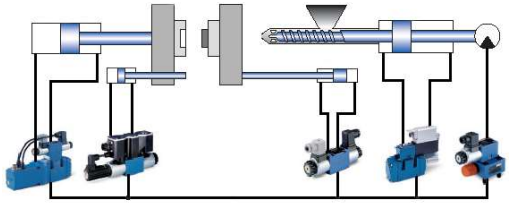
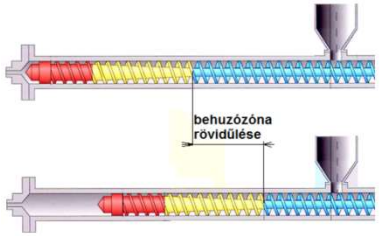
Moulding Concepts

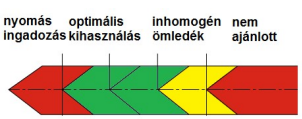
Injection Moulding Machine Operation
Injection, closing-unit operation, control varieties

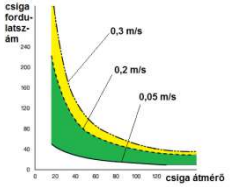


Plasticizing system, screw shortening
Why is there a need for multi-stage back pressure

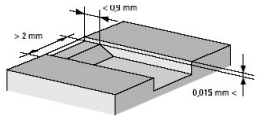


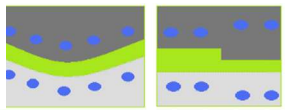
Shot setting **Screw speed and diameter**
HUT time, temperature program, shear rate



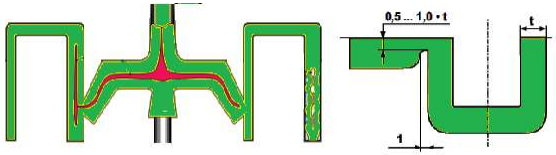


Self-cleaning venting **Cooling, heat removal**
Mold filling, form fixing with cooling



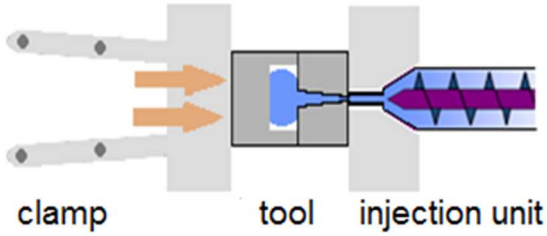


Gate location **and** **scaling**
Compression phase during holding pressure



Consultancy and technical expertise on application technique and processing plastic

Developing new technology and products
Product development
Design, drawing, and model preparation
Technological design
Selecting the materials, technology, starting the production
Tooling management
Design, construction, installation, master adjustment
Investment planning, implementation
Carrying out feasibility studies, investment proposal and implementation.
Selection of new and used machinery and installation
Training on the new technology, starting the production of a „0” run
Expert report preparation and valuation
For tenders, borrowing and lease
Production optimisation
Screening of manufacturing processes, proposals for modification
To improve quality, productivity and unit cost
Examining the conformance of the applied resources, discovering the weak link
Bringing into line materials, machinery, tools, technology and people
Assessment and expansion of plastic-related knowledge
Assessment of plastic-related knowledge
Organization of education and trainings
Specialised training on injection moulding and extrusion
Development of Master technology, quality supervisors and machine settings



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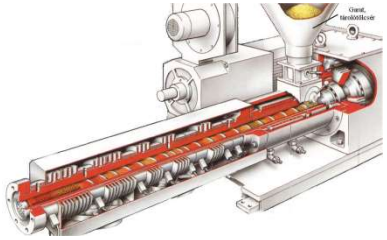

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Education, training

Nowadays the optimal utilisation and the handling of production tools and high-performance injection moulding machinery affect how economical are the production plants.
Despite the use of the best technique, if the adjusted parameters are not optimised the productivity will drop, and there will be more reject.

On the trainings and courses we are focusing on the presentation of typical problems for example:

- During the adjustment of the screw if we do not take into account the screw diameter, the shear force will cause material damage and the production of gas melt.
- The use of one back pressure even in the case of a bigger shot, ignoring the stroke capacity, the cycle time and the melt temperature inhomogeneity caused by the screw shortening.
- The use of one injection velocity during the mould filling, which is the principle cause of the free jetting and the gate rigidity.
- Avoid the errors caused by switching to holding pressure, and the stress which comes from over injection moulding.
- The adjustment of a similar holding pressure run in amorphous (ABS) and semi-crystalline (PA) plastics.
- Among all the factors taking into account only the tool temperature in the preservation of the form and size performed with heat sink.

The main goal of the courses is the invitation to a conscious and deliberate work. Its steps are the following:

1. **Error analysis**
   e.g.: Sink mark on the ribs.
2. **Think through the possible techniques for correction.**
   Is it caused by gate freezing or bad holding pressure parameters?
3. **Interference to make the correction**
   Parameter changing (rates, pressures)
4. **Double check, documentation**
   The modified parameter's effect on the other parameters, transferring the modifications through the technology.

We recommend the participation in the courses for the following people:
Project and QS engineers, shift managers, group leaders, machine adjusters, moulding technologists, tool makers, maintenance staff.

Course on injection moulding

Production of plastic products
Product requirements
Material selection, product manufacturing
The theoretical basis of injection moulding
Material characteristics that influence the processing
Plastication questions, thermal load capacity
Flows, material and form fixation
Raw material
Description of plastics, material characteristics
Material examination, raw material management, preparation
Garbage management, environmental protection
Injection moulding machine
Its types, units, controls
Machinery handling, startup, shutdown, maintenance
Operation, safety at the workplace, safety technology
Moulding tool
Sprue and channel systems
Ejection systems
Cooling and heating systems
The functioning of moulding tools
The connection between the moulding machine and the tool
The structure of the tools, operating principles
Tool changing
Clamping pressure need and optimisation, dwell
Tool installation and removal. wiring, adjustments
Maintenance, storage
Injection moulding technology
Parameters' effects on product quality
Melt preparation
Shot, temperature, plastication adjustment.
Mould filling, chage-over point
Pressure and rate adjustment.
Material and form fixation
With afterpressure, cooling time and cooling rate.
The most common errors
Error manifestations, causes, troubleshoot
Quality, economy and thrift-related questions
Productivity, costs
Consultation, examination, evaluation

References: ADS, AMB, Balluf, Electrolux, Festo, Flextronics, Grana, KnorrBremse, Kunplast-Karsai, Mikropakk, Nolato, Pepperl+Fuchs, SFS Intec, SMR, Sews, Shinwa, Thomas&Bettes, Wolf Plastics, stb.

Extrusion course

Characteristics of the products manufactured by extrusion
Product requirements
Material selection criteria
Elements of product manufacturing
The theoretical basis of extrusion
Material properties that affect the processing
Reflow questions, flows
Shape and size fixing questions
Extrusion materials
Material properties, material testing
Material handling, preparation
Waste Management, environmental protection
Extrusion machinery
Types (profile, plate, foil, etc.).
Mechanical units
(screw types, rewinders, cutters, etc.).
Controls, the types of regulation
Machinery operation
Startup, shutdown, maintenance
Operation,safety at the workplace, safety technology
Tool and caliber replacement
Tool installation and removal
Wiring, adjustments, maintenance, storage
Extruder tool types
Profiles, plates, sheets
Cooling and calibrating equipments
Extruder tool handling
Temperatures
Speeds
Additional procedures on extrusion products
Calibrations
Punches, punching, etc
Cutting to size
Confection
The most common errors
Error manifestations, causes, troubleshoot
Productivity, quality, costs
Consultation, examination, evaluation

References: HelioPlast Kft. ILPEA ProExt. Kft, Karsai Műanyagtechnika Holding, Pro-Form Kft.,SET PROM COM , Szivaplast, Tredegar Film Kft.