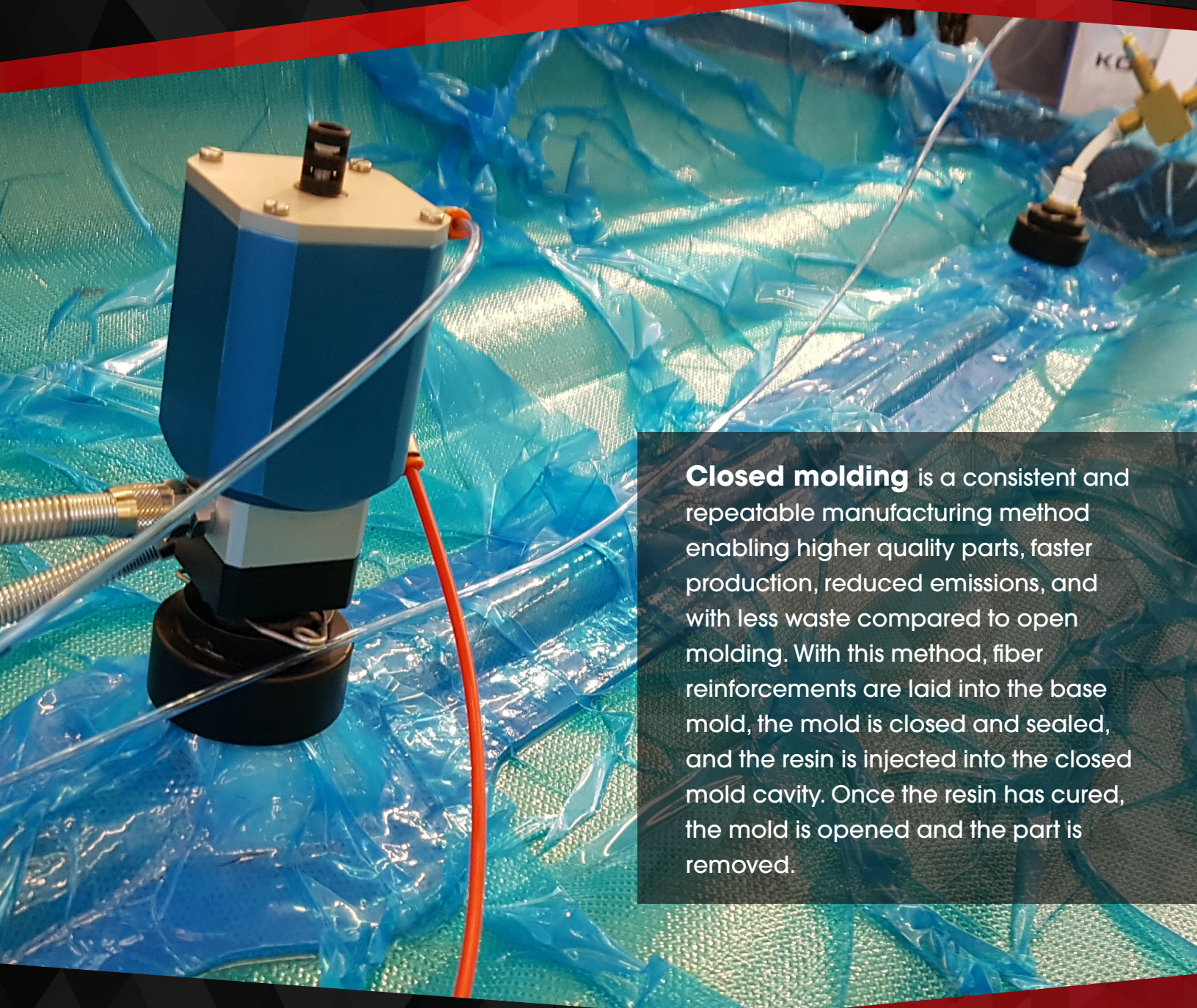


Closed Molding

Comprehensive products, services and training to support a variety of closed molding methods



Closed molding is a consistent and repeatable manufacturing method enabling higher quality parts, faster production, reduced emissions, and with less waste compared to open molding. With this method, fiber reinforcements are laid into the base mold, the mold is closed and sealed, and the resin is injected into the closed mold cavity. Once the resin has cured, the mold is opened and the part is removed.

Types of Closed Molding:

MVP products and technical experts support a variety of closed molding processes, and often tailor or combine solutions for the perfect application. A process is selected based on many factors such as part size, complexity, and desired production volume. MVP supports each of these processes with a variety of specialized equipment and accessories, as well as personalized training for customers.



Resin Transfer Molding (RTM)

Classic RTM is used to produce a high volume of parts per day. The process uses a composite mold reinforced by metal which is then injected under high pressure.



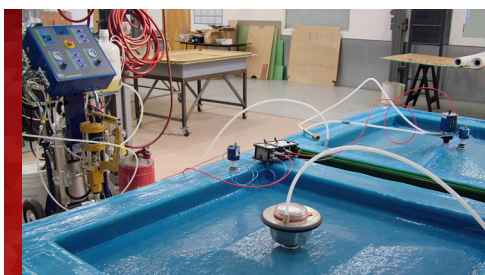
Light Resin Transfer Molding (LRTM)

LRTM, one of the most common closed molding methods, uses a rigid mold and semi-rigid counter mold which is sealed by vacuum. Resin is then injected with an injection machine.



Resin Infusion Process

Resin Infusion Process is utilized for production of large parts and when higher glass content is required. MVP created a single injection port solution for simple operation and developed a unique silicone resin channel network and plastic bag closing system to speed production times for this process even more.



Flex Molding Process

Sometimes referred to as reusable bag molding, Flex Molding was developed by MVP and utilizes one rigid mold half and one flexible mold half, either a plastic bag or a silicone membrane.



Fast Flow LRTM

The latest closed mold process from MVP, Fast Flow LRTM is a blend of the Flex Molding Process and LRTM. It utilizes collapsible resin channels and a unique channel layout for faster injection times. The process enables the production of larger parts with even higher resin viscosity, and eliminates the need for trimming once parts are demolded.

Closed Molding Equipment:

Our closed molding products provide a comprehensive package including reliable injection systems, accessories and seals. MVP products enable proper and accurate injection into reinforced composite molds, LRTM molds, disposable bags, and many reusable bag methods without over pressurizing the mold or part.

Patriot Innovator

The Patriot Innovator RTM Systems were designed for injecting polyester, vinylester and methacrylate resins and catalyst at controlled pressures. The material mixing is done on demand at the injection head, and the catalyst ratio can be adjusted from 0.75% to 2.5% or configured to accommodate a wider range. The system features a unique control panel for easy operation. The fully pneumatic automated controls, controlling the number of strokes during injections, recirculation and more, makes the process easier and more efficient. The PLC control option provides exact control of shot sizes, reducing material waste and saving cost. The PLC option is also equipped with RFID tracking for supplies and injection formulas for safer injections and increased accuracy.



Patriot Innovator PLC System

1:1 Patriot Silicone System

The 1:1 Patriot Silicone System is specifically designed to mix and dispense multiple 1:1 volumetric materials, making it ideal for producing reusable membranes. The system was developed to mix and dispense viscous materials through a gravity feed system that eliminates the need for a ram pump.

Other system features include:

- 1:1 fixed ratio fluid pumps
- Precise Patriot™ metering technology
- 15 gallon A + B polyethylene tanks for gravity feeding
- Easy maneuverability on cart mount model
- Single trigger action to start/stop the spray flow
- Easy low cost maintenance on gun
- Reduced downtime for standard system maintenance with rapid access design



1:1 Patriot Silicone System

MVP also offers a 10:1 Silicone System.

Flex Molding Process Accessories:

INJECTION



IVx3 3-Position
Injection Valve
(8010-INV2)



Pneumatic PV
Sensor
(PPVS-INF)



IVx3 Filter/Regulator -
1 Feedline Control Module
(8016)

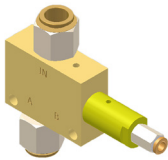


IVx3 Feedline Control Modules
(8019 - 2 feedline control module)
(8020 - 3 feedline control module)



IVx3 Service
Module
(8018)

PIPE CONNECTORS



Automatic Vacuum
Channel Valve
(INV-VCV-1000)



Pipe Clamp
Manual
(IPC-1000)



Universal Injection
Adapter - 10mm
(6319)



Universal Injection
Adapter - 16mm
(ASSY-0448)



Universal Blank
Plug
(6341)

INSERTS FOR PLASTIC BAGS



Infusion Film Adapter -
Omega Feed Channel
(IFA-1000-FLX)



Infusion Film Adapter -
No Resin Feed Channel
(IFA-2000-FLX)



Infusion Film Adapter for
12mm Spiral Tube
(IFA-3000-FLX)



Universal Insert for
Silicone Bag Connector
(FLX-SBC-UI)



Universal Insert
with Clip
(6316)

RESIN CHANNEL & TECHNICAL CLOTH



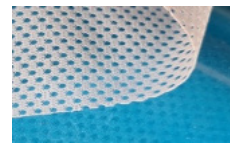
Universal Insert PPVS,
Vacuum & Locking Seal
(FLX-UI-500)



Universal Insert
Resin Feed
Channel



Corrugated Channel
- 25m bundle
(FLX-CT-40MM)



Flex Cloth
- 50m roll
(FLX-CLOTH)



Stretchable
Flex Cloth
(FLX-CLOTH-A)

MEMBRANE CLOSING SYSTEMS



Mold Groove Seal
(FLX-GS-25M)



Small Locking
Lip Seal
(FLX-SLS)

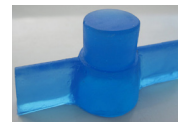


360° Small Double
Locking Lip Seal
for Membrane
(FLX-SLS-360)



Silicone Suction Cup for
Small Locking Lip seal
(FLX-SSC)

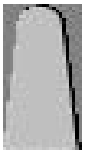
OPTIONS



Universal Insert -
Groove Seal Locator
(6410)



Grooved Band
(Small - 7711)
(Large 7712)



Groove
Seal
(7708)

LRTM Accessories:

INJECTION



Turbo Autosprue
High Volume
(ASSY-0437)



Pneumatic PV
Sensor
(PPVS)



Turbo Autosprue:
Innovator Pro (5855-INV2)
Heavy Duty - 30 bar (5856)
High Temperature - 30 bar (5856-HT)
High Pressure/Double Acting - 110 Bar (5856-HIPRESS/DA)

PIPE CONNECTORS



Universal Injection
Adapter - 10mm
(6319)



10mm Vacuum Connection
for Universal Insert
(6318)



6mm Injection Adaptor
for Universal Insert
(6319-6mm)



Universal
Blank Plug
(6341)



PVS Universal
Insert Adaptor
(6317)



Air Ejector with
Universal Insert
(0580-UNI)



Geka Connection
(6315)



Universal Insert
with Clip
(6316)

CATCH POTS



Vacuum Catchpot
- Metal Lid for use
with Universal
Insert (2146-UNI)



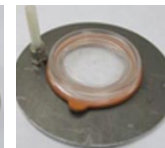
Vacuum Catchpot -
View Lid for use
with Universal Insert
(2146-VIEW-UNI)



Catchpot Bowl
& Thread
Adaptor
(5686)



Catchpot Bowl for
Universal Insert
(5686-UNI)



Catchpot Lid
Complete with Seal
(5685-VIEW)



Catchpot Lid
- Inline
(5686-INLINE)



Catchpot Lid
Spare Seal
(5954)



Catchpot Lid Spare
Seal for Sight
(6462)



Catchpot Lid Spare
Sight Glass
(5921)

VACUUM CONNECTORS



Geka Connector
3/4" npt -
Female (3243)



Geka Connector
3/4" npt - Male
(3244)



Geka Main
Seal
(MISC-0829)

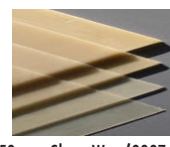


Brass Bulkhead
Fitting 3/4"
(3242)



Geka Connector
3/4" Hose
(3245)

PART CALIBRATION



0.50 mm Sheet Wax (0007-BOX)
1.0mm Sheet Wax (0008-BOX)
1.5mm Sheet Wax (0009-BOX)
2.0 mm Sheet Wax (0010-BOX)
2.5 mm Sheet Wax (0011-BOX)
3.0 mm Sheet Wax (0012-BOX)



Yellow Plasticine
Wax Filler
NONP-0144

SEAL PROFILES



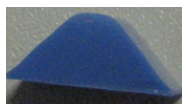
Reusable Wing
Seal Channel
Profile - 25M
(3391)



Reusable
Dynamic
Seal Channel
Profile - 25M
(3340)



Reusable
Mushroom
Seal Channel
Profile - 25M
(0002)

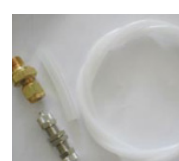


Standard Reusable
Resin Flow Channel
Profile - 25M (6438)



Small Reusable
Resin Flow Channel
Profile - 25M (4530)

OPTIONS



Dynamic Seal
Installation Kit
(2056)



Neoprene Seal:
Soft 12M x 25M (1062)
Standard 25M (0979)



Latch
Clamp
(3370)

MOLD SEALS



Mold Vacuum Wing
Seal - 25M
(1680-UK)



Mold Vacuum Wing
Seal - 25M
(5895)



Green Silicone
Mushroom Seal
- 25M (3202)



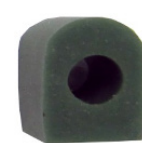
"V" Section
Seal - 25M
(6439)



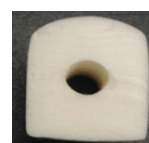
Dynamic Silicone
Seal - 25M
(1114)



Dynamic Silicone
Seal Heavy Duty
- 25M (5857)



Dynamic Silicone
Seal Semi Solid
- 25M (5958)



Silicon Seal
(6013)

Experience Matters:

MVP has been a leader in closed molding technology for decades and has guided hundreds of manufacturers to improve their production with closed molding methods. Our technical support experts not only provide training and guidance, but they are leading new innovations in closed molding. Some of MVP's latest developments include:

- Silicone resin channel for plastic bag infusion
- Single injection port
- Split mold for LRTM and Flex Molding ideal for complex parts



About MVP:

Magnum Venus Products (MVP) is a global manufacturer of fluid movement and production solutions for industrial applications in composites and adhesives markets. MVP collaborates with its customers to offer tailored production solutions to meter, mix, dispense, and apply materials. For over 80 years, MVP has been a leading equipment provider for the marine, infrastructure, pool, bath, oil & gas, transportation, aerospace, and wind industries.



Contact us today!

2030 Falling Waters Rd., Knoxville, TN 37922

info@mvpind.com

+1 (865) 686-5670 | www.mvpind.com