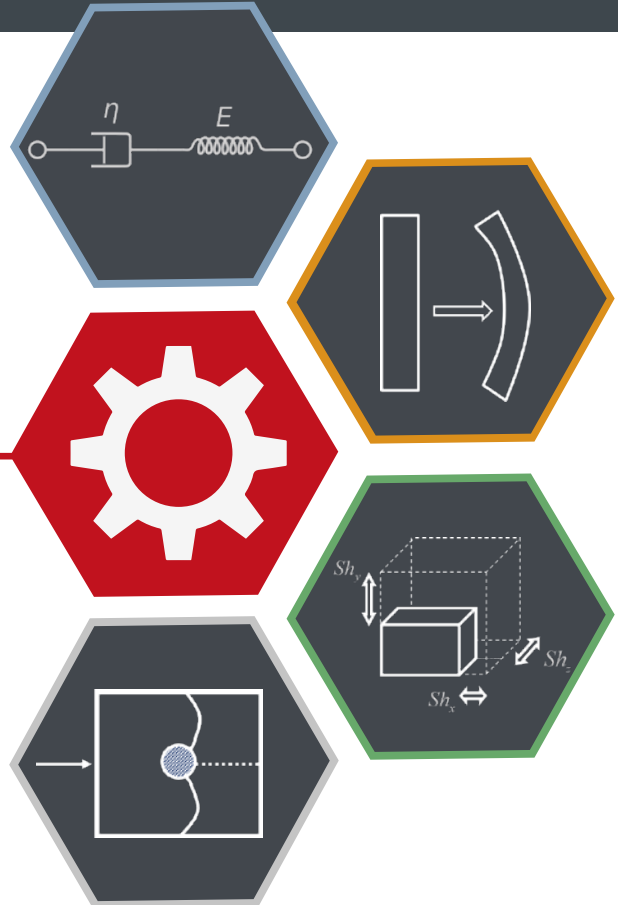


BIMS 1:

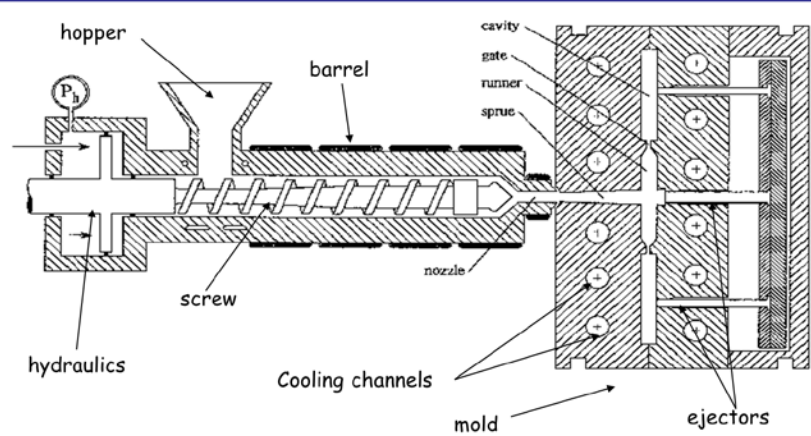
## Understanding Injection Molding of Thermoplastics

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**BIMS 1**



The intention of this seminar session is to help professionals of injection molding, whatever their scientific background, to develop a much deeper understanding of the polymer physics behind the process.



## SCOPE

The idea of BIMS training sessions is to transfer basic knowledge of plastics and processing technology to professionals to enable them to:

- \_\_\_ develop better part design skills
- \_\_\_ improve the dialog between parties (part designer, molder, mold maker, ...)
- \_\_\_ design more efficient tools
- \_\_\_ optimize the molding process for an existing tool
- \_\_\_ provide interpretation keys to flow analysts
- \_\_\_ help select the right material
- \_\_\_ troubleshooting part or mold problems

The referent goes deeply into the physics of the various thermoplastics processing behaviour, thoroughly explains the mechanisms involved in this complex process from filling to final warpage, by using simple words and concepts, and a minimum of mathematics, to guarantee a better understanding of the complex interacting phenomena during molding.

Participants could be:

- \_\_\_ design engineers in charge of molded parts
- \_\_\_ molders & mold making specialists
- \_\_\_ flow analysts looking for analysis interpretation support
- \_\_\_ project leaders involved in developing molded parts
- \_\_\_ research engineers interested in injection molding
- \_\_\_ mechanical engineers interested in process induced weakness and strength
- \_\_\_ material engineers or designers wishing to improve their understanding of a given class of materials
- \_\_\_ students involved in the field
- \_\_\_ young, skilled professionals with little field experience
- \_\_\_ flow analysis developers
- \_\_\_ customer support engineers ...

Dr. Vito LEO

More than 30 years experiences in  
polymer processing and physics process.



# MODERATOR

Dr. Vito LEO is a physicist by training, and has been working for more than 30 years in the field of polymer processing and physics. He has been particularly active in the field of injection molding of thermoplastics and the use of finite element numerical simulation of this process, and currently works more in the field of mechanical performance of plastics.

Vito Leo worked for the largest chemical company in Belgium supplying the biggest portfolio of engineering polymers and compounds in this industry. He also taught a second Master's course at Brussels University, to students of the engineering faculty. Today he is very happy to being able to devote himself fully to his favorite hobbyhorse, sharing his knowledge and explaining scientific backgrounds and theories in order to make every day work easier for all those who deal with plastics on a daily basis.

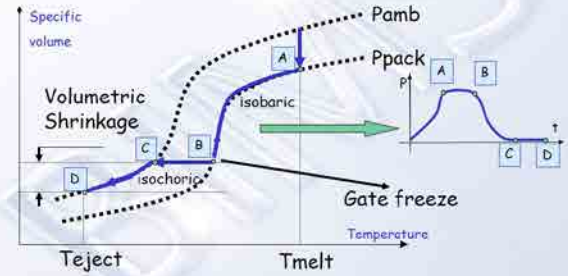
Since 2000 he provides training courses for the plastics industry. We very much appreciate the long-term cooperation with Dr. Vito Leo that recently climaxed into establishing a joint company - **plasticsYou**. We are looking forward to mutually organize a lot more exciting seminars and are already working on new topics to be able to offer you more substantial, diverse and profound seminar and training programs.



# CONTENT

The seminar will focus on complex phenomena behind the injection molding process, with strong emphasis on the understanding of part's problems (aspect, shrinkage, warpage, weld lines, burns, ...) and their relationship to material properties (amorphous, semi-cystalline, filled, unfilled), and the process itself.

## Packing on a PVT curve

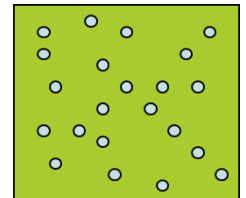
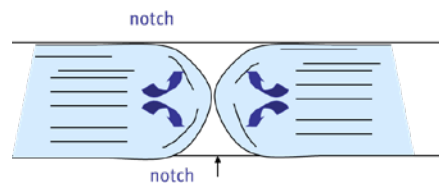
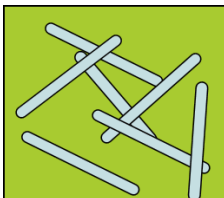


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The 2-day BIMS 1 seminar contains:

- \_\_ basic polymer thermal and rheological behavior
- \_\_ effect of pressure on polymer properties
- \_\_ the flow process in injection molding
- \_\_ part geometry and flow pattern
- \_\_ compressibility, phase change and PVT data
- \_\_ What is crystallinity and how does it affect processing?
- \_\_ the packing phase: key to the dimensional quality of the part
- \_\_ effective part, mould and process design for proper cavity packing
- \_\_ understanding the shrinkage build-up
- \_\_ part warpage mechanisms: designing for minimum warpage, according to material properties and part shape
- \_\_ warpage: the special case of fibre filled materials
- \_\_ the concept of residual stresses: the compromise with warpage
- \_\_ final conclusions and wrap-up-seminar evaluation by the participants

The seminar will be highly interactive, with limited attendance, allowing for questions, group discussions and analysis of the attendant problems. Parts or drawings are welcome for open discussion, when possible. The first part of the seminar will quickly describe the process cycle for the purpose of setting up a common vocabulary. The seminar may not fit the needs of beginners within this field.



# AGENDA

## Day 1

- 10.00 Welcome  
Description of the molding process
- 11.15 Coffee Break
- 11.30 Rheological concepts and implications  
The Flow process
- 13.00 Lunch
- 14.00 Thermal heat fluxes  
Weld line and flow marks
- 15.15 Coffee Break
- 15.30 pVT curves, and packing issues  
Shrinkage of molded parts
- 18.00 End of day 1
- 20.00 Dinner
- 

## Day 2

- 8.30 Fiber and molecular orientation:  
\_\_\_ orthotropic linear shrinkage
- 10.00 Coffee Break
- 10.15 Residual stresses and warpage issues
- 12.00 Lunch
- 13.00 Ribs and warpage
- Conclusions and seminar evaluation

**Remark:** The start times and order of the different chapters are just an orientation. Please be aware that they may change.

Are you interested?

Use the opportunity to better understand the complex interacting phenomena during injection molding and register now.

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Register via  
[www.simpatec.com](http://www.simpatec.com)

# REGISTRATION

## Registration:

- \_\_ visit the category 'Events' at [www.simpatec.com](http://www.simpatec.com) and sort the events by type (seminars),
- \_\_ choose your convenient BIMS session and
- \_\_ fill out the given registration form.

## Registration fee for BIMS 1:

EUR 1,400.00 + 19% VAT

The fee includes the lessons, training material, food and beverages during both days, and additionally a dinner on the first evening for one person. We appreciate to provide a special early bird discount of 10%. Please check our website for the deadlines.

## Remark:

The seminar will take place with a min. of 8 up to a max. of 25 participants. Please do not forget to timely organize your accommodation by yourself.

## Cancellation:

Cancellations received 30 days or more before the seminar are fully refunded.

For cancellations received less than 30 days but more than 14 days before the seminar, 70 % of the fee payment will be invoiced. No refund for cancellations received later than the 14 days.

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