



# THERMOFORMING AND BLOW MOLDING SIMULATION

WITH PAM-FORM FOR PLASTICS

## KEY BENEFITS

- Predict forming issues earlier in the production cycle
- Optimize the thermoforming process and tool design
- Improve material selection
- Foster innovation
- Overall cost savings and reduced time to market

## TYPICAL APPLICATIONS

- Food & drink packaging
- Pharmaceutical and electronics articles
- Automotive interior panels
- Appliance components
- Toys

PAM-FORM is the pioneering virtual manufacturing software dedicated to non-metallic forming processes, developed through industrial partnerships and projects in various fields such as automotive, aerospace and consumer goods.

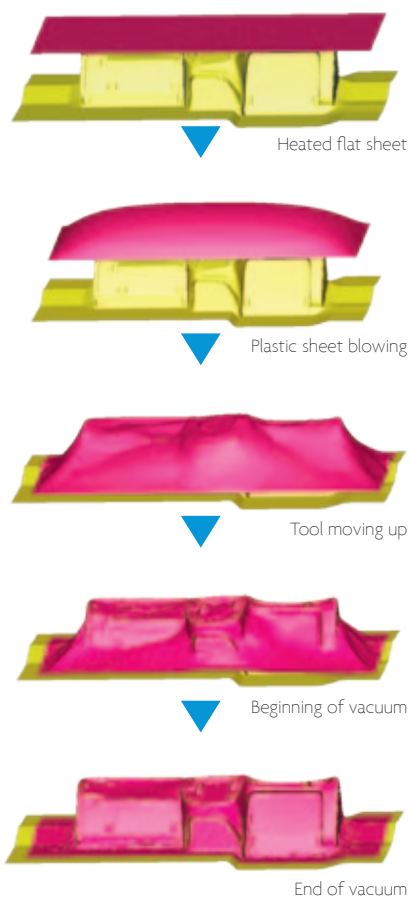
PAM-FORM for Plastics extends the thermoforming simulation frontier from a simple formability evaluation to a complete virtual thermoforming solution for industrial use. It provides unsurpassed productivity gains and flexibility for formability evaluation and process validation.

PAM-FORM simulates the entire forming process, making it possible to prove thermoforming tools and processes on computer, before any hardware is built.

With PAM-FORM, you can produce validated results (wrinkles, splits if any, final thickness...), which up until now could be obtained only by actual tryout, thus producing all answers

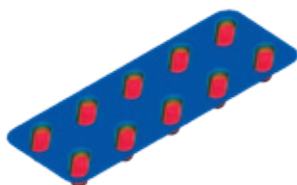
### Automotive application example:

#### Dashboard Thermoforming



### Other industrial applications include:

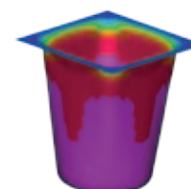
Pharmaceutical blister



Plastic Bottles



Yogurt cup



required to build hard tooling with confidence. By carrying out these simulations, through successive refinements of forming conditions or geometry, your hard tools will require only fine-tuning before a successful production run.

PAM-FORM enables you diagnosing and solving manufacturing problems in your design, as well as correcting and preventing wrinkling and excessive thinning while improving your tooling.

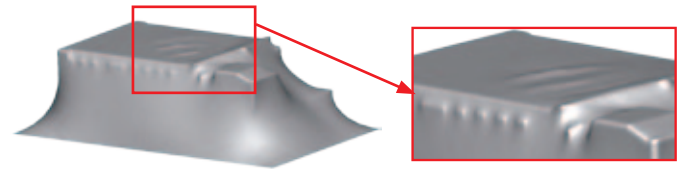
PAM-FORM provides the designers and process engineers with the following help:

- **Correct:** analyze an existing tooling to improve design and process, reduce the scrap rate and meet product design criteria.
- **Prevent:** analyze a new design to predict design flaws before tooling takes place, avoiding costly formability problems and time and money spent re-tooling.

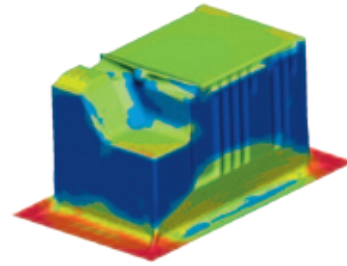
PAM-FORM is fully compatible with ESI's simulation software portfolio for virtual manufacturing and performance testing, hence, keeping the manufacturing history of the calculation run, you can make use of the results for further analysis. For instance, while performing thermoforming simulation, thickness results can be kept for static and/or dynamic loading application for "as built" design analysis.

### Typical results on a fridge innerliner:

Wrinkling



Thickness distribution



Shape distortion



For more information, visit: [www.esi-group.com/pam-form](http://www.esi-group.com/pam-form)

## ABOUT ESI GROUP

ESI is a pioneer and world-leading provider in virtual prototyping that takes into account the physics of materials. ESI has developed an extensive suite of coherent, industry-oriented applications to realistically simulate a product's behavior during testing, to fine-tune manufacturing processes in accordance with desired product performance, and to evaluate the environment's impact on performance. ESI's solutions fit into a single collaborative and open environment for End-to-End Virtual Prototyping, thus eliminating the need for physical prototypes during product development. The company employs over 750 high-level specialists worldwide covering more than 30 countries. ESI Group is listed in compartment C of NYSE Euronext Paris. For further information, visit [www.esi-group.com](http://www.esi-group.com).



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