Benefits of Simulation Process Automation for Automotive Applications

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Abstract: The use of iSight to automate Inergy's simulations related to automotive plastic fuel tank development is highlighted by three examples:
1. the static venting simulation, where the low added value part (finding the position of valves on the tank so that the customer's specifications are fulfilled) is automated. This allows the expert to focus on higher added value tasks.
2. the tank aging simulation, which consists in computing the permanent deformation of the fuel tank caused by the plastic creep. ISight permits to easily investigate different tank architectures at early stage of development.
3. the blow molding simulation is simplified so that non-simulation specialists are able to run it. This eases the access to simulation for technical experts.

Keywords: Plastic fuel tank, task automation, optimization, fuel tank aging, blow molding, fuel tank venting.

1. Introduction

In the last years, the use of numerical simulation has spread within INERGY Automotive Systems and is now a mandatory part of the Development process of a plastic fuel tank. A step further is now made by automating the simulation processes with two objectives: reducing the cost and duration of simulation to make it even easier to integrate in the Development process, and facilitating the access to simulation to allow more persons in the organization to take advantage of these tools.

Three concrete examples of benefits taken from the use of simulation process automation are presented.

2. Support technical experts

One of the most obvious tasks that are expected from simulation results is an efficient support to the technical experts. This implies a few constraints:

1. Technical experts are not necessarily familiar with simulation tools, nor comfortable with simulation results. The output of the simulation must be expressed in terms that are familiar to the field expert.