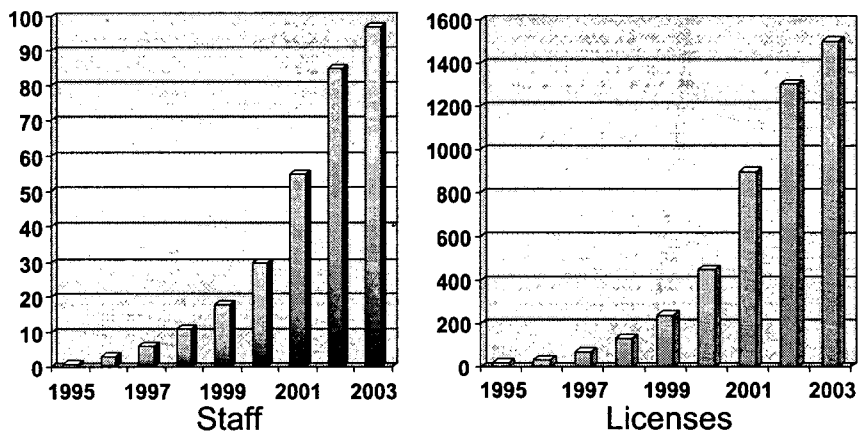
AutoForm: Worldwide Support



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AutoForm: Company Development



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AutoForm: Customers

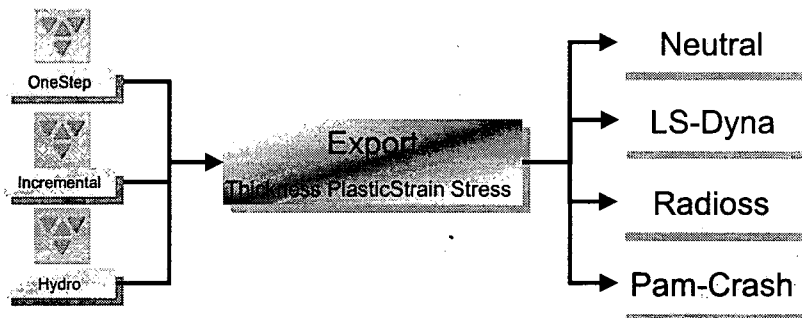
- 100% of the top-20 automotive manufacturers
- 80% of the top-50 automotive manufacturers
- > 200 suppliers: Tools & dies, steel & aluminium, components, engineering, design



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Improve CAE-Analyses: Export Results



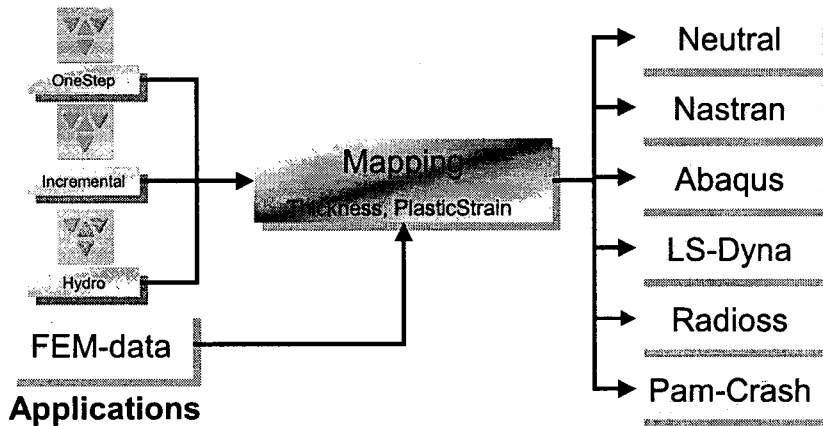
Applications

- Mapping done in CAE-analysis (i.e. crash)
- Use the AutoForm mesh for the CAE-analysis

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Improve CAE-Analyses: Map Results



Applications

- Mesh for the CAE-analysis is different from AF mesh

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AutoForm Incremental Forming Steps

Drawing



Trimming



Flanging



Cam flanging



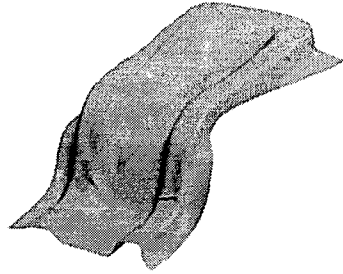
Springback after cam flanging
(normal displacement)



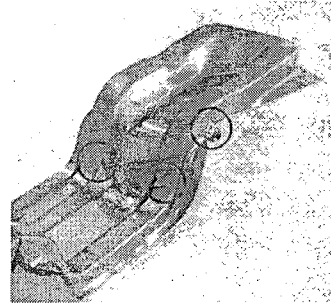
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AutoForm Shell Element



Shell



Real part

Thickness: 1.2mm, Material St14

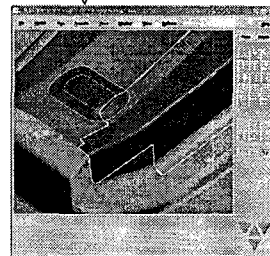
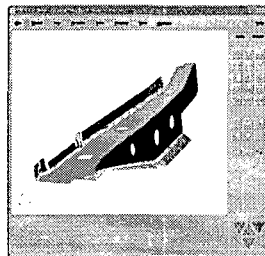
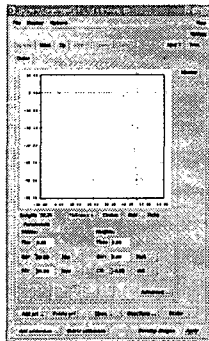
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 **AUTOFORM**
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AutoForm - DieDesigner

- AutoForm DieDesigner

New features



- Trim Line 자동 전개 기능

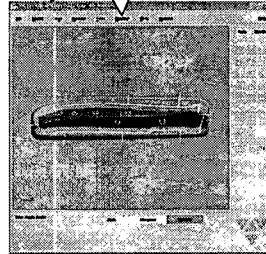
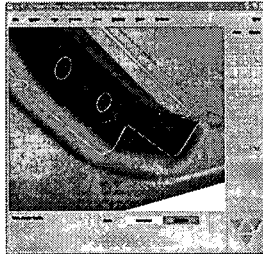
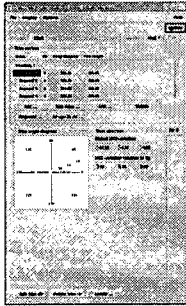
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 **AUTOFORM**
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AutoForm – Die Designer

- AutoForm DieDesigner

New features



- Vertical/CAM Trim 구간 자동선정

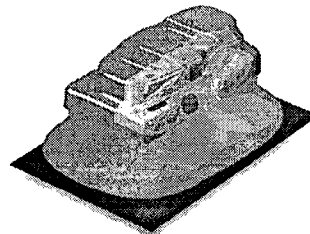
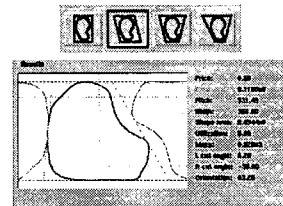
- Scrap Cutter의 위치에 따른 Scrap Size 자동계산

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AUTOFORM
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AutoForm – Blank Designer

- Early estimation of material costs during product development
- Minimization of material usage during die design
- Determination of cost-optimized sheared blanks

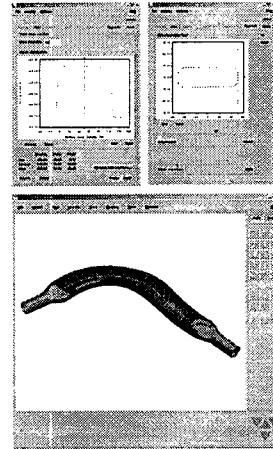


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AutoForm – Hydro Designer

- Close all holes
- Define the center line and analyse approximate strain
- Generate an addendum at both ends of the part
- Die tipping and separation surface (create upper and lower tools)
- Automatic determination of bending line
- Automatic transfer of all tool data to AutoForm-Hydro

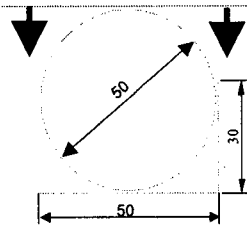


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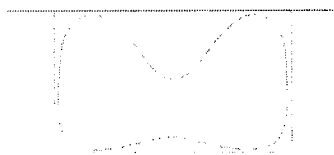
AUTOFORM
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New Shell Element Formulation

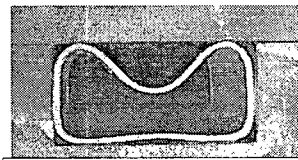
Thickness : 1,5 mm
Material : AlMg4,5Mn



Elements : 2054
CPU-time : 170 s



New shell element



Experiment

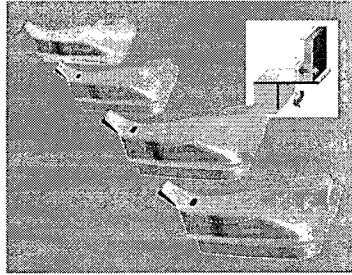
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AutoForm-Trim

AutoForm-Trim is the solution for:

- Determining the blank outline for crash forming operations
- Determining the trim line before restrike or flanging operations



AutoForm-Trim : References

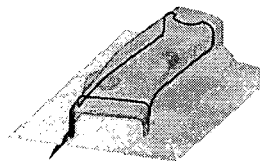
DaimlerChrysler
Fontana Pietro
Ford
General Motors
Honda
Isuzu
Maruti
Ogihara
Pacific Industrial
Unipress ...

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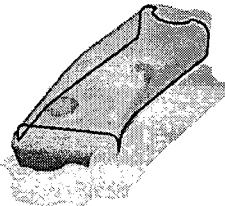
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AutoForm-Trim

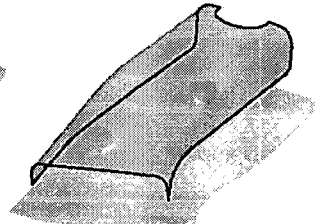
- Blank outline determination for crash forming process



Base simulation



First trim iteration



5th trim iteration

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