



adroit
Engineering & Beyond

Hot Runner System

Let your mould perform....



www.adroitcontrol.com

An ISO 9001 : 2000 certified company

OVERVIEW

Established in September 1994, headquartered in Delhi, Adroit delivers expertise in the field of Industrial control systems, be it electrical, Instrumentation or automation.

Adroit runs corporate & marketing activities from its 5200 Sq ft modern office at Okhla Industrial Area in Delhi. System integration is engineered at 20000 Sq ft factory in Faridabad, an industrial hub of Haryana, at outskirts of Delhi. Our new factory having an area of 50000 sq ft is coming up at IMT Faridabad.

"Solutions & Services to PLASTIC industries" is an integral part of business at Adroit. We have knowledge & experience to effectively deliver sensors, controls for plastic processing & machinery. Adroit is one of the leading brands for Hot Runner Systems & Temperature Controllers and Sequential Injection timers.



Adroit is approved and accredited to **ISO 9001 : 2008** certified by Indian register quality systems

At **ADROIT** the pursuit for excellence continues. Our cooperation with ERUMTECH Korea, has enabled us to offer world class hot runner systems.



Established in Korea, since 2000, ERUM has been bringing innovation to the plastics injection moulding industry. Continuous improvements and new technologies have established the company's hot runner portfolio as one of the most advanced and reliable in the industry. Technically advanced manufacturing unit, highly competent staff and timely delivery services are the backbone of our organization.

ERUM is successfully positioned in the Domestic and International trade and are poised for large values and volumes from a growing presence in global trade.



Erum has a standard & continuously evolving high performance range of hot runner components & systems. Products are designed and developed meeting the precise requirements and international quality standards.

- **RANGE OF PRODUCTS** : From Single nozzles to multinozzel assemblies and hot halves.
- **VALUE ENGINEERING** : Selecting right hot runner for your application
- **MOLD FLOW MODELING** : Process & hot runner optimisation
- **RESPONSIVE SERVICE** : Concept, Repair & rebuild

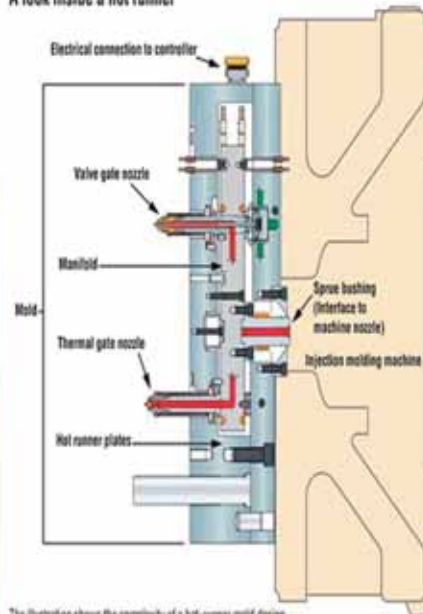
HOT RUNNER TECHNOLOGY

In a hot runner mould, the runners are insulated from the cavities are kept hot. Hot runner mold make parts of uniform density, and are free from all runners, flash and gate stubs

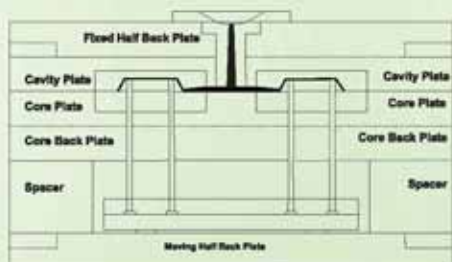
Hot Runner Systems have come like a boon to the industry. Moulds incorporated with Hot Runner System are also known as zero wastage moulds as unlike conventional two-plate and three-plate moulds, these moulds eject only the components and not the feed system. Hot runners advantages are;

- No loss of melt and thus less energy and work input.
- Easier fully automatic operation.
- Longer holding pressure, which leads to less shrinkage.
- Shorter cycles; cooling time no longer determined by the slowly solidifying runners; no nozzle retraction required.
- Absence of runners reduces shot volume, clamping forces are reduced as hot runners do not generate reactive forces, thus machines can be smaller
- Superior quality because melt can be transferred into the cavity at the optimum sites.
- Gates at the best position; thanks to uniform, precisely controlled cooling of the gate system, long flow paths are possible.
- Pressure losses minimized, since the diameter of the runners is not restricted.

A look inside a hot runner



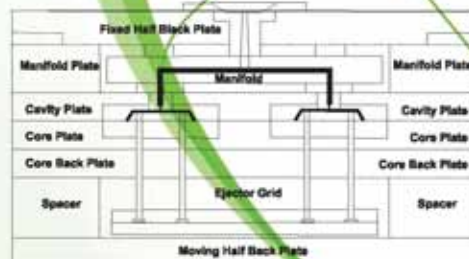
The illustration shows the complexity of a hot-runner mold design.



CONVENTIONAL TWO MOLD PLATE



Around 10-14% of the Shot Weight is wasted with each



HOT RUNNER MOLD

HOT RUNNER SYSTEM

We have a standard & continuously evolving high performance range of hot runner components & systems. Products are designed and developed meeting the precise requirements and international quality standards.

- Hot Runner Nozzles
 - Open Gate System
 - Valve Gate System
- Hot Runner Manifold
- Melt Flow Control
- Hot Halves
- Hot Runner Controls
 - Temperature Control
 - Sequence Control Time



Nozzles & tips



Manifold blocks



Sequential Timers

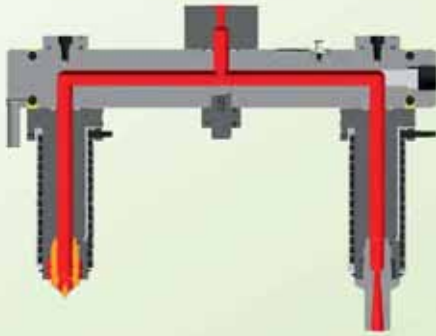


Hot Runner Temperature Controllers



Hot Halves

OPEN GATE SYSTEM



Open gate systems are most commonly used direct gating method either with pinpoint or sprue. It's an economical & proven high quality system to process wide range of general and engineering plastic products ranging from small to big sizes.

- Relatively lower costs and in greater variety of standard products.
- Great for high cavitation molds with close cavity pitch dimensions
- Externally heated systems for outstanding processing results
- Exchangeable tip, bush, thermocouple and heating element

SINGLE OPEN NOZZLE

The hot sprue bushings enhance performance of single cavity moulds. We offer various models to customise your requirements.



EASY OPEN



ENCO OPEN



SINGLE VALVE



LEGATO OPEN

EASY OPEN SYSTEM : Main Open gate system of Erum. Widly used from small products to medium, large sized products

ENCO OPEN SYSTEM : Dual structured gate system. Reduced gate distance by applying slim heater. Suitable for small sized products such as caps :

ENMO OPEN SYSTEM : Suitable for multi-gate products for injection balance.



MULTI OPEN SYSTEM : Suitable for multi cavity moulding wherein resin has high liquidity.

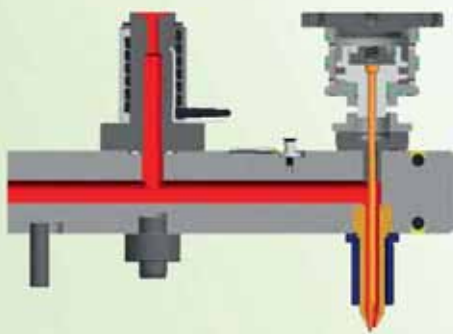
- Nozzel locators with heaters
- Nozzels without heaters
- Uniform heat conduction
- Neat gate vestige
- Pin protrusion is 0.3mm
- Cooling line in clamping plate is recommended



NOZZEL TIPS



VALVE SYSTEM



Valve system is used for direct injection where cosmetic appearance is critical. It has wide range of applications for highly accurate parts where sequential injection is needed. We manufacture Both pneumatic and hydraulic valve gate systems for various applications.

- Large gate diameters to reduce filling time
- Elimination of trimming & secondary operations
- Precise control of gate opening
- Minimizes mould stress and warp

EASY VALVE SYSTEM : General Valve gate system. High quality pneumatic valve gate system.

SHARP VALVE SYSTEM : Neat gate mark even with engineering resin. Suitable for high speed injection, mass production.



MULTI VALVE SYSTEM : Applied to small sized multi cavities products.

HYDRAULIC VALVE SYSTEM : Valve gate system based on hydraulic structure. Suitable for both of high and low pressure injection.



COMPARISON OF OPEN GATE AND VALVE GATE

PARAMETER	OPEN GATE	VALVE GATE
GATE VESTIGE	Not clear	Excellent
DROOLING	- Manifold may overheat & Drooling may occur - Difficult to exchange moulds	No drooling
INJECTION PRESSURE	Injection condition need to be changed depending on gate temperature	- Minimum of parts deformation - Available low pressure injection molding
INJECTION SPEED	Injection condition need to be changed depending on gate temperature	- Short cycle time & Constant Injection speed - High speed injection molding
MATERIALS COMPATIBLTY	-All virgin materials -Not for some reinforced materials	All virgin and reinforced materials

NOZZEL TIPS



HOT RUNNER TEMPERATURE CONTROLLERS

Temperature control is critically important to the overall injection molding process, especially when using hot runner systems. It affects all molding variables — flow, pressure, time and of course temperature. We offer both modular system & integrated system to manage all zones as a complete systems. With our HRTC customers seek improved reliability, energy savings and ease of use.

■ Process Consistency

Precise and repeatable temperature control with constant tuning PID Technology

■ Reduced Downtime

Predict heater failure & Detect leakage
Protect thermocouples and control modules

■ Tooling Protection

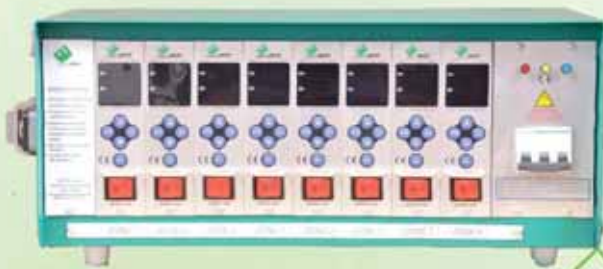
Automatically "bake out" moisture, sequentially "even-soak" by group and "soft-soak" to prevent cold shooting

■ Energy Efficiency

All zones are managed as a system .This reduces peak demand electrical consumption

■ Ease of Use

Auto diagnostics provide real-time t/c, heater, temp, amp and power condition by zone



SEQUENTIAL TIMERS

Sequential injection enables opening and closing valve gate nozzles. accordingly to precise time sequence settings. It is applicable in single and multi cavity moulds. The major features are: reduction of weld lines, increased appearance and strenght of injection moulded parts and it is effective in reduction of clamping force of injection moulding machine.



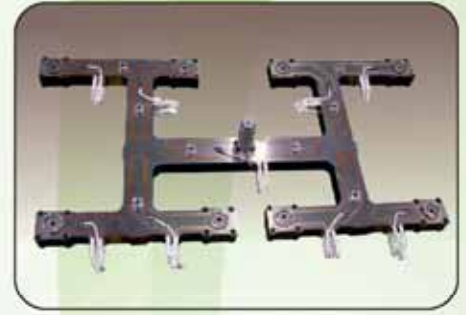
MANIFOLD BLOCK

Manifold Blocks are made out of high thermal conductivity material. Block size are calculated according to the centre distance of number of cavities required.

Every manifold custom designed and manufactured to customer requirement keeping in mind balance material flow, even filling of cavities, even heat balance & fast colour change.

Applying sheath heater allows uniform temperature at all time. Manifolds for Valve system and Open system have different structure.

STANDARD MANIFOLD BLOCK : Normal Manifold blocks are produced in I, T, Y, X, □ shapes.



SPECIAL MANIFOLD BLOCK: In case the product requires high injection balance or has a complex structure, manifold is made in balance oriented shape in order to control the amount of injection.



CASSETTE SYSTEM

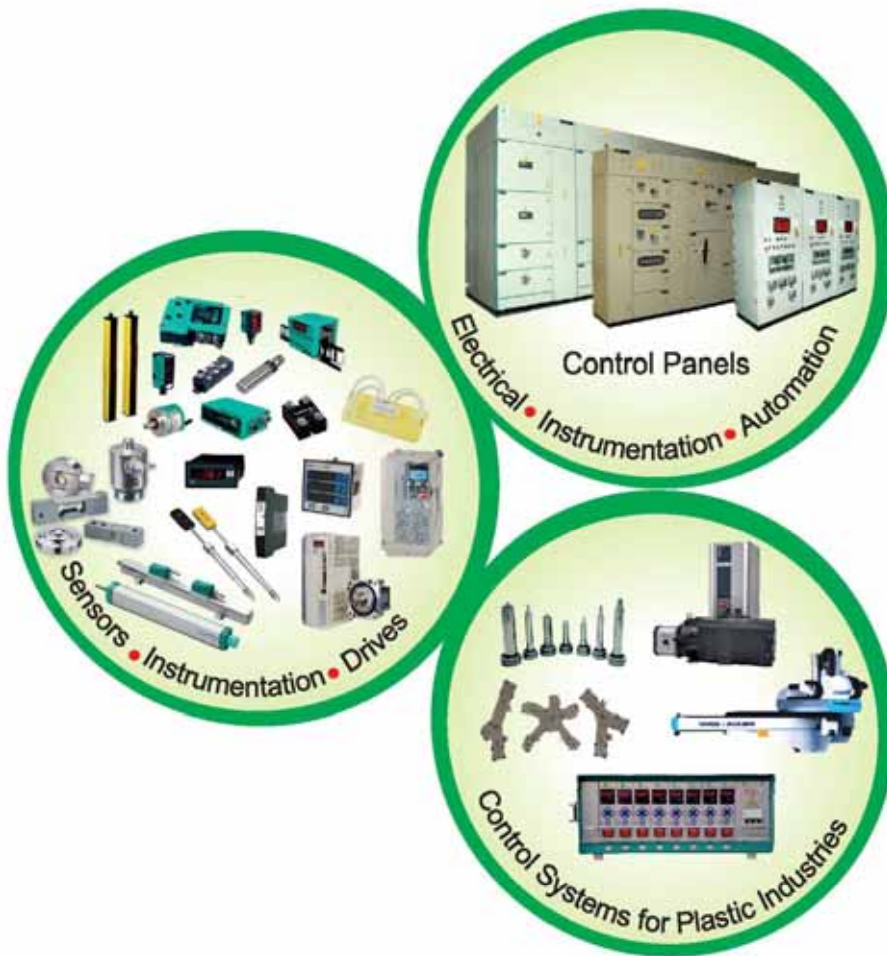
Complete assemblies of Hot runner system and mould plates are supplied wired, tested and ready to be mounted on the cavity plates of the mould. Erum HOT HALVES can cut delivery times, cut costs and increase shop efficiency by allowing mould Makers to concentrate on their specialty work.

We cooperate with our customers to meet their exact needs with complete "HOT HALF" assemblies.





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