Babyplast 6/10P

Babyplast 6/10VP

Autonomous Injection Unit I/10P

babyplast

ALBA Enterprises has been providing innovative solutions to the plastic injection molding industry for over three decades.

ALBA's staff has more than 150 years of collective experience serving injection molders. We are able to understand our clients' problems, and help them find the solutions they need. Our modern, spacious facility in Southern California includes not only a large warehouse to facilitate rapid delivery, but also dedicated space for product demonstrations and training courses on plastic manufacturing.

Babyplast is the fruit of experience gained from the millions of applications in the fields of medical - electronic - micro-mechanics and from years of research and experiments in the field of MICRO-INJECTION of thermoplastic materials, ceramics and wax. The machine is ideal for producing small and microscopic parts and is suitable for processing all injectable thermoplastic materials.

The results achieved around the world, by our Babyplast bench top machine, together with the continued and constant developments in performance and applications, have brought it to be a leader in its field and thus able to take on the challenge to satisfy the demands of such an ample area.

ALBA ENTERPRISES

ALBA ENTERPRISES, LLC
10260 Indiana Court, Rancho Cucamonga, CA 91730
PH: 909.941.0600 • 800.432.6653 • FX: 909.941.0190
Email: info@albaent.com • **www.ALBAENT.com**

Babyplast 6/10P

Babyplast 6/10P is the fruit of the experience gained from the thousands of applications matured in medical - electronic - micro-engineering fields and from years of research and development in the field of MICRO-INJECTION of thermoplastic materials, ceramics and waxes for micro-fusion.

The results achieved on world markets of our table top machine Babyplast, together with the continued and constant developments in performance and applications, have brought it to be a leader in its field taking on the challenge to satisfy the demands of such an ample area.
The new electronics controlled by two powerful microprocessors, widens and improves the field of application of **Babyplast 6/10P** and increases its characteristics:

- Easy to operate with the possibility to memorise up to 100 production cycles.
- Cost saving mold construction thanks to the particular concept of its plattens.
- The injection group can be moved off center. 5 piston sizes from 3 to 15 cm^3 Pressure settings from 2650 to 815 bar.
- PID temperature control with the possibility to control mold and hot runner (230V) temperature.
- Proportional hydraulics – Silenced motor / pump assembly.
- Output sockets for auxiliaries, controlled by the microprocessor – PC interface
- Cooling circuit (5 zone) controlled by microprocessor (Optional)
- Monitoring of injection position and mold closure by linear transducers.
- Quality control.

All of this maintaining the same basic structure and not forgetting the concept of simplicity which has been a major contribution to defining it as a forerunner in micro-injection molding machines.

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Advantages with Babyplast

QUALITY of PARTS PRODUCED

LOW PRODUCTION COSTS

SMALL INVESTMENT NEEDED FOR MOLDS

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QUALITY OF PARTS PRODUCED

Molds with a low number of cavities
Dimensional precision easy to obtain . Thanks to the low running costs, it is possible to be competitive even using molds with a low number of cavities.

Layout of cavities easily balanced
It is easier to balance molds with a small number of cavities and allows to reduce the sprue size.

Homogenous mold temperature
Thanks to temperature control directly on cavity plate.

Plastification of resin without stress due to friction
Thanks to the unique plastification system using spheres, the temperature of the plastification cylinder is homogenous and each granule of plastic is melted by contact on hot metal. In this way, the resin is not overheated by friction.

Low residence times in the injection unit
Thanks to the reduced dimensions of the plastification chamber (15cm³), the material remains for a short time at the melting temperature even in cases of small shot sizes of less than a gram.

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LOW PRODUCTION COSTS

Molds with a low number of cavities
Dimensional precision easy to obtain . Thanks to the low running costs, it is possible to be competitive even using molds with a low number of cavities.

Low power consumption
Maximum power consumption Only 3 KW, Inverter for motor speed control. Power consumption during cycle from 1,5 to 2,5 Kw

Reduced times for mould and material change
Each cavity plate is fixed by two screws and centered on the machine platens. Material and color change with approximately 100/150gr.

Low sprue/part ratio
Injection directly into the cavity plate with consequent reduction of the sprue. Average weight of sprue for 4 cavities : 0,6gr.

Low consumption for mold temperature control
Mold dimensions reduced to cavity plate with consequent reduction in time and energy needed (cooling/heating) to reach and maintain the correct temperature for the mold.

A complete production cell in only 1m² of space.
Thanks to its compact size (1x0,6m), it is possible to have a complete production cell (machine – chiller – loader – sprue separator - robot) in less than 1m².

Flexibility in high production.
By dividing the production over more machines, in case of problems, only a part of the production stops. It is possible to produce batches of different colors simultaneously. Starting with small production quantities, it is possible to increase production by replicating machine / mold.

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SMALL INVESTMENT NEEDED FOR MOLDS

Molds with low number of cavities
Thanks to the low running cost of the machine (approx. 1,5 to 2 €/h) it is possible to obtain low production costs even with molds which have a low number of cavities. Above all with technical parts where the cost to make the cavity is very high, (core pulls etc.). The saving in the reduction of the number of cavities is very important for reducing costs.

Construction of the cavity plate only
Thanks to the particular concept of the machine platens (they act as bolsters) only the cavity plate needs to be made.

Mini hotrunners with upto 16 tips
Due to the vast number of applications using babyplast, some major manufacturers of hotrunners (Hasco – Ewikon – Thermoplay) have developed mini hotrunners, especially for Babyplast, with upto 16 tips. In some cases, thanks to a special machine nozzle, it is possible to inject directly into the part without using a hotrunner.

Mini mold blanks
Hasco produces a range of standard mold blanks for Babyplast molds, in various grades of steel, where it is only necessary to make the cavity. This helps reduce time and costs in mold construction.

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TECHNICAL DATA

Piston diameter (mm.):	10	12	14	16	18
Volume (cm3):	4	6, 5	9	12	15
Injection pressure (Kg/cm2):	2.650	1.830	1.340	1.030	815

Clamping force :	6.250 Kg/cm2	62,5 KN
Opening force :	400 Kg.	4 KN
Opening stroke :	30 - 110 mm.	
Ejection force:	500 Kg	5 KN
Ejection stroke :	45 mm.	
Hydraulic pressure:	130 Kg./cm2.	
Oil tank capacity :	16 l. (circa)	
Dry cycle :	2,4 s.	
Power :	2,9 Kw	
Weight :	~ 120 Kg.	
Noise level:	< 70 db	
Power supply:	3 ~ 230V. 50/60 Hz. + earth	
	3 ~ 400V. 50/60 Hz. + Neutral + earth	

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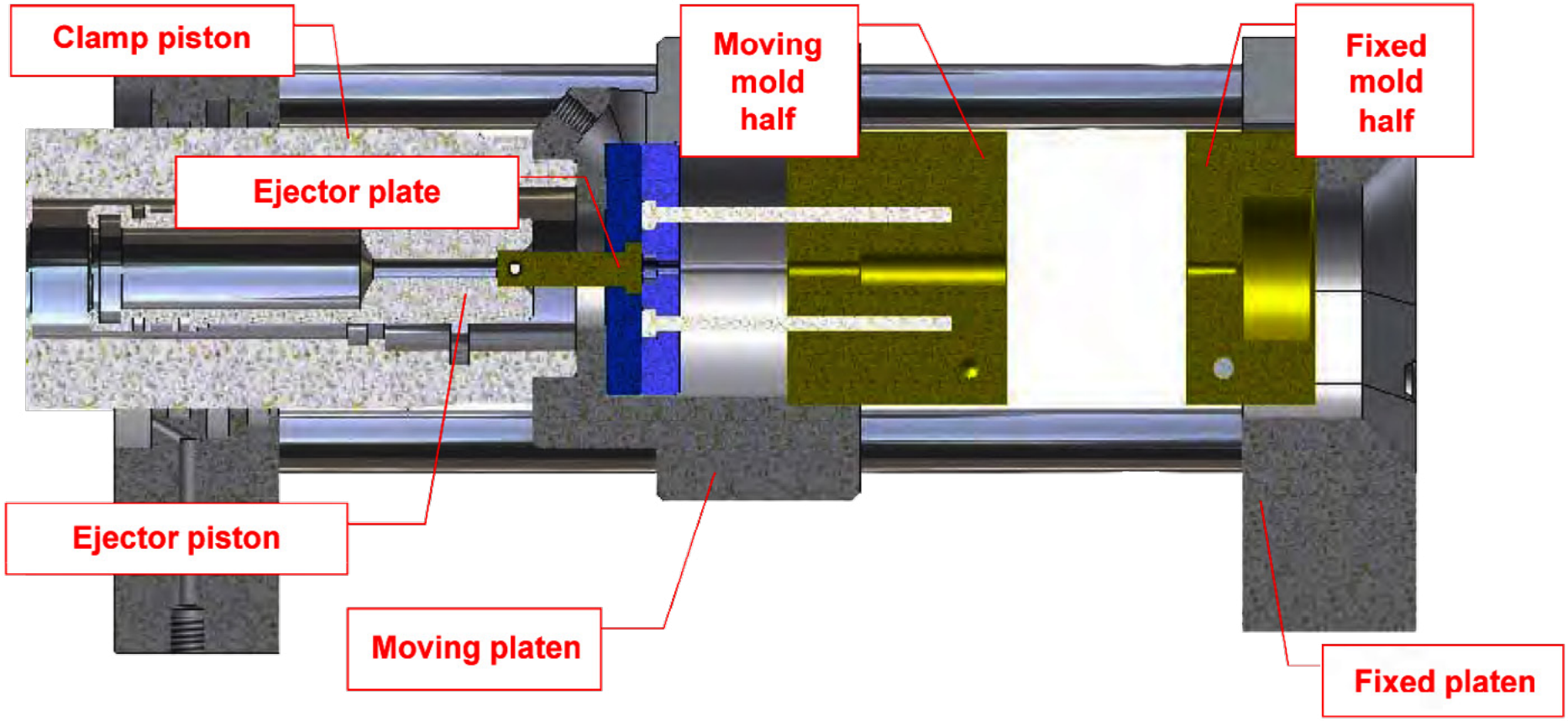

Drawing to show mold assembly mounted in Babyplast machine

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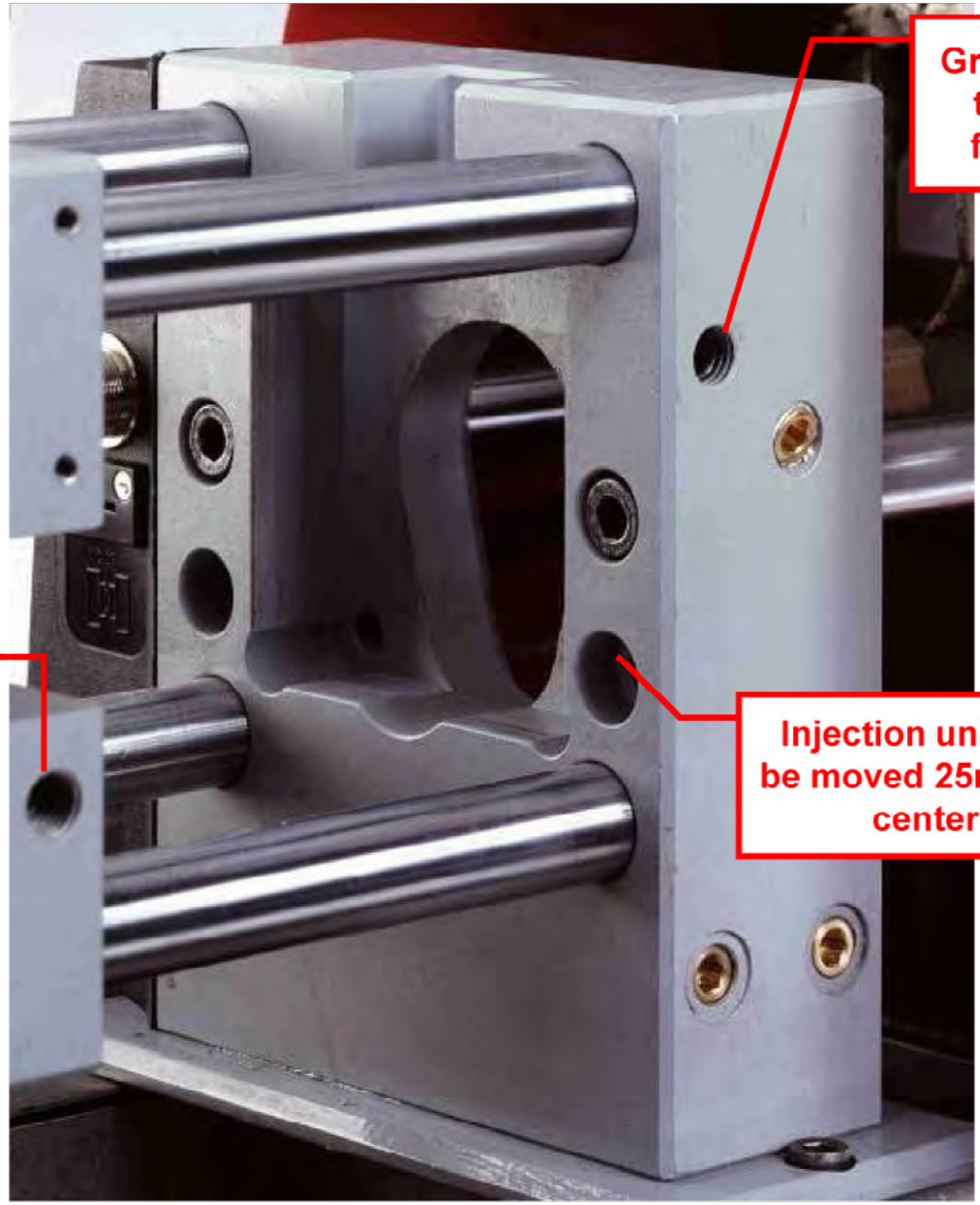
The machine platens act as bolsters.

The injection point can be moved off center.



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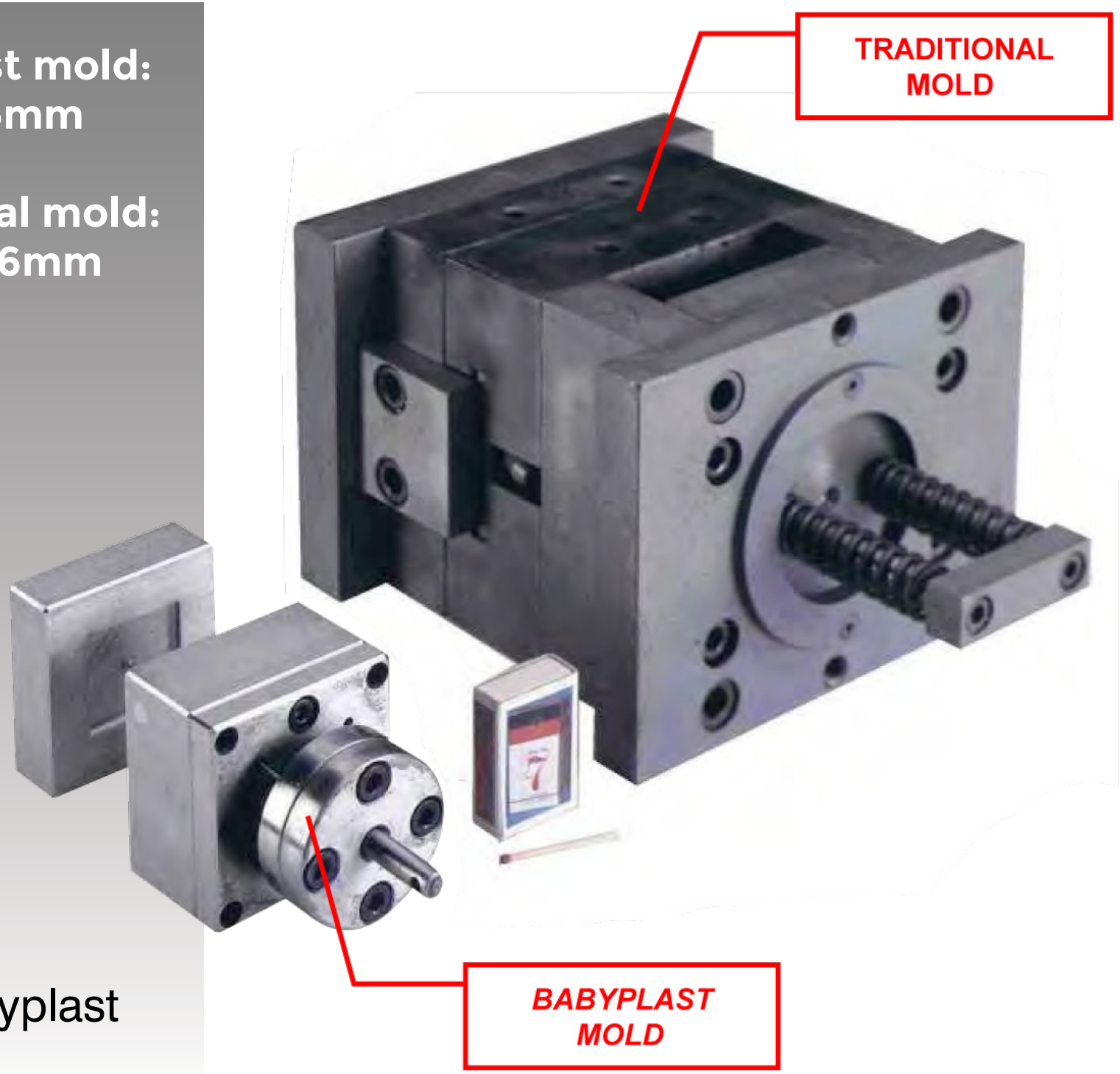
Babyplast mold:
75x75mm

Traditional mold:
156x156mm



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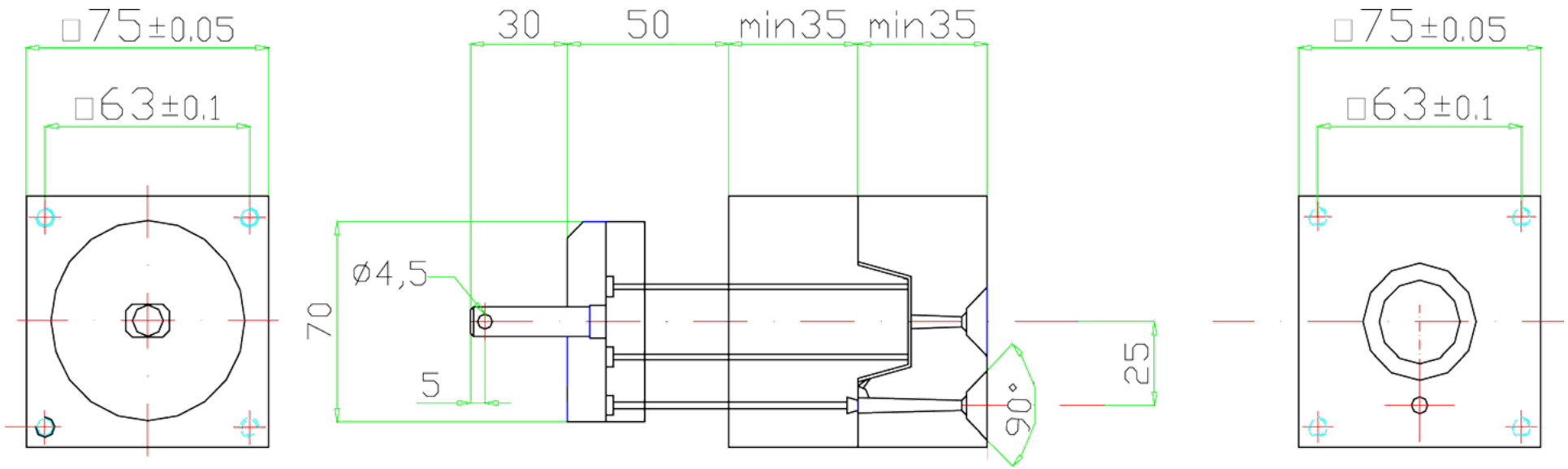

Babyplast Mold Dimensions

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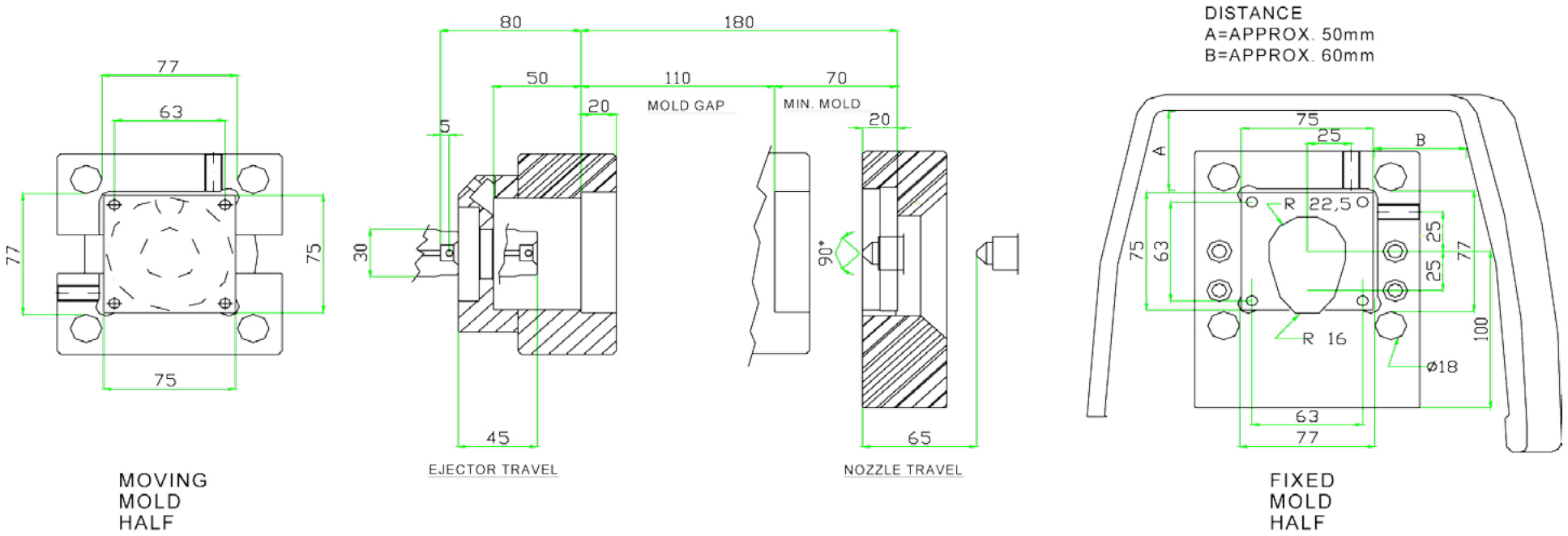

Machine Platen Dimensions

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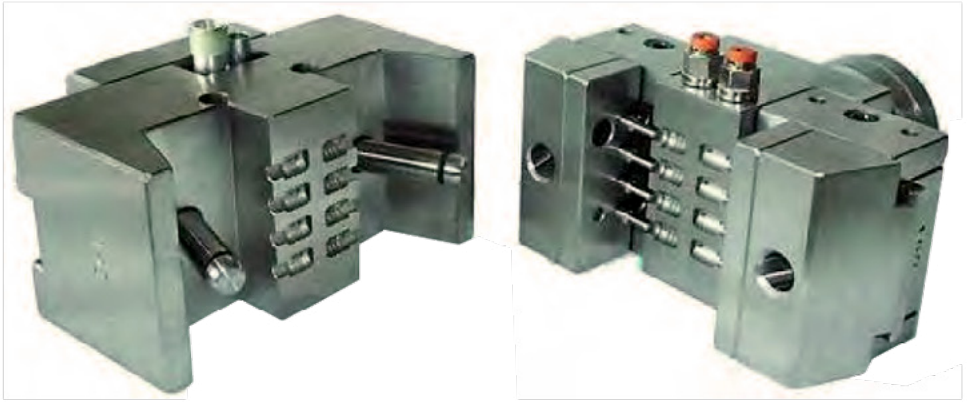
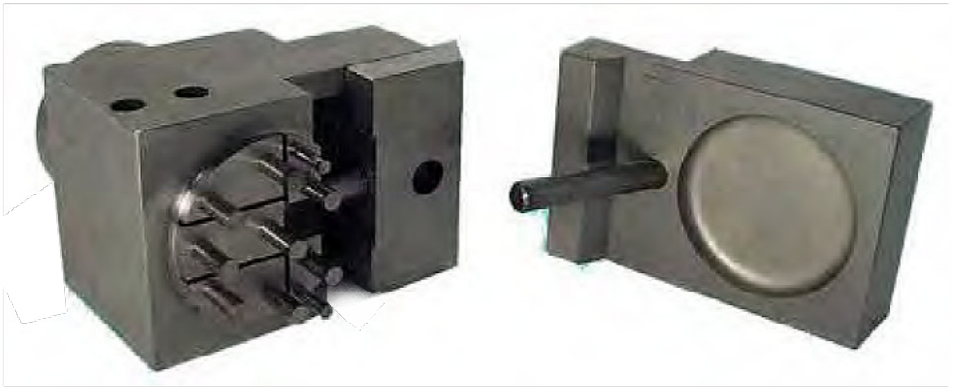
Babyplast Molds

8 cavities with slides and injection via a hotrunner - mat. PA6



1 cavitie with slides mat. ABS



4 cavities with slides mat. PA 66

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Babyplast Molds

10 cavities with
slides mat. PA 6

4 cavities with
slides mat. POM

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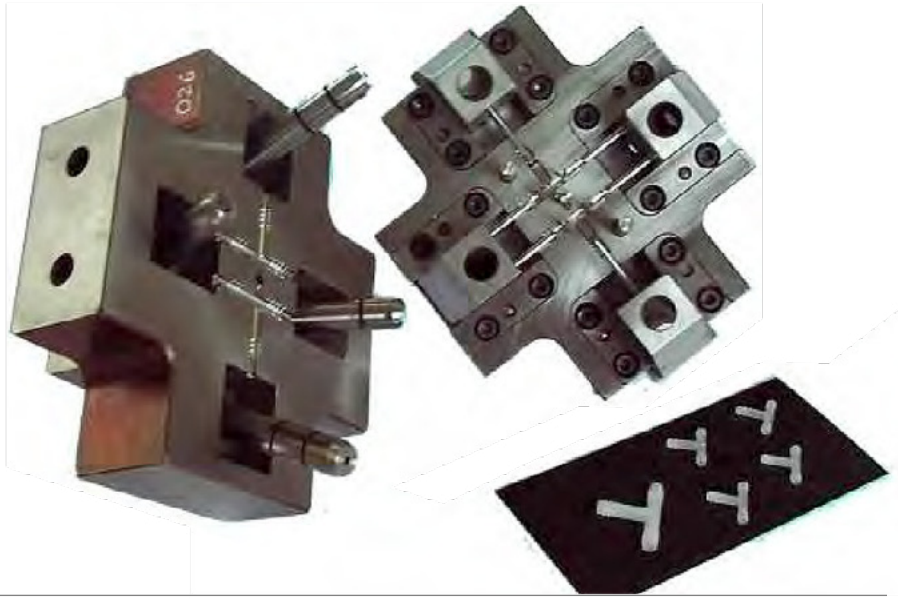
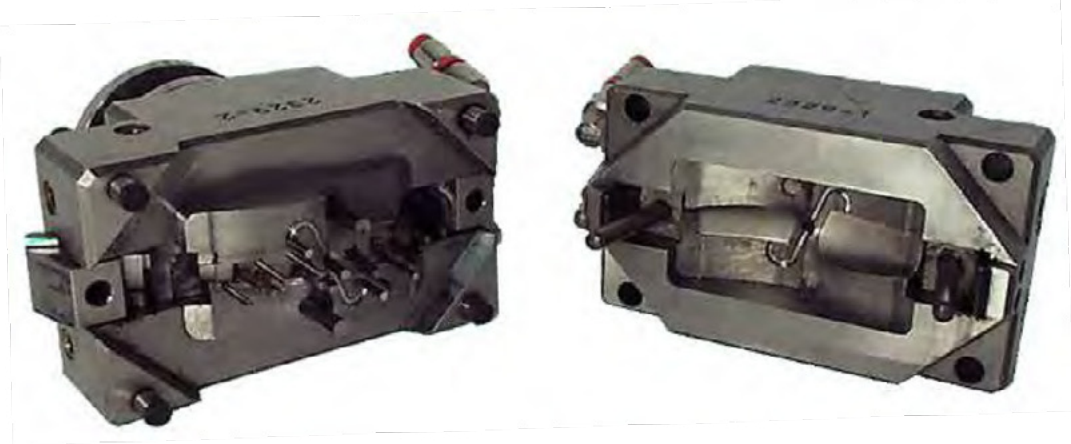
Babyplast Molds

2 cavities with
4 slides mat. PP



3 cavities with Ewikon multi-tip
hot-runner mat. PP

2 cavities
with slides
mat. POM



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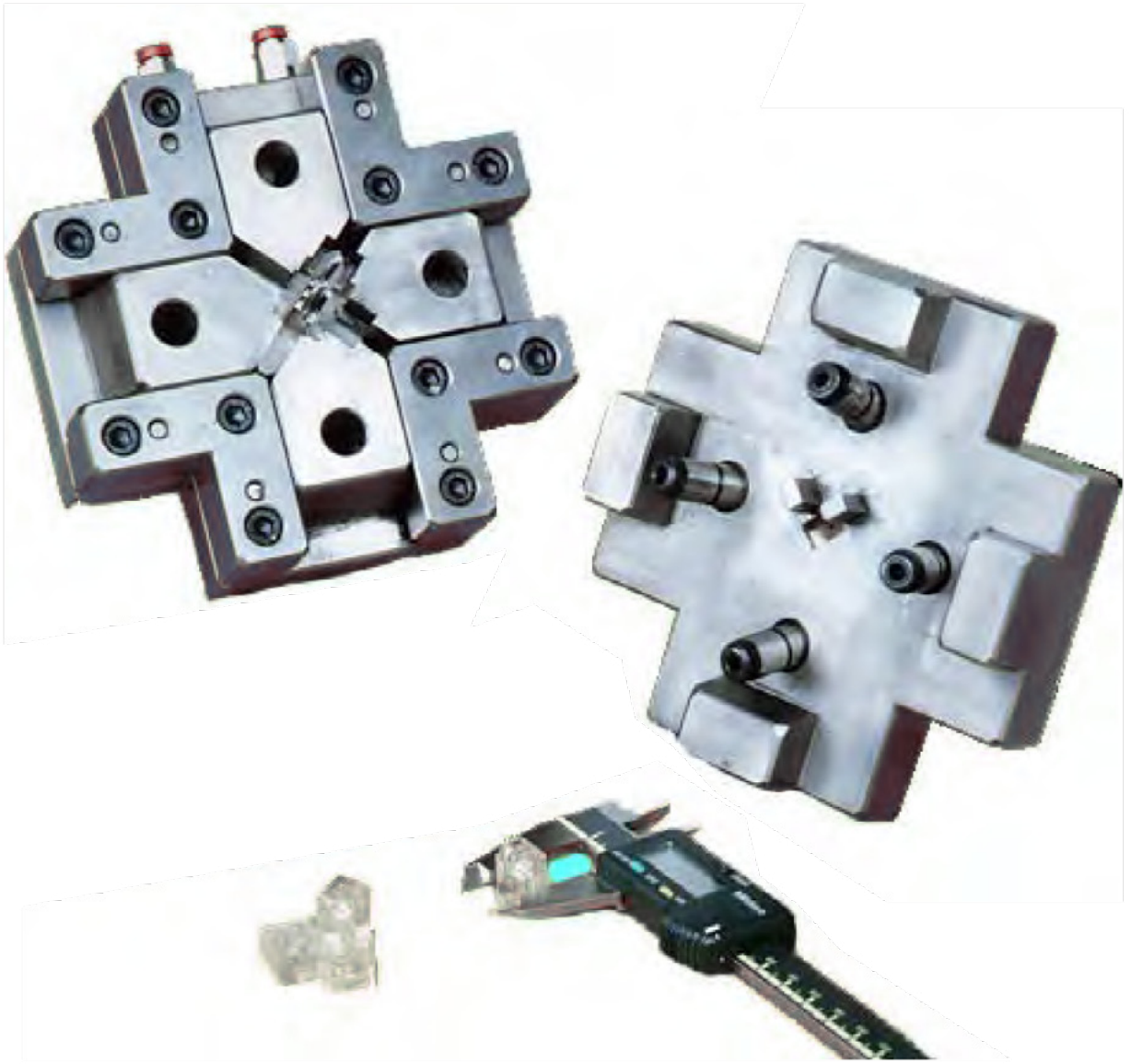
Babyplast Molds

Mold with 4 slides - 1 cavity - Injection with Ewikon hot tip- Mat. PC



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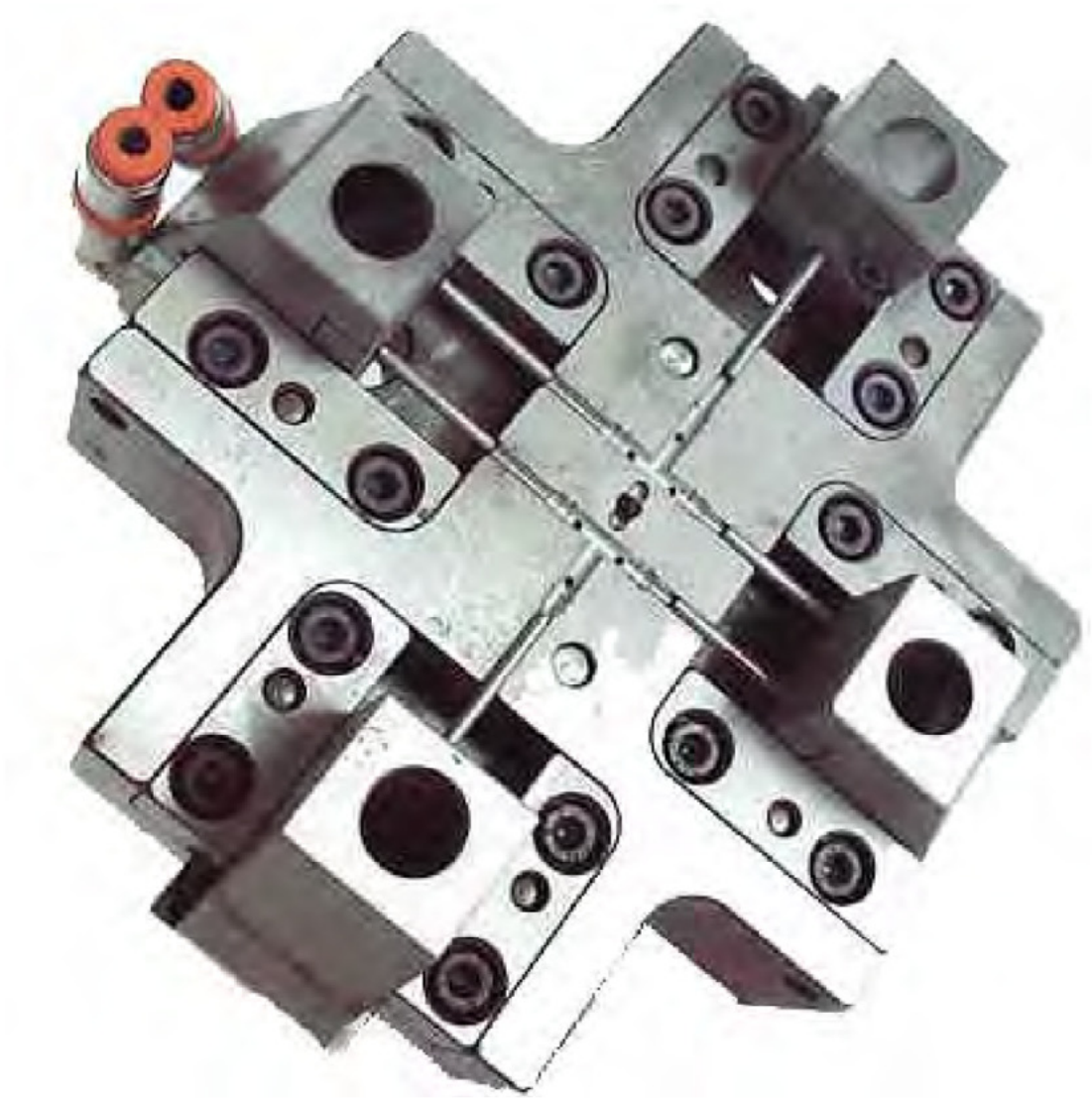
Babyplast Molds

Mold with 4 slides -
2 cavity Mat: PP



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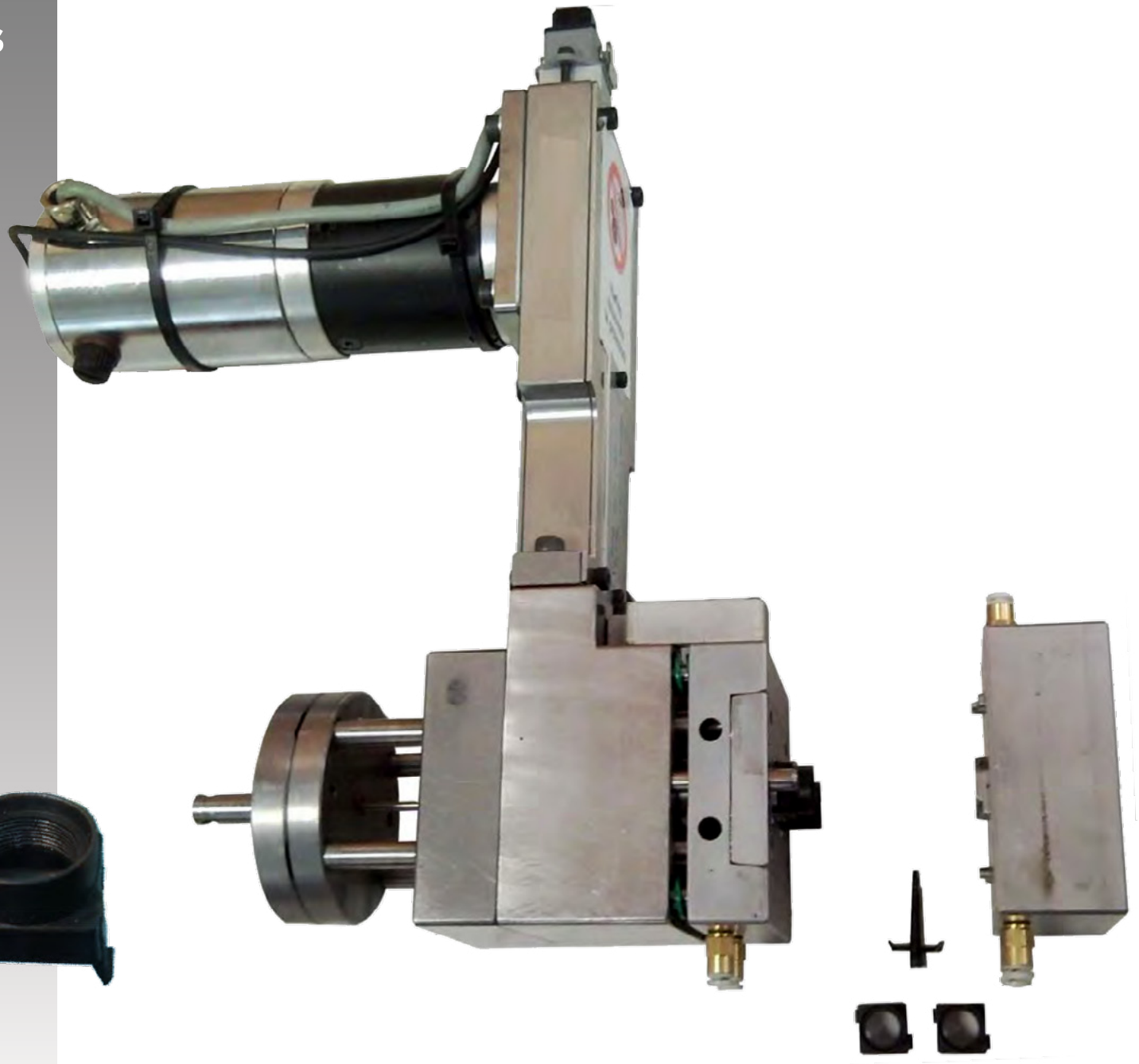
Babyplast Molds

Mold with
unscrew system
2 cavities
Mat: PA



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Babyplast Molds

Mold with
64 cavities
Mat: POM

Nozzle for spray
record
24.000 pcs/h

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Babyplast Standard Mold Parts

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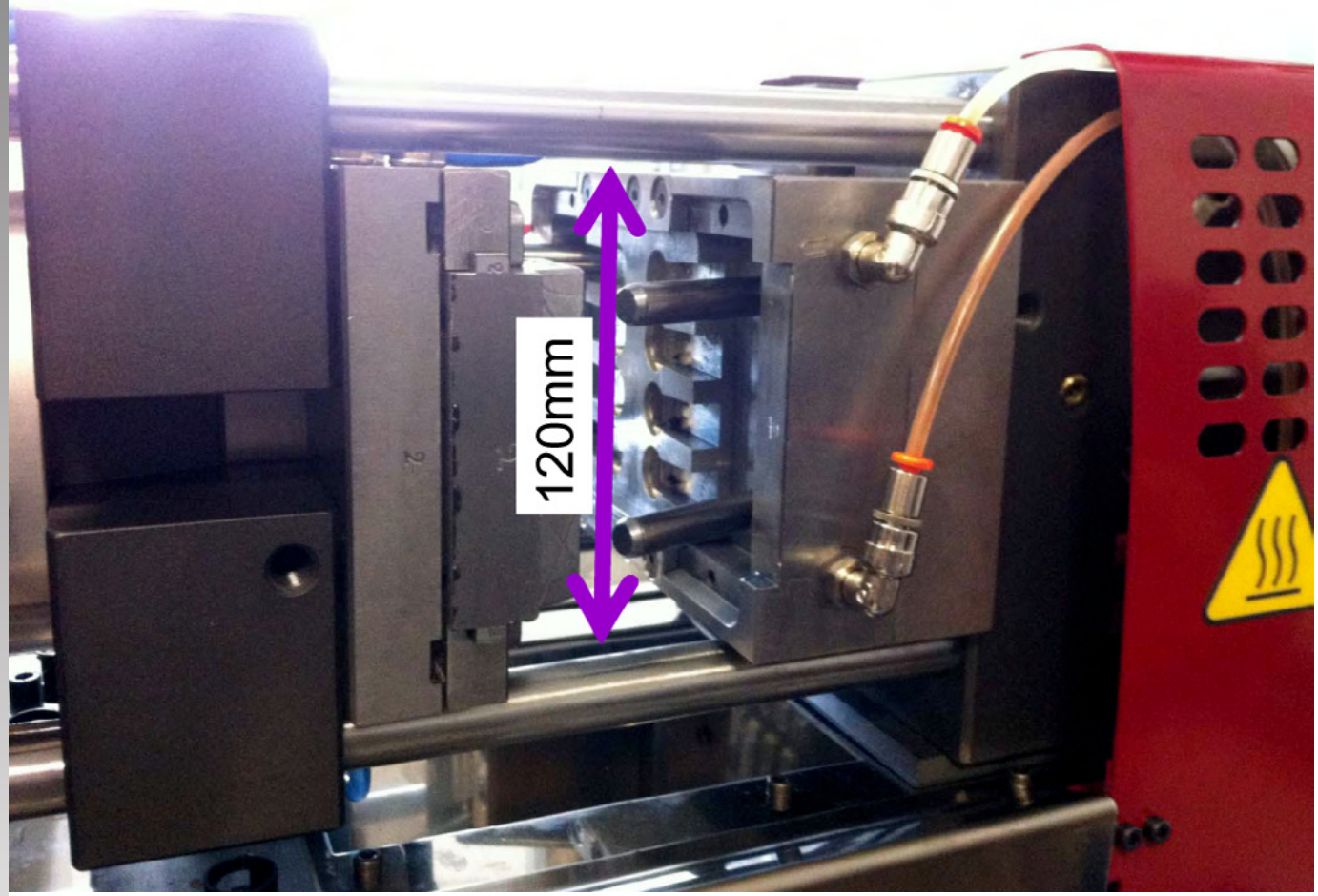
Babyplast Large Machine Platten

120x120 Option



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CASE STUDY

A project in collaboration

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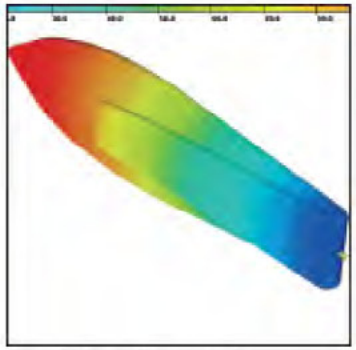
Condizioni generali / Premesse

In linea generale sono state definite le seguenti condizioni:

- Un pezzo utilizzabile per scopo pubblicitario globale con grammatura molto limitata e rendimento pratico.
- Stampo a piu' impronte con iniezione diretta e senza materozza
- Produzione con una pressa Babyplast perchè facilmente gestibile, con ridotta necessita' di periferiche e minima occupazione di spazio, adatta proprio per l'impiego in occasione di fiere e seminari.
- Massima produttivita' e brevissimi tempi ciclo (forzato <10s)

Partner nella progettazione

Studio di progettazione Hein GmbH	Sviluppo del prodotto con Sistema di calcolo FEM, simulazione di stampaggio e calcolo del ritiro, progettazione dello stampo
HASCO	Sistema a Canale Caldo, normalizzati dello stampo, Costruzione dello stampo, Campionatura presso la scuola interna
Babyplast, H. Christmann	Pressa di iniezione
ISK GmbH	Raffreddamento con CO_2
Linde Gas	Fornitore del gas
Barlog Plastics GmbH	Fornitore del materiale plastico
Dicronite U.T.E. Pohl	Rivestimento dei componenti dello stampo



Simulazione-Stampaggio

Sviluppo-Prodotto (Alexander Hein) e Progettazione-Stampo presso lo Studio di Progettazione Hein GmbH

Progettazione-Stampo

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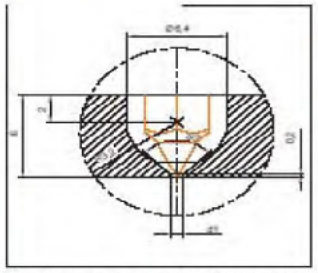
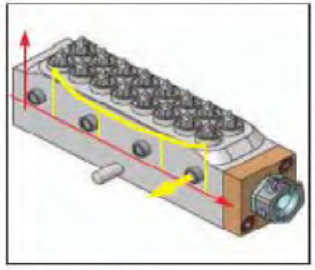
Sistema a Canale Caldo H7000/...

- Per lo stampaggio a molte impronte, senza materozza di pezzi piccoli e molto piccoli su uno spazio estremamente limitato.
- Disponibile a magazzino come sistema Standard a 4, 8 o 16 punti di iniezione. Distanze tra le punte di soli 8, 10 e 20mm. Nello stampo per la graffetta ci sono 10mm di interasse tra le punte.
- Le minime dimensioni di ingombro del sistema a canale caldo ne permettono il montaggio in stampi con dimensioni esterne a partire da 75x100 mm.
- Utilizzo universale di normalizzati della HASCO per gli stampi molto piccoli per Mini-Presse, come: distributori a canale caldo standard con anche bussola di iniezione opzionale ed attacchi rapidi per piccoli stampi.
- Uguali rapporti di pressione in ogni punto di iniezione grazie al bilanciamento geometrico dell'intero sistema.
- La tenuta ermetica piatta della calotta intorno alle punte compensa la dilatazione termica radiale del distributore ed evita le tensioni che eventualmente si presentano in caso di dilatazione termica.
- La superficie con minimo carico di pressione riduce le forze di portanza. La presenza di poco materiale nella zona della calotta facilita il cambio di materiale.
- Le tolleranze molto strette per il punto di iniezione e la lunghezza permettono di eseguire un posizionamento preciso della punta sul punto di iniezione a caldo e quindi garantiscono un minimo diametro di iniezione, a partire da ca. 0,4mm.
- Le punte sono prodotte con una lega speciale di molibdeno che, insieme ad una buona conducibilita' termica, presentano anche una elevata resistenza all'usura.
- Una adeguata potenzialita' termica, su tutta la lunghezza del distributore, garantisce un profilo termico omogeneo ed una temperatura costante lungo tutto il percorso di scorrimento ed in tutte le punte.
- Elementi di supporto in titanio riducono al minimo le perdite di calore dovute alla conduzione termica nello stampo.

Iniezione diretta di 16 cavita' in spazio molto ridotto



Minimo diametro di iniezione grazie a tolleranze di montaggio precise



Profilo termico

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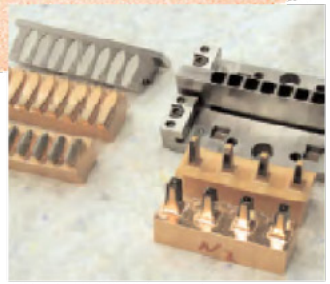
Costruzione dello stampo ad iniezione nel Reparto Produzioni Speciali HASCO

- Precisi lavori di elettroerosione a filo ed a tuffo.
- Determinazione precisa dei profili per un articolo privo al 100% di bave.
- Creazione precisa di margini di soli 0,5mm di spessore sul profilo.
- Creazione adeguata dei tardoni di estrazione determinati dal profilo.
- Marcatura/incisione Laser delle cavita' delle guance.
- Minimo attrito nelle guide delle guance per ridurre le forze di sformo ed apertura grazie all'utilizzo di un innovativo rivestimento in dicronite.
- Dalla progettazione del prodotto fino alla campionatura: 12 settimane - Costruzione stampo: 5 settimane.

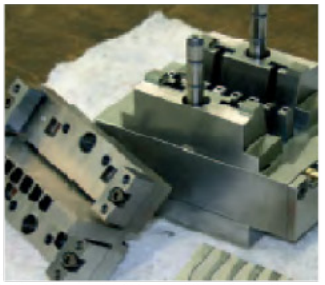
Campionatura presso la Scuola Tecnica della HASCO

- Messa in funzione dello stampo su una pressa Babyplast.
- Collegamento e regolazione del condizionamento ISK con CO_2.
- Ottimizzazione della geometria del pezzo sulla base del comportamento di sformo e della rigidita' presso il reparto Produzione Speciale HASCO.
- Rivestimento delle cavita' per uno sformo migliore del pezzo.
- Seconda campionatura presso la Scuola Tecnica della HASCO alla presenza di tutti i partnersi di progettazione; prove di materiale soddisfacenti con PET, PA12 ed ABS.
- Tempo ciclo: 10s



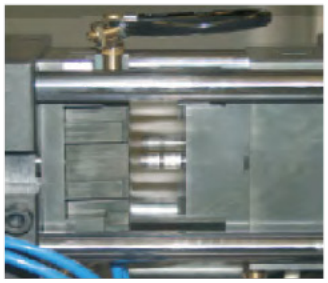
Elettrodi dello stampo

Marcatura Laser delle cavita'



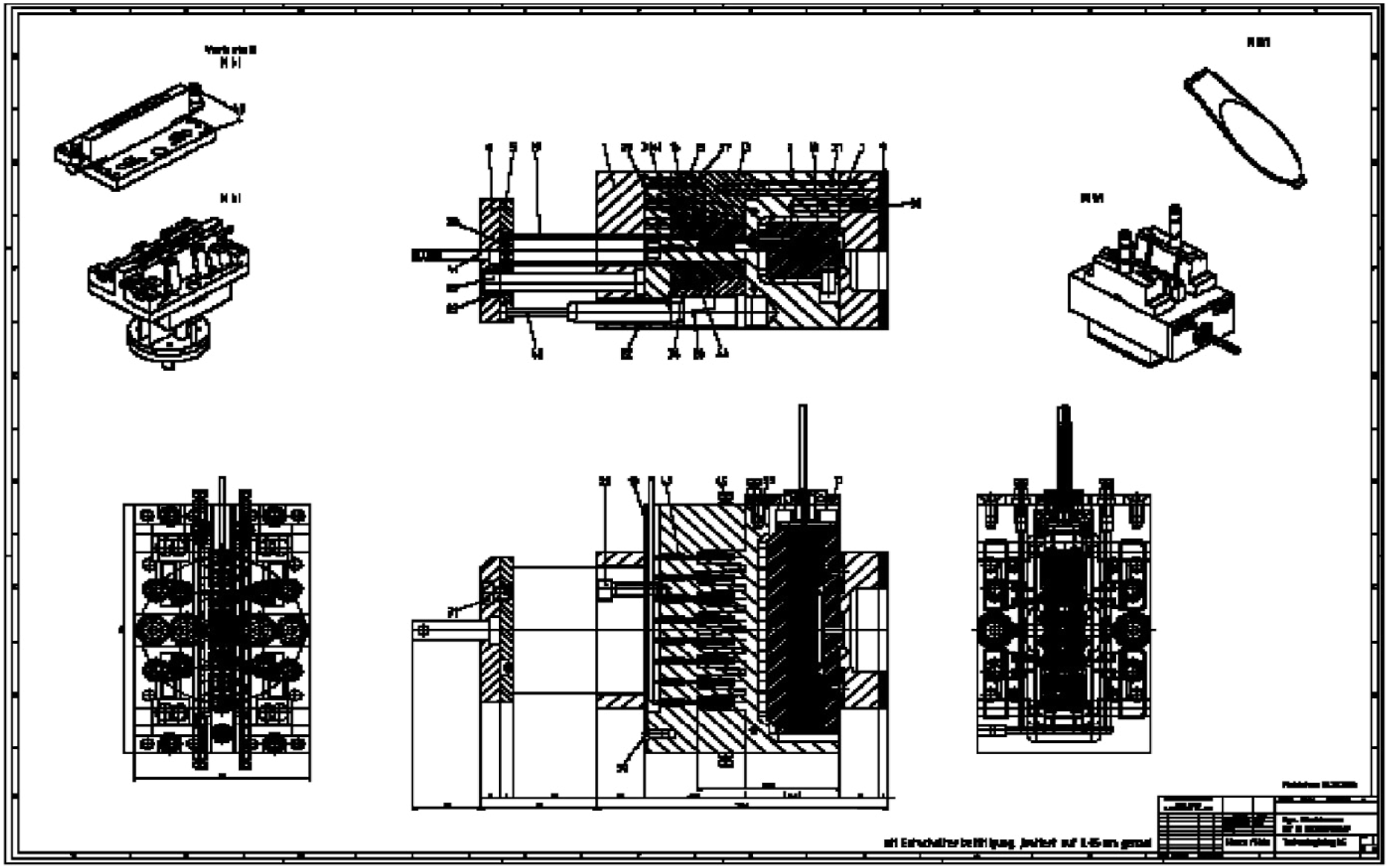
Montaggio ed aggiustaggio dello stampo

Pressa Babyplast



Condizionamento ISK con CO_2

Campionatura presso Scuola HASCO



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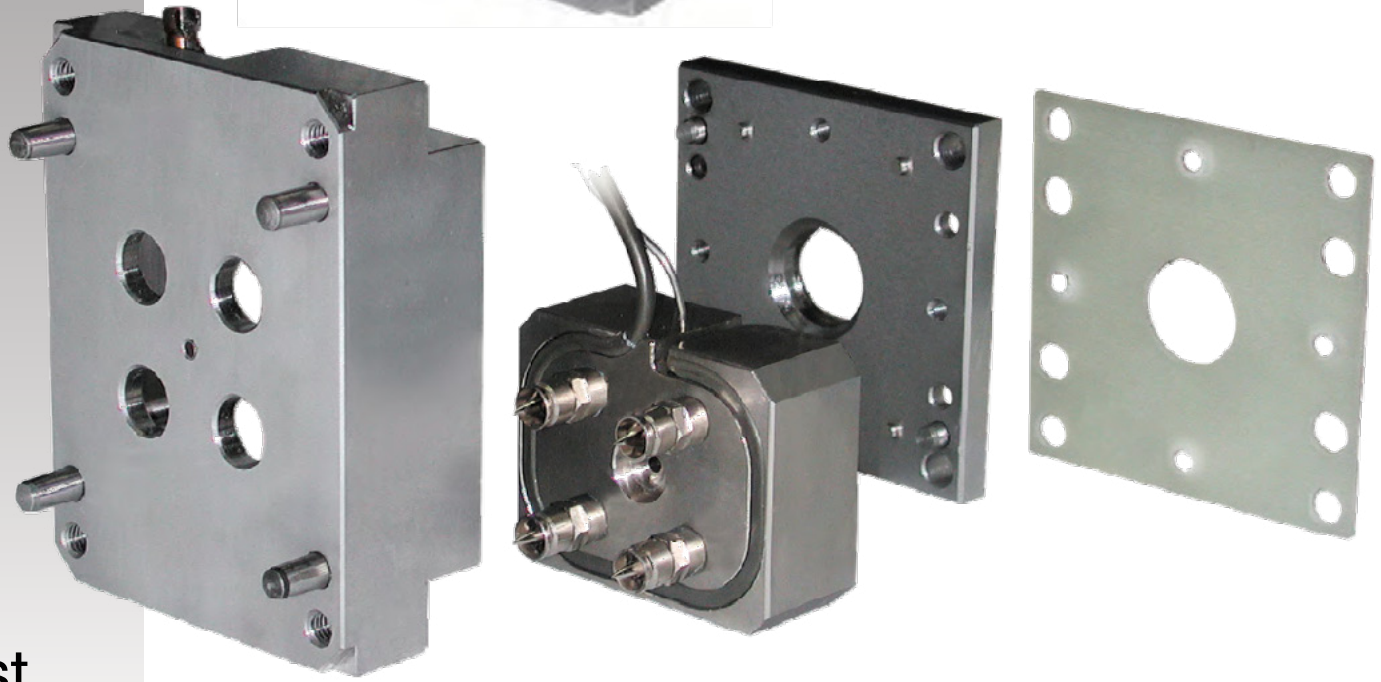
Ewikon hotrunners for Babyplast

2-4-6 tips

EWIKON



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Ewikon hotrunners for Babyplast

2-4-6 tips

EWIKON

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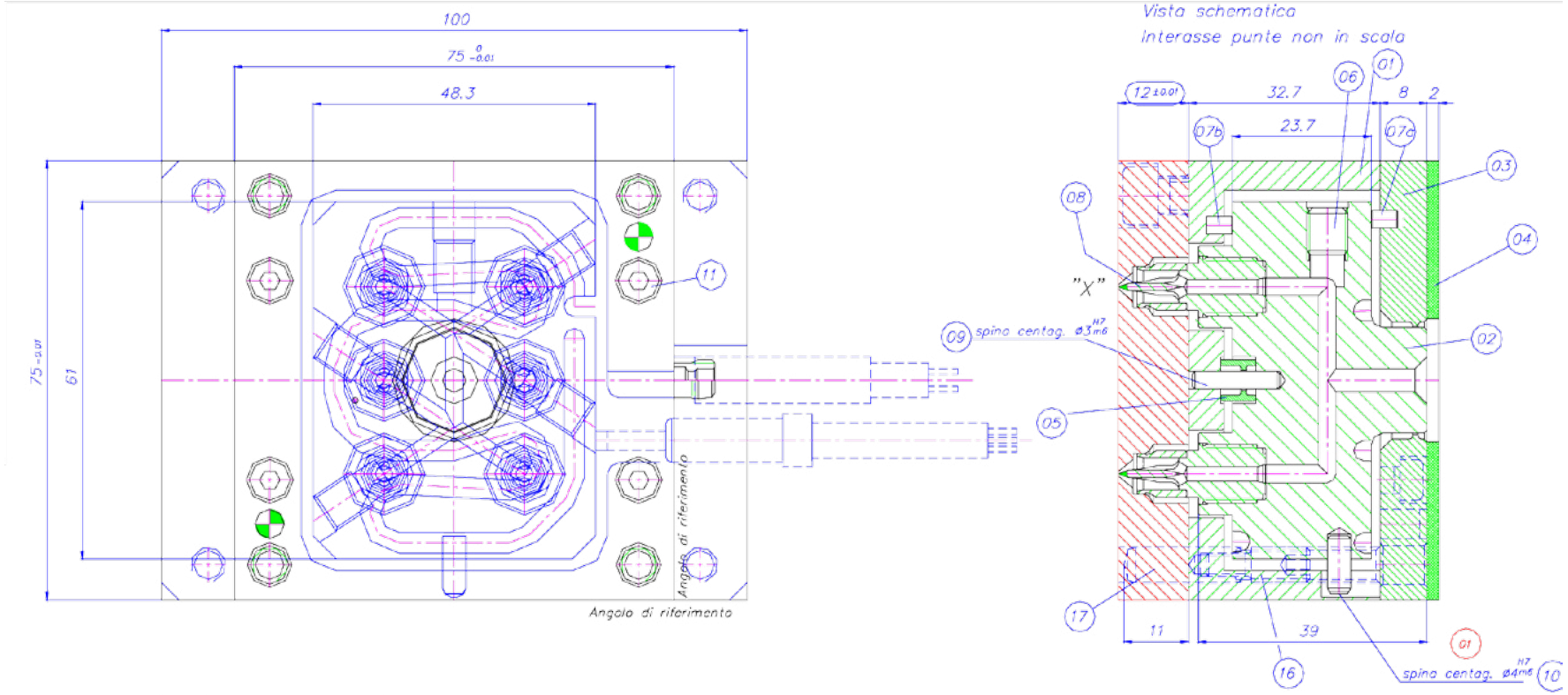

EWIKON

Heißkanalsysteme

GmbH & Co.KG

Ewikon hotrunners for Babyplast 2-4-6 tips

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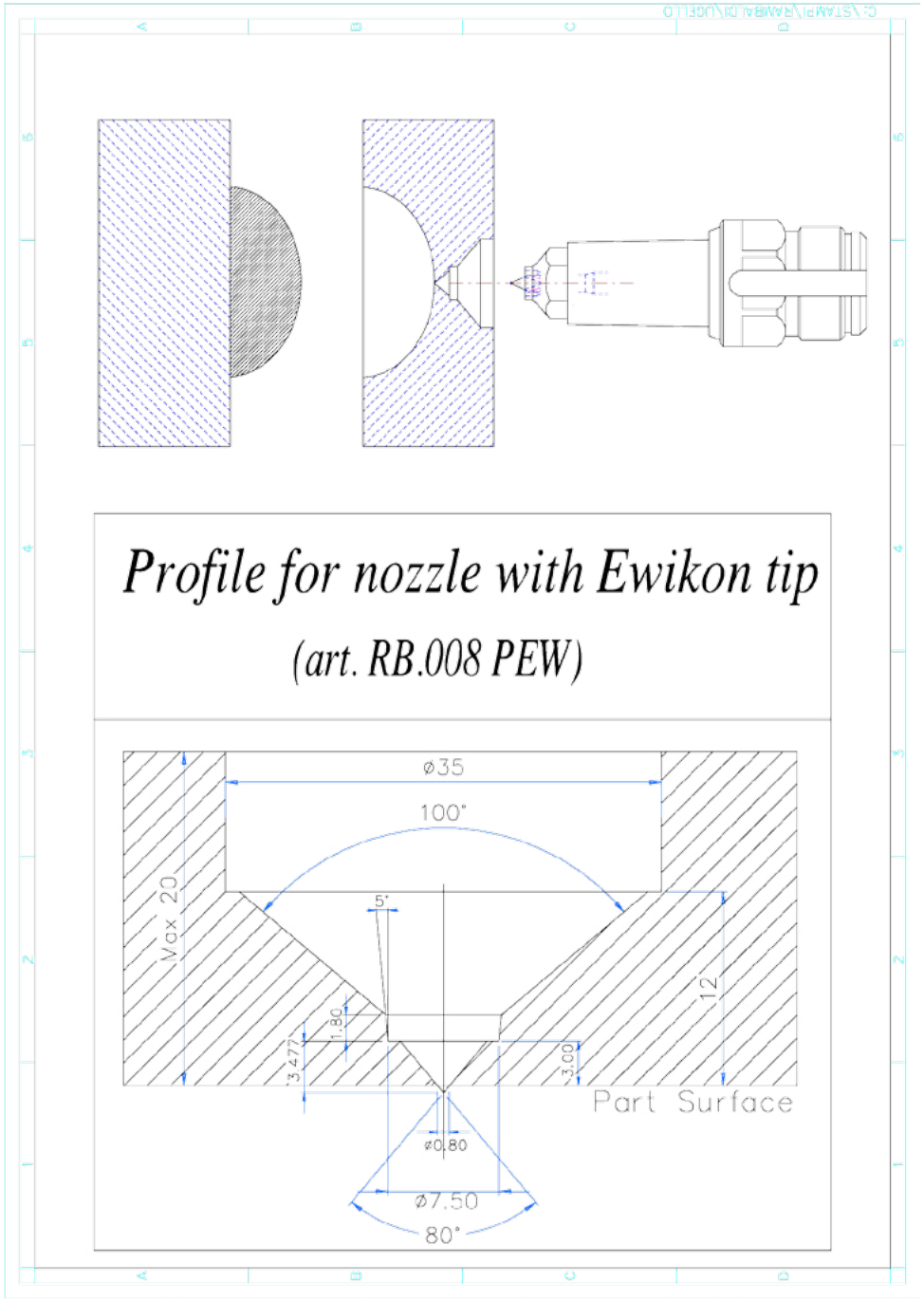
Injection directly into part



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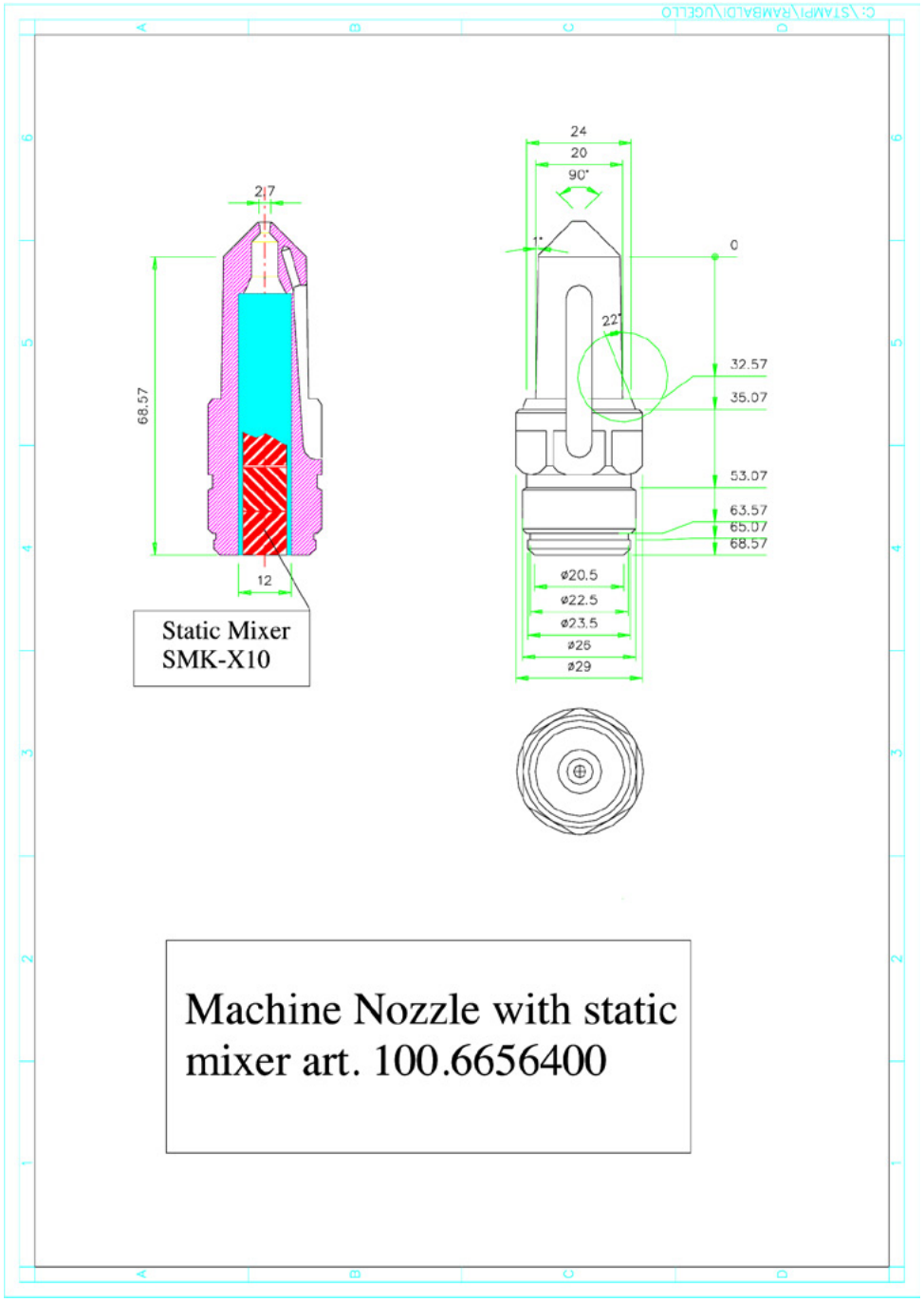
Babyplast nozzle with static mixer



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Babyplast Auxiliaries

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Babyplast Accessories

Shut off nozzle
Cod. RB006UO
For low viscosity materials. Spring loaded shut off system. Supplied with heater and thermocouple.

Mixer nozzle
Cod. C100.6656400
For materials coloured using masterbatch.

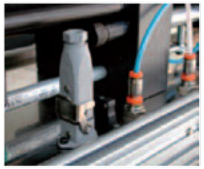
Nozzle with Diam. 1.0mm
Cod. C20004100
Reduced bore for low viscosity materials, improves sprue break.

Nozzle with Ewikon tip
Cod. RB008PEW
For injecting directly into the part without hotrunner. For materials melt temps. upto 240°C.

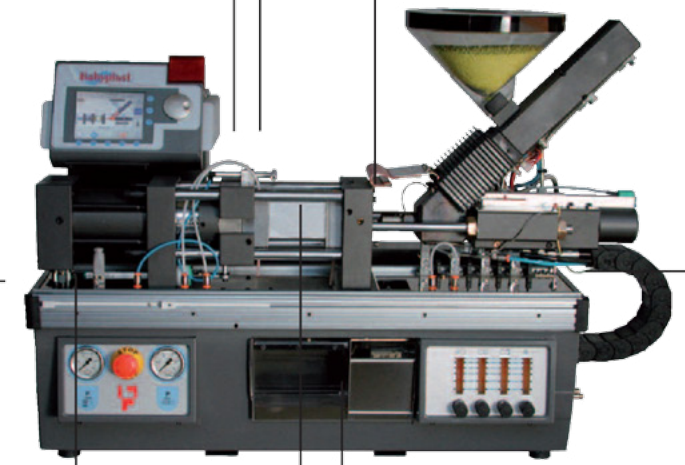
Mini nozzle
Cod. C20013000
Without heating element, compact size for low viscosity materials.

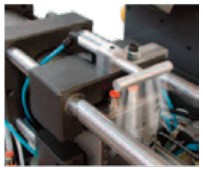
Cooling ring
Cod. C10005600
Cooling ring for moving platen. Necessary for mould temperatures over 80°C

EUROMAP 67
Cod. RB06EU
Euromap 67 socket for ROBOT interface.



5th heater zone
Cod. RB025ZA
5th heater zone available for the moving half.





Air blow
Cod. RB017SA
Adjustable airblow, to fit to moving platen, complete with control valve.

Core pull
Cod. RB004MI
Hydraulic manifold for controlling core pull.

Accumulator
Cod. RB031AC
Nitrogen accumulator for injection speed.

Hot runners
Nozzles and hotrunners available with upto 16 tips
Hasco – Ewikon – Asso – Thermoplay – Plasting

Consultants for Babyplast mould design and construction.

Standard mould parts for Babyplast
Standard mould parts for the construction of Babyplast moulds.

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Parts produced by Babyplast

PC - POM - PA - PP - ABS

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Parts produced by Babyplast

PC - POM - PA - PMMA - PP - ABS

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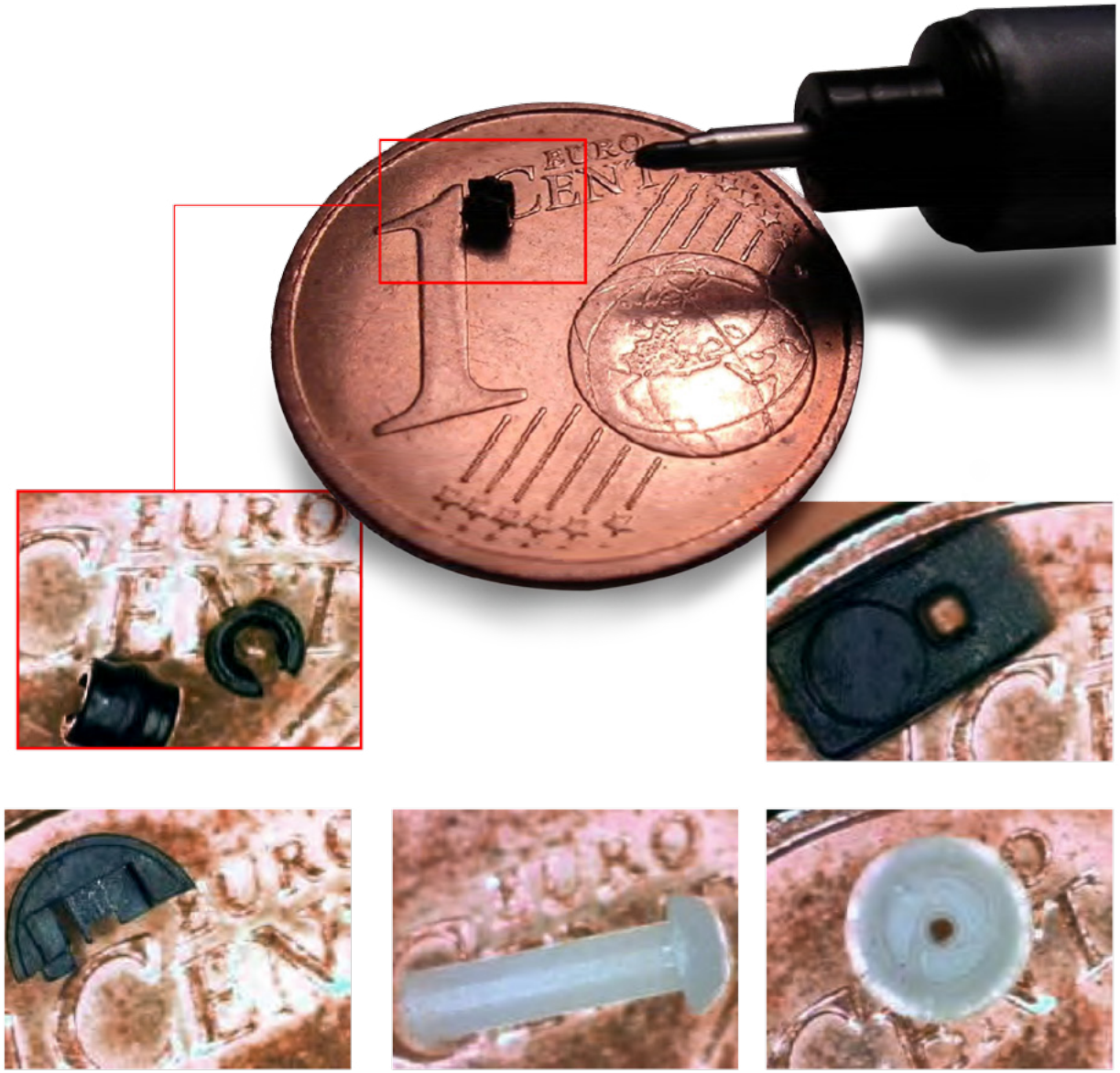
Micro molding specialists



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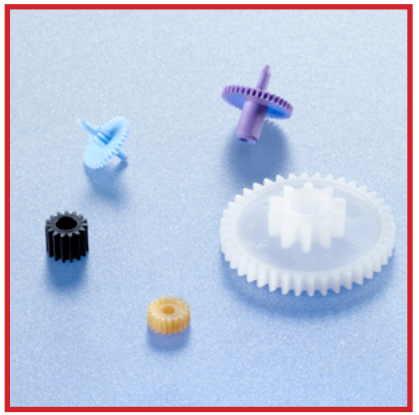
Micro molding specialists



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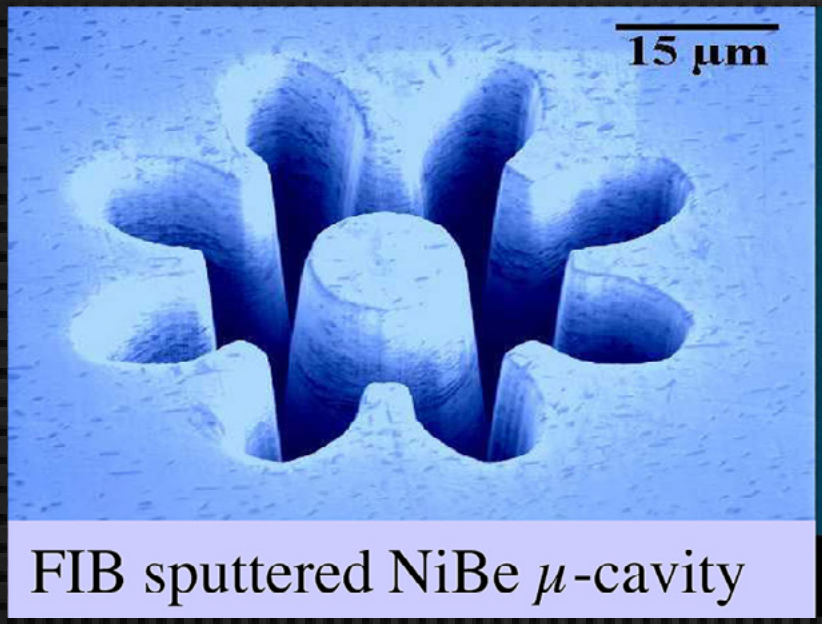
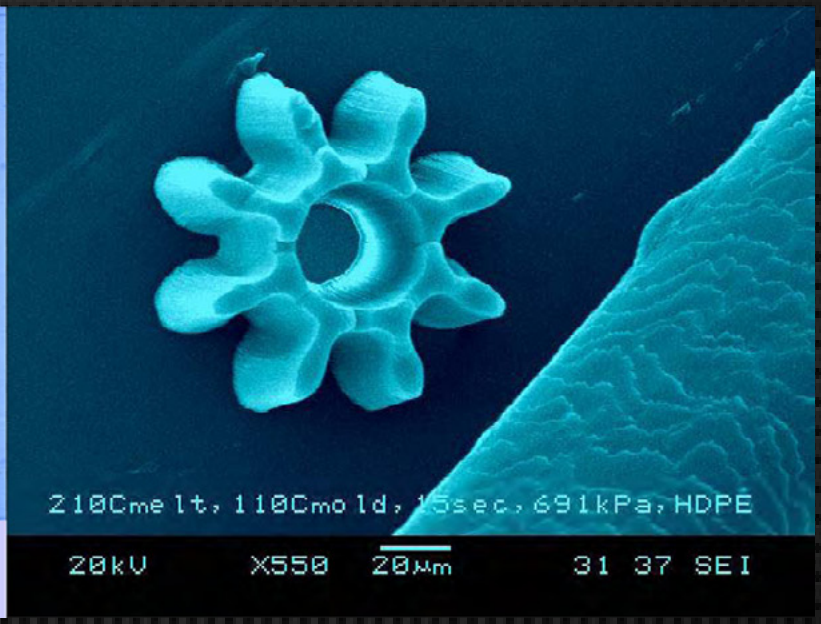
Education and research on micro/nano manufacturing
Previous and current work



FIB sputtered NiBe μ-cavity



Education:

- New course "Micro/nano manufacturing" in Spring 04

Research:

- Development of micro/nano manufacturing technologies (micromolding, micromachining, microwelding…)
- Complement to MRSEC, and PTC, MIC, CIMS centers
- Lab: new Micro/Nano Manufacturing Lab

Education and research on micro/nano manufacturing
New equipment

1. Ferromatik Milacron Babyplast molding machine
2. FEI Strata-201focused ion beam
3. Sodik K1C microEDM

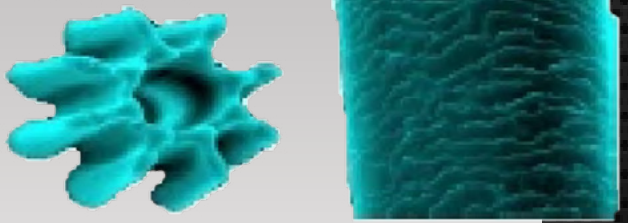
Education and research on micro/nano manufacturing
Relevant publications of principal investigator

INTERNATIONAL JOURNALS

1. Ali, M. Y., Hung, N. P., Ngoi, B. K. A., and Yuan, S., "Sidewall Surface Roughness of Sputtered Silicon, Part I: Surface Modeling", Surface Engineering, 19 (2), 2003, pp. 97-103.
2. Ali, M. Y., Hung, N. P., Ngoi, B. K. A., and Yuan, S., "Sidewall Surface Roughness of Sputtered Silicon, Part II: Model Verification", Surface Engineering, 19 (2), 2003, pp. 104-108.
3. Yuan, S., Hung, N.P., Ngoi, B.K.A., and Ali, M.Y., "Development of Microreplication Processes- Microinjection Molding", accepted for publication in Journal of Materials and Manufacturing Processes, Feb 2003.
4. Ali M.Y. and Hung N.P., "Fabrication of Three-dimensional Microcomponents," submitted to Journal of Machining Science and Technology.
5. Hung N.P., Fu Y.Q. and Ali M.Y, "Focused-Ion-Beam Machining of Silicon," Journal of Materials Processing Technology, Vol 127 (2), 2002, pp. 256-260.
6. Hung N.P., Ali M.Y., Fu Y.Q., Ong N.S. and Tay M.L, "Surface Integrity and Removal Rate of Silicon Sputtered with Focused Ion Beam," Journal of Machining Science and Technology, Vol 5(2), 2001, pp. 239-254.
7. Ali M.Y. and Hung N.P., "Surface Roughness of Sputtered Silicon, Part I: Surface Modeling," Journal of Materials and Manufacturing Processes, Vol 16(3), 2001, pp. 293-313.
8. Ali M. Y., and Hung N. P. "Surface Roughness of Sputtered Silicon, Part II: Model Verification," Journal of Materials and Manufacturing Processes, Vol 16(3), 2001, pp. 315-329.
9. Fu Y.Q., Ngoi B.K.A., Ong N.S. and Hung N.P., "Influence Analysis of Dwell Time on Focused Ion Beam Micromachining in Silicon," Journal of Sensor and Actuators (A), Vol. 79, 2000, pp. 230-234.
10. Fu Y.Q., Ngoi B.K.A., Ong N.S. and Hung N.P., "Influence of the Redeposition Effect for Focused Ion Beam 3D Micromachining in Silicon," Journal of Advanced Manufacturing Technology, Vol. 16, 2000, pp. 877-880.

Micro ingranaggio

50 μm



babyplast

Texas A&M University
Manufacturing & Mechanical Engineering Technology
Department of Engineering Technology & Industrial Distribution

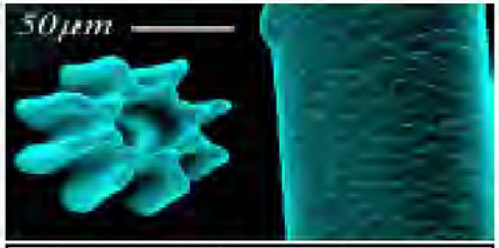
THE DWIGHT LOOK COLLEGE OF ENGINEERING

Micro/Nano Manufacturing Laboratory

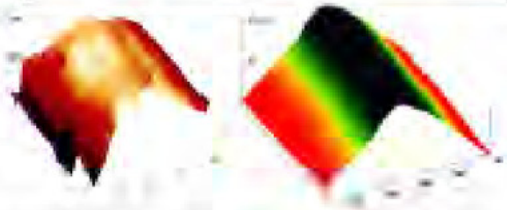
Objectives

VISION
- To serve as the center for micro/nano manufacturing at Texas A&M University.
- To integrate with national micro/nano manufacturing network.

MISSION
- To provide expertise, synergistic collaboration with other departments at Texas A&M University, industry, and international institutions.
- To inspire and prepare our students for further study in nanotechnology.
- To expose high school teachers with state-of-the-art micro/nano manufacturing techniques.



A molded microgear next to a human hair. Molding of polyethylene at 210°C, 690 kPa.



SPM image of a new WC cutting edge (left, 150nm edge sharpness) and single crystalline diamond tool (right, 10 nm edge sharpness).

Current Projects

- Development of CIM-enhanced dental implant fabrication.
- Design and fabrication of microfasteners for orthopedic applications.
- Development of micro extrusion/sewing process.
- Development of micro/nano molding process.
- Fruit surface modification for shelf life and security enhancement.
- Welding of A356-SiCp composites
- Micromechanical properties of ZrP-epoxy nanocomposites.

Collaboration

- Applied Materials Inc.
- Microscopy & Imaging Center, Texas A&M University
- Center for Integrated Microchemical System, Texas A&M University
- Universidad de las Americas-Puebla, Mexico
- Nanyang Technological University, Singapore

Facility & Equipment

- 1550 ft² lab with fabrication and inspection capability
- FEI Sirela 210 focused ion beam (pending)
- Milacron BabyPlast micromolding system
- Sodick K1C microEDM system
- Digital Instrument Explorer SPM (pending)
- ADC laser height measurement system
- Quad IVc MK2 SMT assembler
- Quad VMP20-MV SMT stencil printer
- Quad ZRC SMT reflow oven
- Nikon zoom stereo optical microscope
- Struers Planopol-3 polisher
- Engis Hyprez lapping system
- Chevalier NC grinder
- MKS vacuum plasma system
- Bruel Kjaer 4810 mini vibration system

The Team (Feb 04)

- Dr. Wayne N.F. Hung, Director
- Mr. Balaji R. Vaidheeswaran, Graduate student
- Mr. Manoj Agnihotri, Graduate student
- Mr. Mitul A. Kothari, Graduate student
- Mr. Rahul R. Bhat, Graduate student

Contact

Dr. Wayne N.F. Hung
Email: hung@tamu.edu
Tel: (979) 845-4989

Micro molding specialists

babyplast

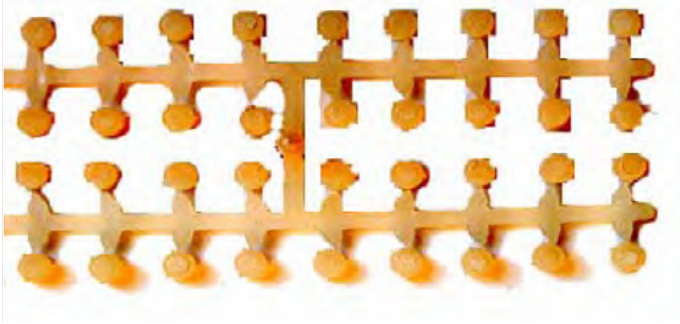
Parts produced by Babyplast

POM - PA - PP

POM - 4 cavities -
surface area 32 cmq

POM - 1 cavity -
EWIKON nozzle - 3 tips

PP - 1 cavity -
insert loaded by robot



PA6 - 40 cavities

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Parts produced by Babyplast

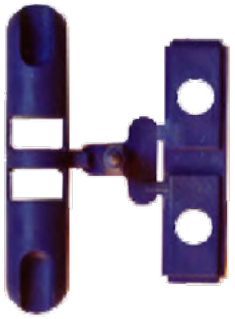
PC - POM - PA - PBT

PC- 1 c.
3,4 gr

POM - 4 cavities
pz. 0,02 gr

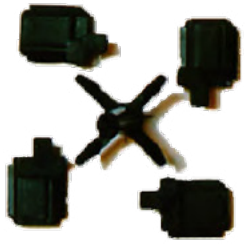
PC - 1 cavity
pz. 5,4 gr

PC - 2 cavities -
pz. 1,1 gr

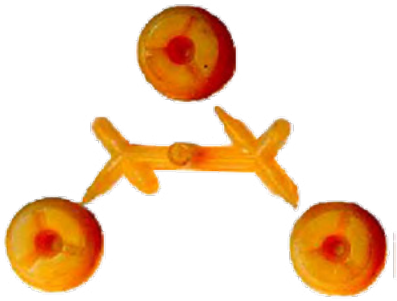


Valox 420
2,5 gr

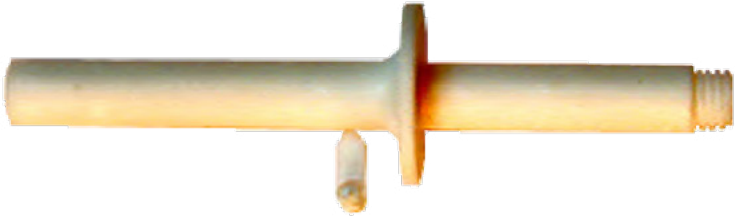
PBT 30%Fv
2c. 1,3 gr



Pa 66 + 20%fe
+ 30%fv - pz
0,1gr



Stanyl - 3 cavities
- pz 1 gr



PBT 20% Fv - 1 cavity - 6 gr

POM
1 cavity - 1 gr

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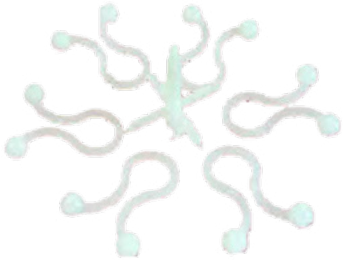
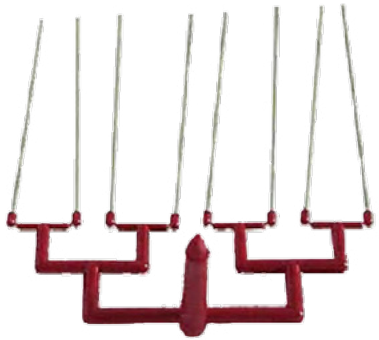
Parts produced by Babyplast

PC - POM - PA - PBT



POM - 6 V cavities

POM



PS - 8 cavities

PEEK - 2 cavities

PP - 8 cavities

PS

PP 32 cavities

POM

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Parts produced by Babyplast

PC - POM - PA - PP - ABS

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Parts produced by Babyplast

PC - POM - PA - PP - ABS - PP

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Production

If you need to produce a part that weighs from 0,01 g. to a maximum of 15 g, we have a real winner as an alternative:

BABYPLAST 6/10
With more than 10,000 applications used on the Babyplast machine, that include the use of the most varied thermoplastics, various types of molds, we are able to put at the disposal of the customer our experience, that has no equal in the field of micro injection molding.

The majority of the moulds developed for Babyplast are not for preliminary production or prototypes, but for full production.

The materials used, range from PP-PS-PE-ABS-PA to PC-POM-PBT-PPS-PPO-LCP, from thermo rubbers to filled materials, from ceramics to sintered metals.

Molds have been developed with up to four slides, single and multi tips with up to four tips, and as many as 40 cavities in one single mold.

Babyplast is mainly used in technical fields: Electronics - automotive – micro-mechanics - medical - furniture, but it is also used by manufacturers of toys – promotional products - cosmetics – costume

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Babyplast in Production

playmobil®

babyplast

Babyplast in Production

babyplast

Babyplast in Production

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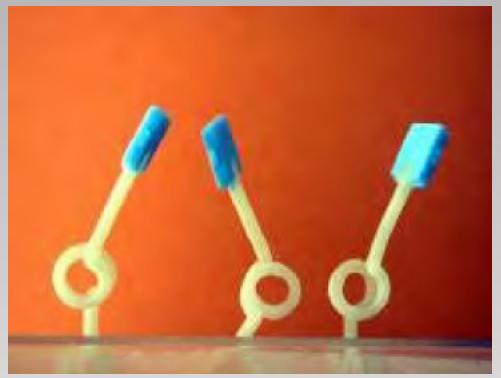
Installation of the UAI injection unit onto a Babyplast machine



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Installation of the UAI injection unit onto a Babyplast machine

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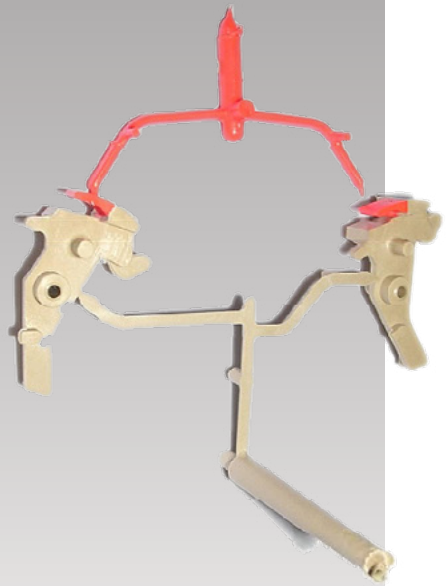
Installation of the UAI injection unit onto a Babyplast machine

PPS + TPU



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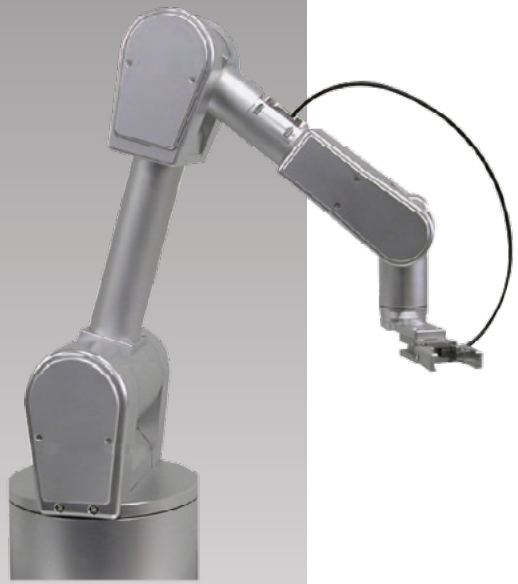
Babyplast with robot application



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Babyplast 6/10P references

Electronics Communication

- BTicino spa
- Legrand
- LG Korea
- Ilme
- Perlos
- Vimar
- Gewiss
- Alfanar Electrical S.
- CS Colombo
- Luminex –Columbia
- Lovato
- Foxconn

Laboratories Research

- Basell
- Clariant Italy
- EMTL CH
- Dublin City University
- Frunhofer Institut
- Ciba Specialitatenchemie AG
- CNR Italy
- C.R.P. (FIAT)
- TKK - Fl
- Texas A&M University
- UMIST – UK
- University of TEESSIDE UK
- Tyndall National Institute
- London University

Automotive Micromechanics

- Valeo
- Black&Decker
- Salice Spa
- AG. Ferrari
- Faurecia
- Cemm Thome
- Hutamaki Australia Ltd
- Flexible Lamps Ltd
- Bitron
- Hutchinson

Medical

- Becton & Dickinson
- Borla Industrie Spa
- Leone spa
- Ponzini spa
- Valois Dispray
- Bespak
- Inter Surgical

Dom. Electrical Appliances

- Merloni Spa
- Giacomini spa
- Sar
- Coster

Other

- Playmobil (toys)
- Drennan (Fishing tackle)
- Columbian Chemicals co.
- RAMBALDI + Co I.T. Srl

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CONTACT FOR NORTH AMERICAN SALES AND TECHNICAL SUPPORT

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