



6th European Framework Program

VIRTUAL INJECTION MOULDING



Starting point

There is a rising demand to simulate virtually injection moulding process of the plastic parts production on the level, where the users of these products can plan their real production costs and quality before they have to make the expensive investments to the moulds. The other important point to develop virtually precise simulation of the process is the demand of shortening the time-to-market.

Most important development sectors

- To precise the flow model in injection moulding simulation
- To preview the visual defects and their quality
- To precise the shrinkage and warpage analysis
- To find the optimal production window
- To take into account the special technics in simulation

To precise the flow model

- viscosity model for high shear rates
- determination of pressure dependency of the viscosity
 - influence of the bending of mould inserts
- ameliorate the material data, standardize the measuring methods and equipment

To preview the visual defects and their quality

- visual and mechanical quality of the weld line
 - visual importance of sink marks
 - importance of the air trapments and burn marks
- correlation between simulation results and visual surface quality

Better accuracy for the shrinkage and warpage analysis

- Better modeling of solidification temperature area and packing phase
- The shape of the mould cavity from the simulation in the format of a stl-file

To find the optimal production window

- The use of DoE and statistical methods already in simulation phase to optimize the production parameters
- Mould cavity shape based on optimal production parameters

Special technics in simulation

- IMD, IML
- hybrid parts
- multicomponent injection
- Rapid tooling optimization

Possible partners

SOFTWARE DEVELOPMENT

-Simcon, SIGMA, Gierth, Accuform, Bassetti, Elastopoli

UNIVERSITIES/RESEARCH

-TUT, UPV, Lboro Uni, Imtec

END-USERS

-Nokia, Perlos, Lego, Brivaplast, Ghepi

HARDWARE DEVELOPMENT

-Priamus, Gierth

TRAINING

-SPE, Polymertraining, AIJU, VIM Italy, Koiré

VIM Project schedule

- Proposal must be in EU 3rd of September
- Possible acceptance in October -03
- Final agreement and consortium agreement signature appr. in December -03
- Project lasts 4 years starting early -04