SIMOULDING Rotomoulding Simulation Software

OBJETIVE

For companies that design rotomoulding plastic parts or moulds, SIMOULDING software helps users predict and avoid manufacturing defects during the initial phases of part and mould design, thereby eliminating the high cost of rework moluds and helps improve part quality as well as decreasing time to market.

MARKET

In recent years, the rotomoulding process has expanded its presence in various markets that have high quality standards, such as the manufacture of toys, auto parts, technical parts, furniture, and sporting goods, among others. With a demand of 3% of global PE consumption.
The global rotomoulding industry was valued at US$5 Bn in 2024 and is estimated to grow at a rate of 5.9% per year from 2025 to 2037 and reach a valuation of US$12,7 Bn by the end of 2037. Surge in demand in building & construction and automotive & transportation sectors is expected to drive the rotomolding market size during the forecast period [1].

To promote the creation of parts with complex geometries and greater added value for new applications, it is crucial to have innovative technologies that allow these objectives to be achieved at competitive costs.

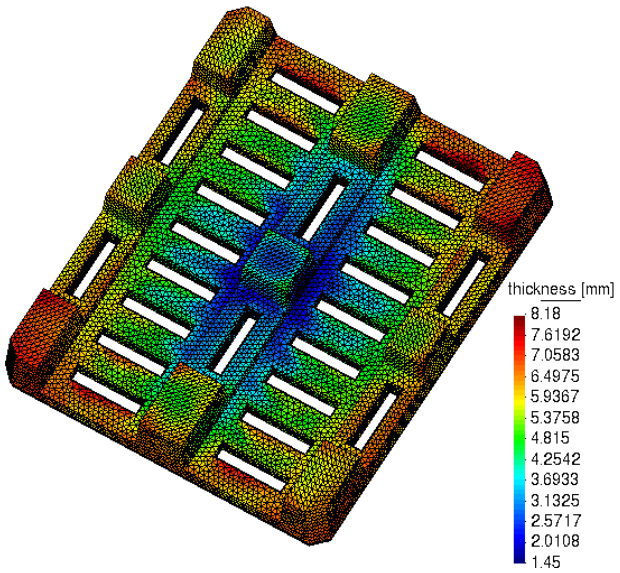
Rotomolded product developments typically have some degree of uncertainty that generates additional costs associated with modifications and losses due to delays in market launch.

Therefore, anticipating potential problems is the key to avoiding indefinitely extended deadlines for fixes and adjustments. In this way vendors in the global rotomoulding industry are investing significantly in R&D+i of new products to broaden their revenue streams.

[1]https://www.researchnester.com/reports/rotomolding-market/4393

OVERVIEW

SIMOULDING is a Computer-Aided Engineering (CAE) simulation tool that predicts how powdered and molten plastic flows inside a mould during the rotomoulding process, a manufacturing method for producing hollow plastic parts and products, generally large in size and with different wall thicknesses, in a wide range of plastic materials, including polyethylene (PE), polypropylene (PP), PVC and Nylon (NY) among others.
By being able to predict these defects, users can change mold geometry or the selected material, in the early phases of the design, as well as determine the optimal processing conditions to eliminate or minimize potential defects, allowing savings in material, energy , natural resources, time and money.



BENEFITS

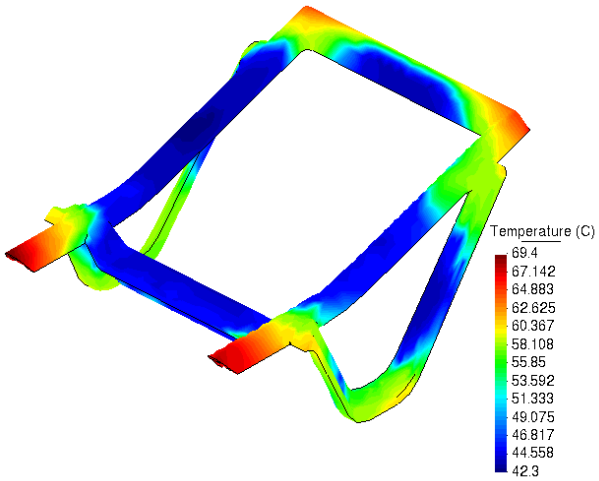
• Anticipate unexpected problems: SIMOULDING software can be used to predict and optimize part wall thickness, mould wall thicknesses, and appropriate processing parameters such as process times, temperature, and spin rates, among other features. In this way, it will be possible to ensure the mould works right before it is manufactured and reduce or eliminate the need to have to modify or repeat it.

• Reduce manufacturing defects and scrap: SIMOULDING makes it easy to analyze design iterations at the earliest stages of product development, when the cost of changes is lowest and the impact on manufacturability is greatest. This improves part quality and minimizes scrap rates.

• Guarantee the parts structural resistance: with SIMOULDING we can ensure that the part has the expected structural and design requirements for the demands of use, knowing its real thickness and exporting the results as input data for a FEA structural analysis.

• Save raw material and resources: By using SIMOULDING, by knowing the distribution of thicknesses, it is possible to avoid a very common practice in the rotomoulding industry, such as adding material to achieve greater thickness in thin and weak areas, or to preheat these areas before each process cycle, or even re-evaluate the design of the piece, modifying or redoing the mold.

• Reduce time-to-market delays: SIMOULDING helps predict and avoid potential manufacturing defects prior to production of any mould tool. This virtually eliminates the need for mould rework (an expensive and timeconsuming task) and ensures project deadlines are met within budget.



SIMOULDING DESIGN SUPPORT

• Compatibility with other softwares
• Solid and shell parts
• Solid 3D mesh
• Surface mesh (shell)

RESULTS

• Residence time of powdered material
• Melt time
• Mold load capacity
• Melted material fraction
• Mold and part temperature profiles at different stages of the process
• Adhesion and solidification time
• Post-demolding temperature
• Point of interest and process graphics
• Solidified material fraction
• Volumetric Shrinkage
• Displacement (part warpage)
• Residual stresses

SIMULATION CAPABILITIES

• Process variables stage
• Filling Analysis stage
• Heating stage
• Cooling stage
• Tracking points
• Warpage Prediction stage

Simoulding