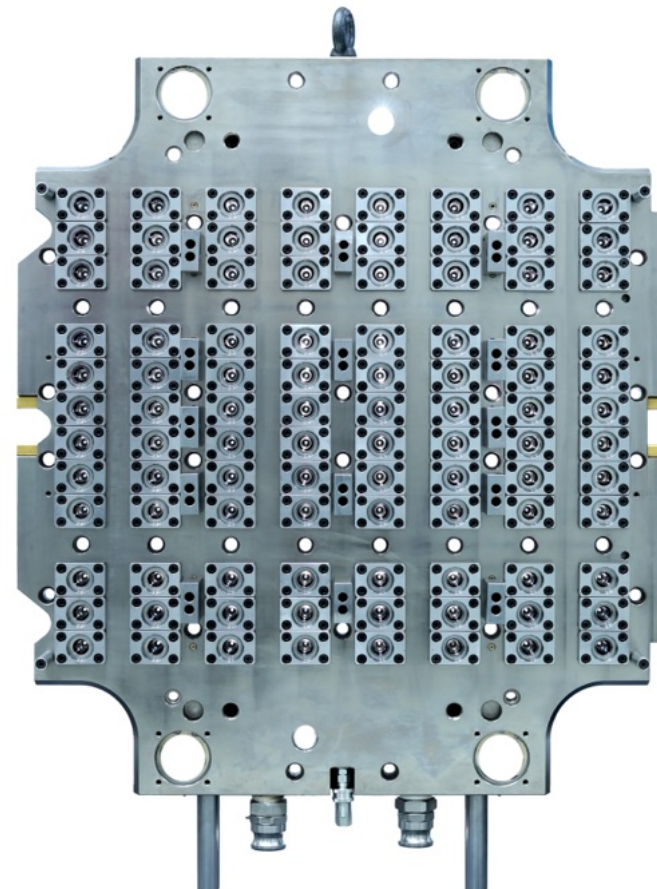
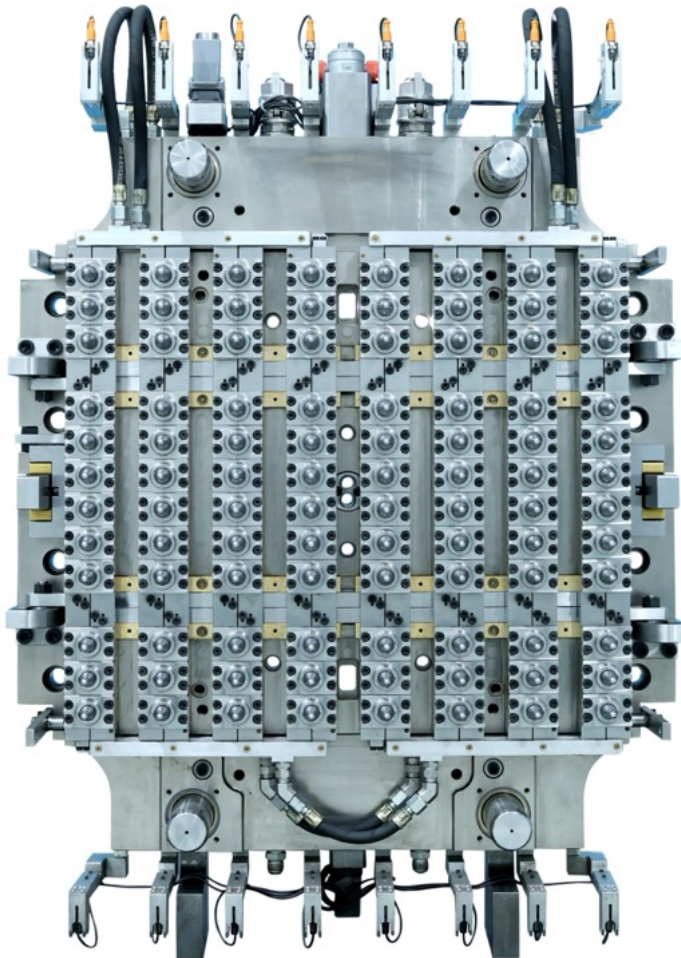




High Performance Preform Moulds

Mould Making since 1998



About PETform

PETform Technologies is a privately held company founded in 2013 by Shurid Mody who has experience in preform mould manufacturing, injection moulding of PET & blow moulding of PET since 1998.

PETform's focus is manufacturing of moulds and components for high end preform systems.

The company employs approximately 120 people.

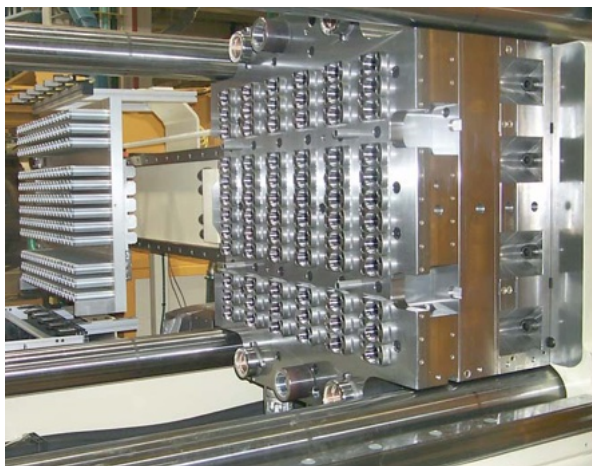
The manufacturing facilities is located in Daman in the western region of India around 150 km north of Mumbai International Airport.

Web site address : www.PETform.Co

Email address : Sales@PETform.Co

Factory Address : 54 Daman Industrial Estate, Kadaiya, Daman 396210, INDIA

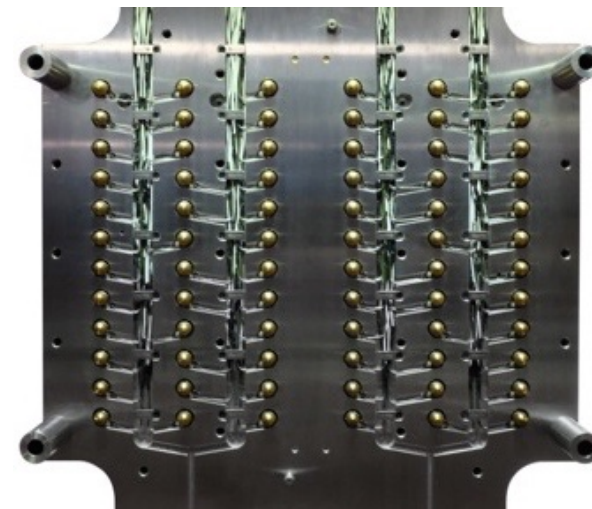
Products & Services



New Preform Moulds



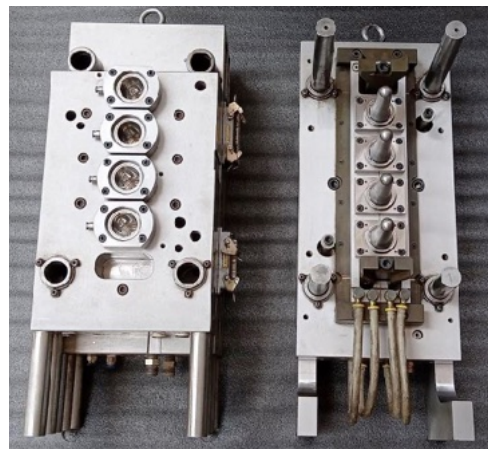
Stack Replacement



Hot Runner Systems



Hot Runner Components



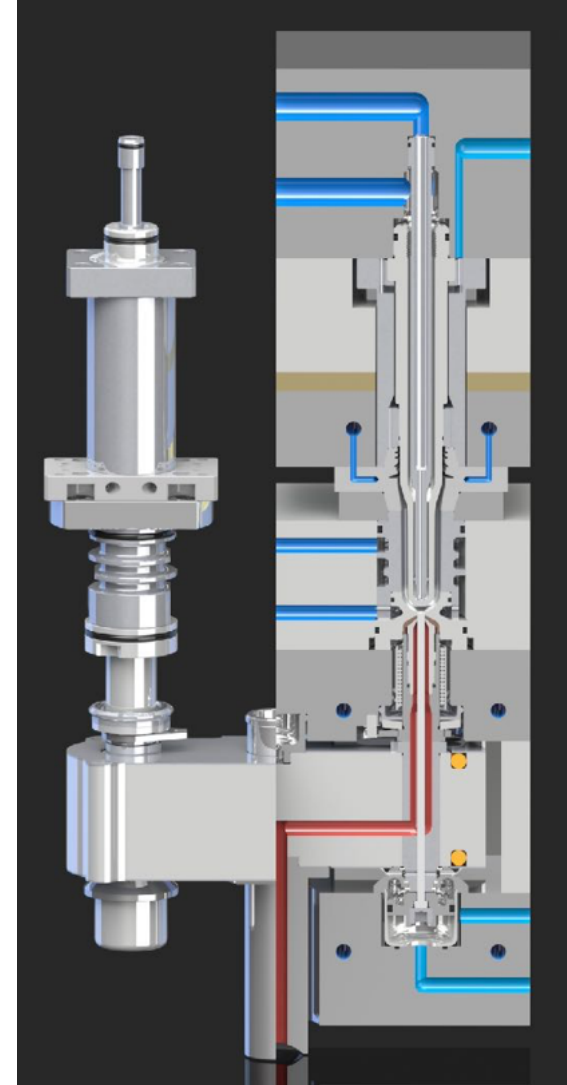
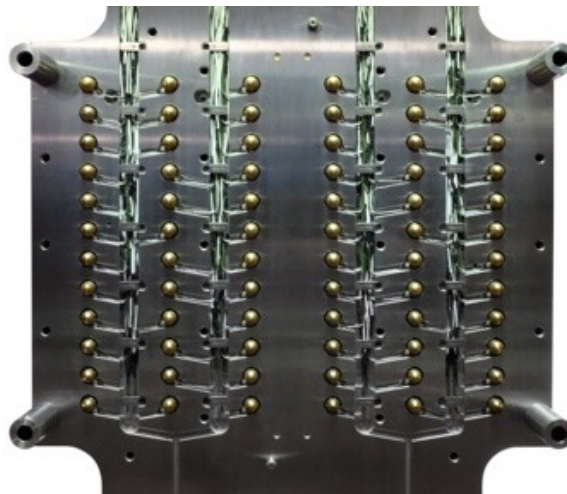
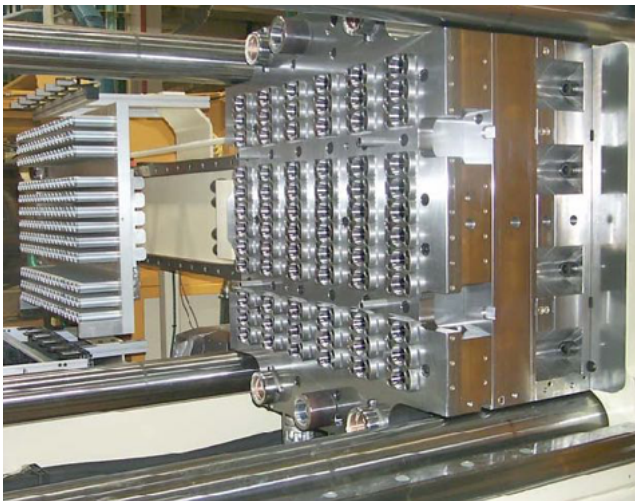
Prototyping



Reheat Blow Moulds

Two Stage Preform Moulds, Hot Runners & End of Arm Tooling

- PETform Manufactures Two Stage Preforms Moulds, Hot Runners & EOAT up to 144 cavities.
- We can supply moulds for any preform systems, including & not limited to Husky, Netstal, Sacmi, Sipa, ASB Nissei (PM series), etc.
- PETform guarantees flash-free & efficient production for 8 million shots between refurbish cycles.
- Our Hot Runner components that are compatible with Husky's latest Ultra-PET hot runners.
- We employ local technicians in Europe & the Americas to provide installation, commissioning & after sales service.



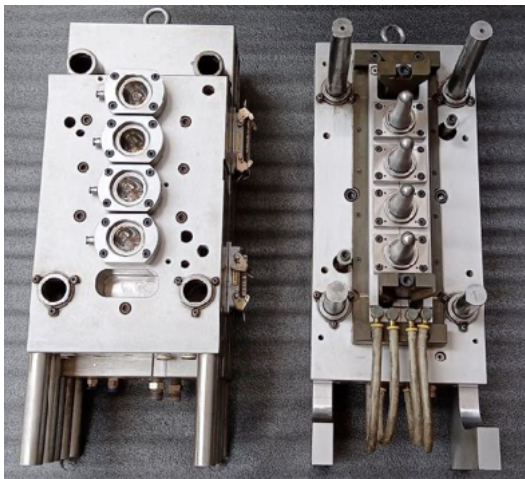
Spares for Preform Moulds & Hot Runners

- PETform specialises in manufacturing spares & conversion kits for preform moulds originally built by Husky, MHT, Otto Hofstetter, Sacmi, Sipa, SIG, ASB Nissei, etc.
- PETform guarantees that the same materials, design, tolerances (within 3 microns) and surface finishes are applied.
- We stock standard Husky & MHT Hot Runner Components that are 100% compatible with OEM parts.
- PETform also manufactures hot runner components for single stage platforms such as Aoki & Nissei.



Prototyping & Small Scale Production

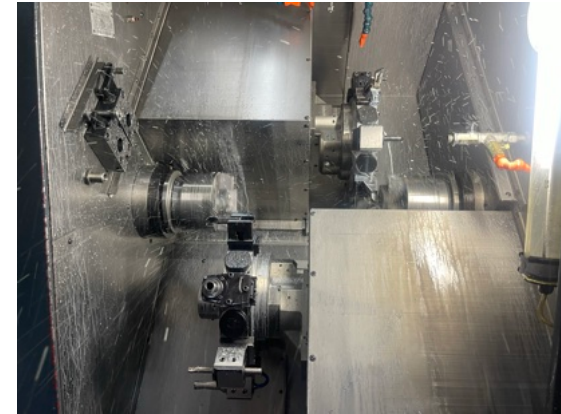
- PETform Provides Prototyping Services deploying either a 2 cavity or 4 cavity platform on a Husky Lab Preform Systems with a small extruder & shot size. The machine is equipped with a 3 position robot.
- PETform has two 300 ton Husky machines & one 175 ton Krauss-Maffei Preform System to support its customer by either supplementing their production or developing a new product line before making their next investment in a new preform system



PETform's Manufacturing Practices

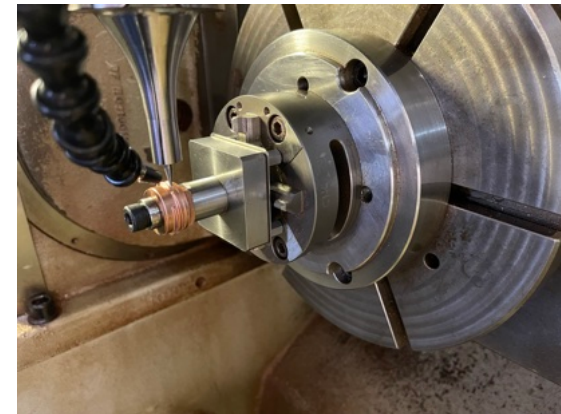
Stack Parts & Hot Runner Components-

- Cores, Neck Rings, Cavities & Gate Inserts are manufactured exclusively using Deutsche Edelstahlwerke (DEW) or Bohler-Uddeholm's ESR grade Corrosion resistant martensitic stainless steel steel.
- Stack parts are rough machined, stress relieved & vacuum hardened to 50-52 Rockwell.
- Final dimensions are machined only after hardening to nullify any changes in dimensions during hardening.
- All mating surfaces (that experience wear) are cylindrical / surface ground for high precision and long life.
 - Manufacturing is conducted in a temperature controlled room.
 - Components are measured in-process by work-probing systems.
- Component are measured post process by highly accurate measuring instruments & gauges in a temperature controlled (standard) room.
- Tolerances on critical dimensions is maintained within 5 microns.



Mould Base Plates-

- Mould base plates are manufactured from DEW or Bohler Uddeholm's 1.2085 pre hardened corrosion resistant stainless steel with hardness of 30-34 Rockwell.
- Mould base plates, hot runner manifold & backing plates are rough machined and stress relieved before finish machining. This is to ensure that the dimensions of the plates do not change over time.
- At PETform, finish sizing, drilling & boring is done by **jig boring class machines*** only and never general precision CNC machining centers.
 - In process gauging is used for eliminating errors and holding close tolerances.
- All plates are inspected on CMMs in temperature controlled (standard) rooms before assembly.



** jig boring machines are geometrically much more accurate than standard precision CNC machining centers. Jig borers have geometrical accuracies similar to measuring machines. The axes on jig boring machines are significantly straighter and the axis are more square in relation to each other (3 to 4 axis) than standard precision CNC machining centers commonly used by virtually all preform mould manufacturers.*

List of Metal Cutting Machine Tools

CNC Lathes (11 units)-

Hardinge Conquest 42 Super Precision Single Spindle
Hardinge Conquest 42 Super Precision Dual Spindle
Hardinge Conquest T65
3 x Jyoti CNC Lathes
1 x LMW Ultra Smart Turn
Micromatic CNC Lathe
Monforts KNC 5 Teach-In Lathe
Traub 42/65 Dual Spindle Dual Turret Turn Mill Center
Nakamura Tome TW20 MMY Dual Spindle Dual Turret
Turn Mill Center

Cylindrical Grinders (5 units)-

Kellenberger Kel-Varia with full B-axis & 2 external + 1
internal wheel (CNC)
Jones & Shipman Universal Cylindrical Grinder
3 x Micromatic Universal Cylindrical Grinders

CNC Machining Centres (10 units)-

2 x Huron KX30 (1.8 m x 1.0 m travels)
Dixi DPC 200 Horizontal Machining Center
Makino V55 HSC Machining Center
Makino V33 HSC Machining Center
Mikron VCP 600 HSC Machining Center
Mikron UCP 600 5-axis HSC Machining Center
Jyoti VMC850 with 3+2 axis
Jyoti RDX 20 with 3+2 axis
Jyoti PX10

Jig Borers (8 units)-

Dixi 75FE 4 Axis CNC Horizontal Jig Borer
Hauser B3-DR
Mitsui Seiki JIDC-5C CNC Horizontal Jig Borer
Mitsui Seiki 6CNII CNC Jig Borer (0.712 m x 1.024 m)
Mitsui Seiki 7CN CNC Jig Borer (1.53 m x 1.02 m)
SIP 600 CNC Jig Borer (1 m x 0.7 m)
SIP 8P Jig Borer (1.5 m x 1.0 m)
SIP 5E Jig Borer

Gun Drilling Machines (2 units)-

Buck TBFZ 1100
Ixion TL1004

Surface Grinders (6 units)-

Favretto 1,500 x 2,000 mm
ABA 500 mm x 1,000 mm
Blohm HFS9 400 mm x 900 mm
Chevalier FSG 618 150 mm x 500 mm
Jones & Shipman 150 mm x 500 mm
Jung 540 150 mm x 500 mm

EDM-

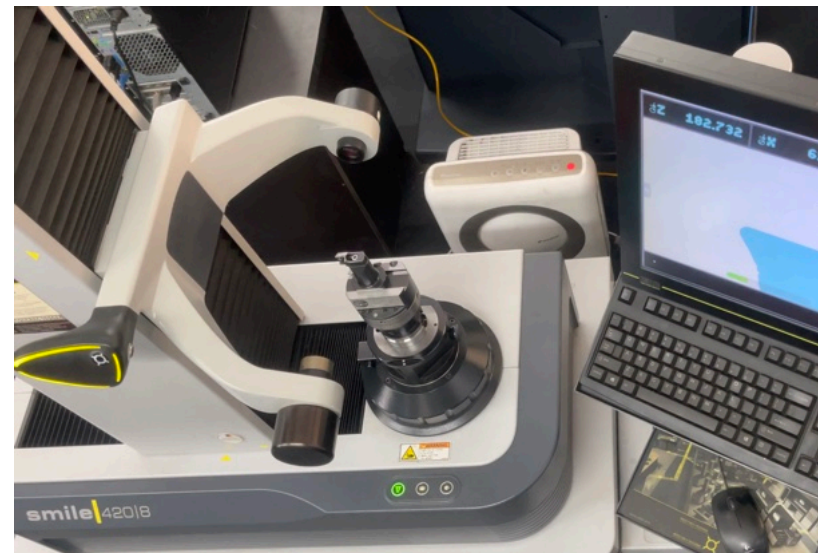
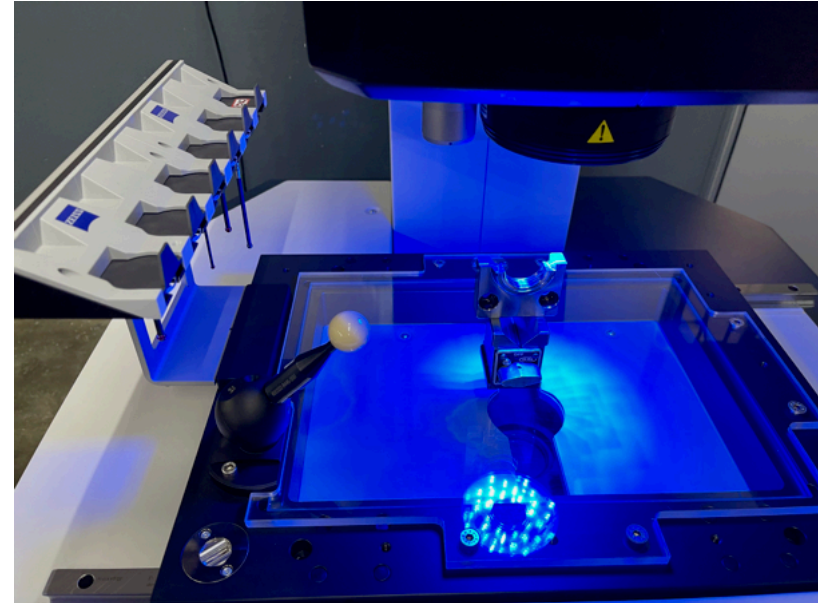
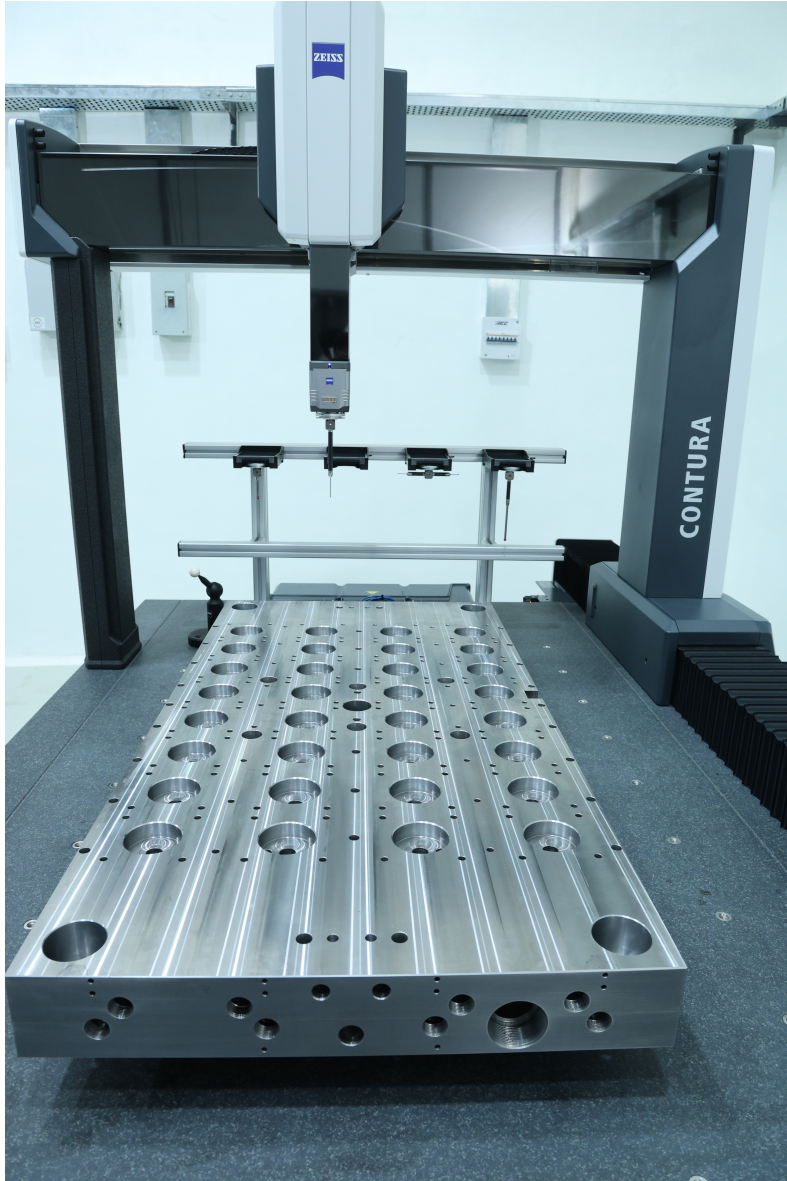
Sodick AL40G Linear Motor

Miscellaneous-

Boehringer Copy Lathe
Lagun FCM-1600 Milling Machine
Alzarapid Radial Drilling

Quality Control

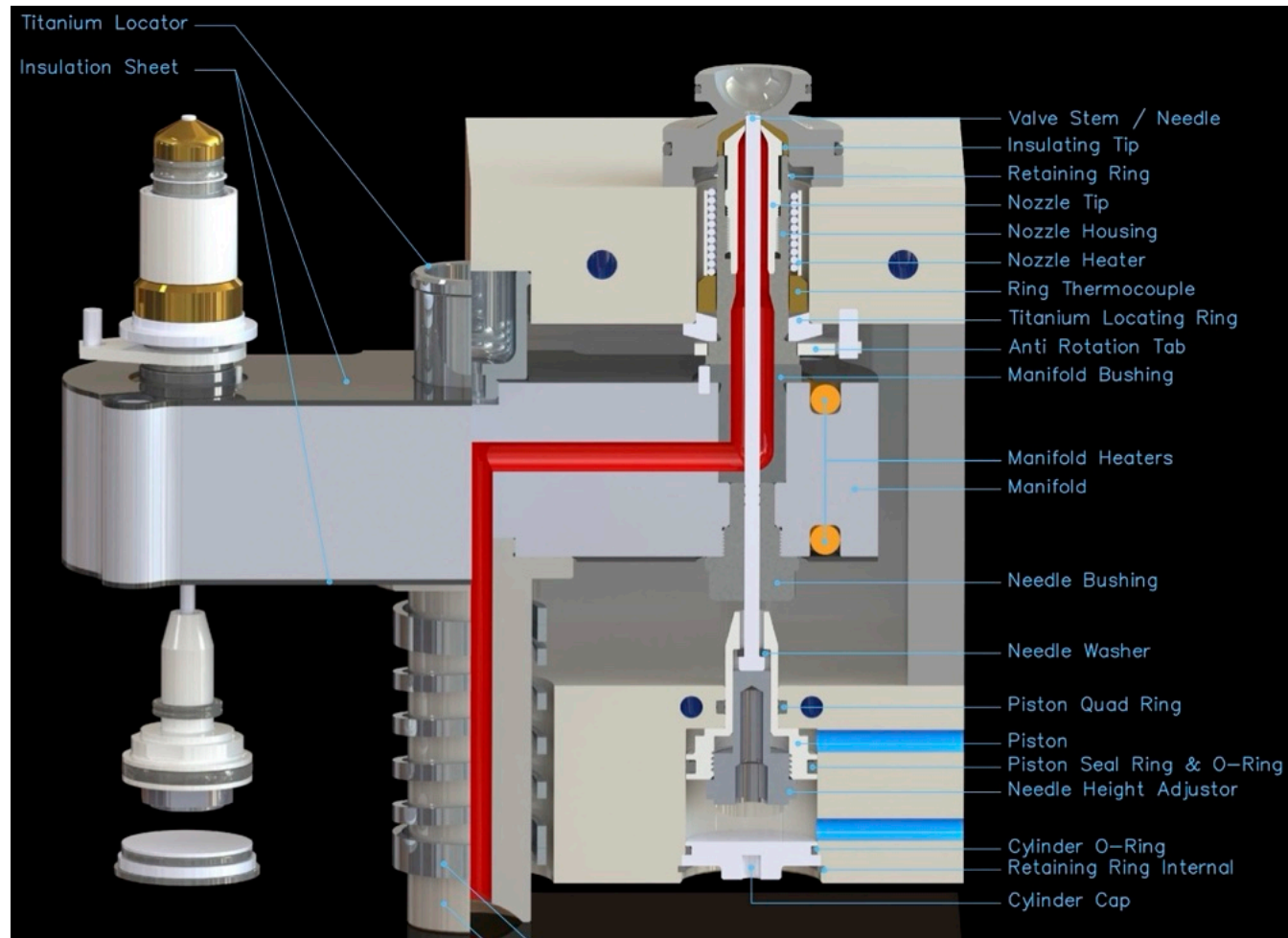
- Inspection takes place in an environmentally controlled room (temperature is controlled at $22^{\circ}\text{C} \pm 1^{\circ}\text{C}$)
- Critical dimensions of every component is measured to ensure tolerances are maintained within prescribed limits



Key Innovation 1 : 40 mm pitch hot runner

In 2018 PETform developed a new hot runner design that allows pitching of down to 40 mm. This permits us to build preform moulds/ cold halves for up to 30 mm neck finish with a pitch of only 45 mm, and for cold preform moulds/ cold halves for up to 25 mm neck finish with pitch of only 40 mm. With the lower pitch, we are able to pack in more cavities on a machine for higher throughput and lower energy consumption. Residence time of the PET melt is also reduced in the runner system resulting in lower IV drop and AA levels.

Though the pitch is reduced, many components are still common with Husky Ultra-PET hot runners, such as the insulating tips, nozzle tips, nozzle heaters, piston seals, circlips, thermocouples, etc.



Key Innovation 2 : Solution for moulding thick walled preforms with short cycle times on standard injection moulding machines

PETform has developed a unique solution for moulding preforms with wall thicknesses from 8 to 12 mm, wherein the preform is de-moulded from the cavity but remains on a second core & neck ring set for one complete machine cycle as well as a water cooled take-out tube. It is then left in the water cooled take-out tube for one more machine cycle before being transferred to a tray for removal.

This allows the preform to be de-molded significantly earlier without suffering shrinkage, shortening the machine cycle time significantly.

One prime example of this system is for the production of 20 L / 5 USG preform. With this solution one is able to mould 630 to 720 gm preforms, with a wall thickness of up to 12 mm, under a cycle time of 80 seconds on a *standard* injection moulding machine.

In this application the throughput vs. shot size ratio is low, and the dwell time of the melt is very high, resulting in material degradation. With the shorter cycle time of under 80 sec (vs. 130 to 140 sec with the conventional method) dwell time is reduced by at least 40% and the extent of material degradation is curbed significantly.

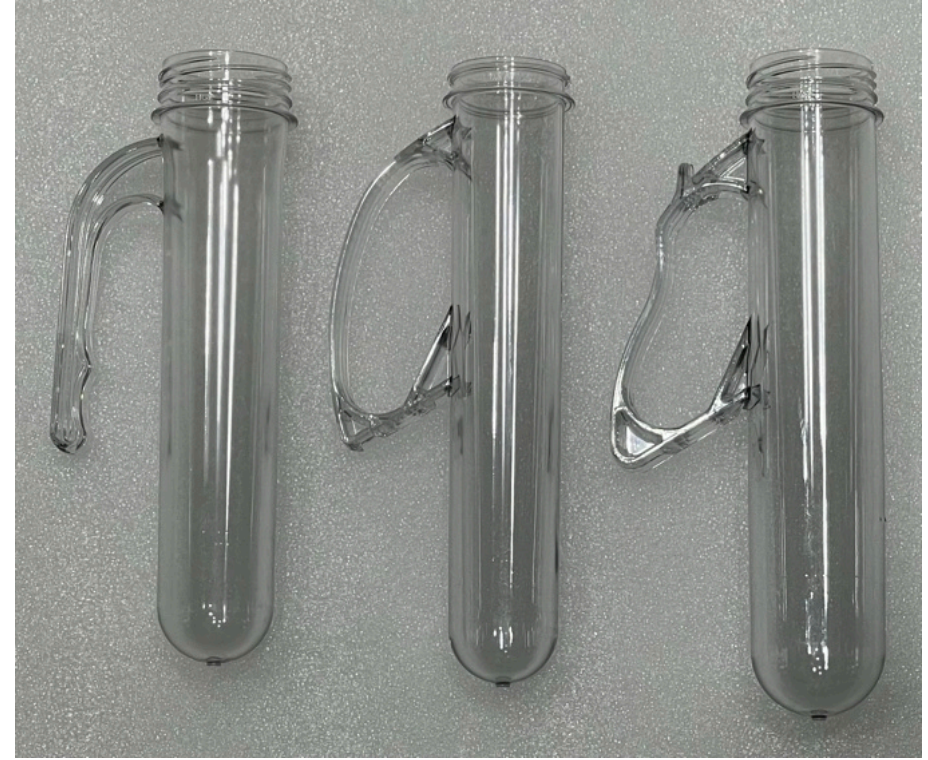
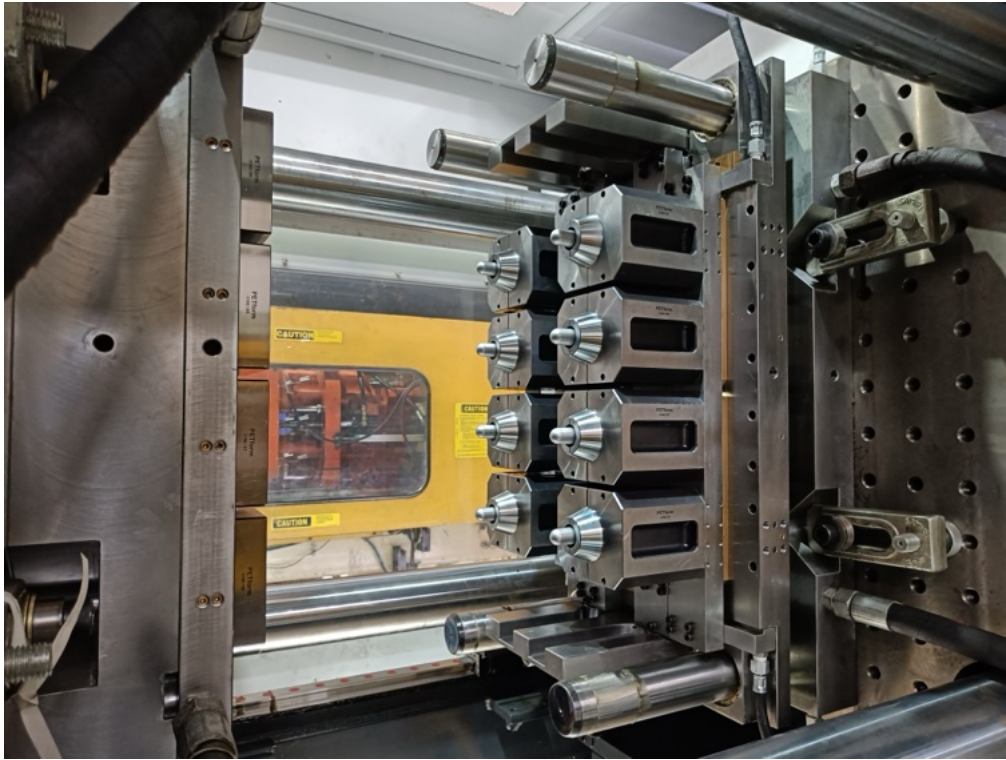
The resulting bottle blown from 630 gm performs, with the original properties of the resin being better preserved, enjoys more cycles vs bottles blown from 700-720 gm preforms made from competing systems.



This unique solution provides the convertor with 3 compounded benefits-

- 1) 60 to 70% higher production rates on the same machine.
- 2) Lower degradation of material for better material distribution in the bottle for higher strength.
- 3) Allows reducing bottle weight/ material consumption by around 10%.

Key Innovation 3 : Moulds for Integrally Moulded Handle (IMH) Preforms for 2 stage RHSB



Principles & Objectives

Quality

Means providing our customers with products that meet or exceed their expectations and specifications.
Quality is not "relative". It is the best that modern science and technology can deliver.

Service

Means treating our customers with courtesy and competency.

Delivery Times

Need to be kept as short as possible.

Technical Competence

Is continually improved by providing our engineers and specialists with constant training. Only through regular engagement with modern technological developments can we guarantee that our employees keep their knowledge up-to-date.

Prices

Our prices are a fair reflection of the value of our systems and components. We put a great deal of emphasis on maintaining this relationship. If prices rose relative to value it would burden our customers, if prices fell it would inhibit our ability to continue innovating and providing service to our customers.