WITH EXPERIENCE OF MORE THAN 35 YEARS

MPlast®

ROTATIONAL MOULDING

MACHINES | MOULDS | DESIGN | SOLUTIONS

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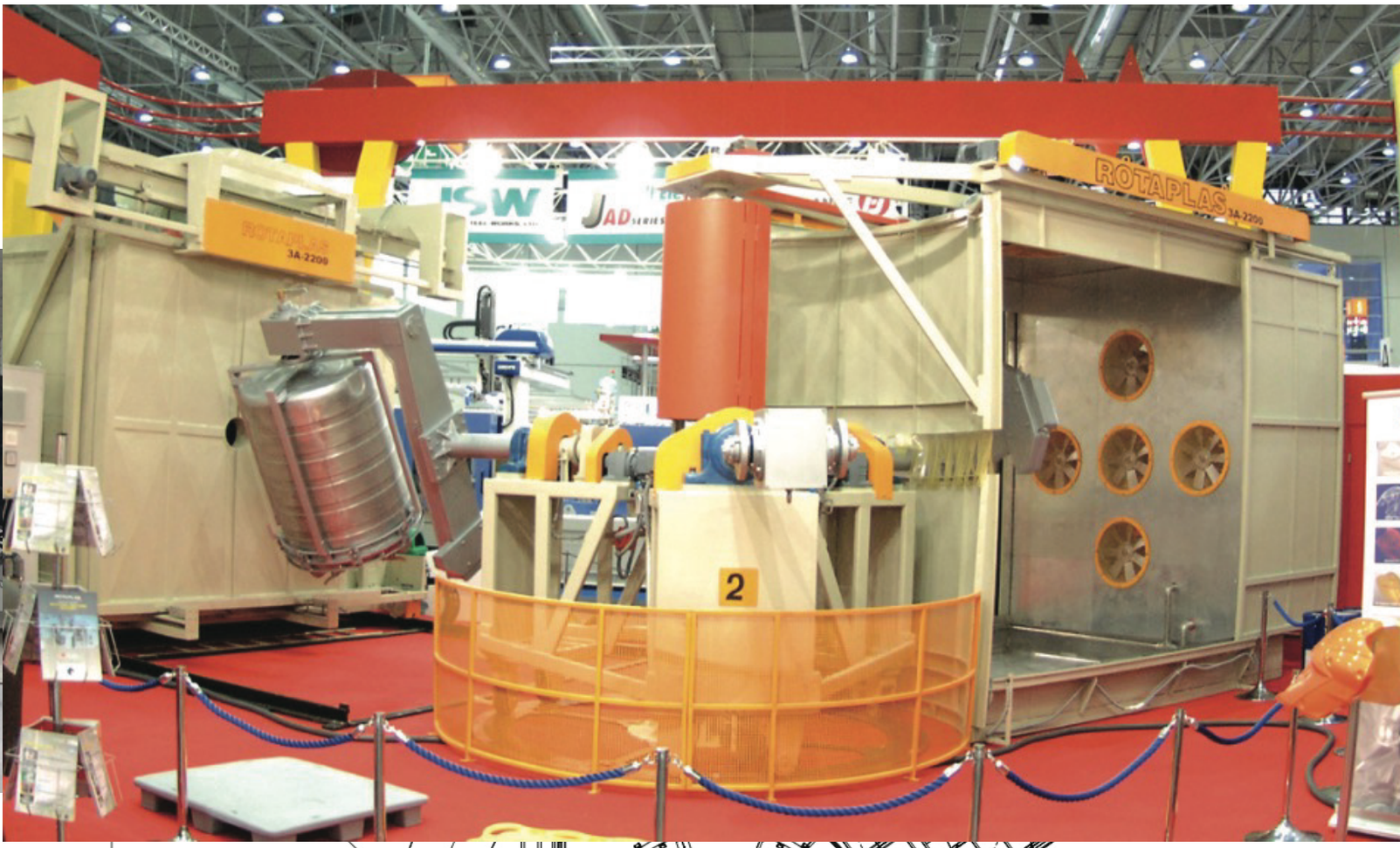
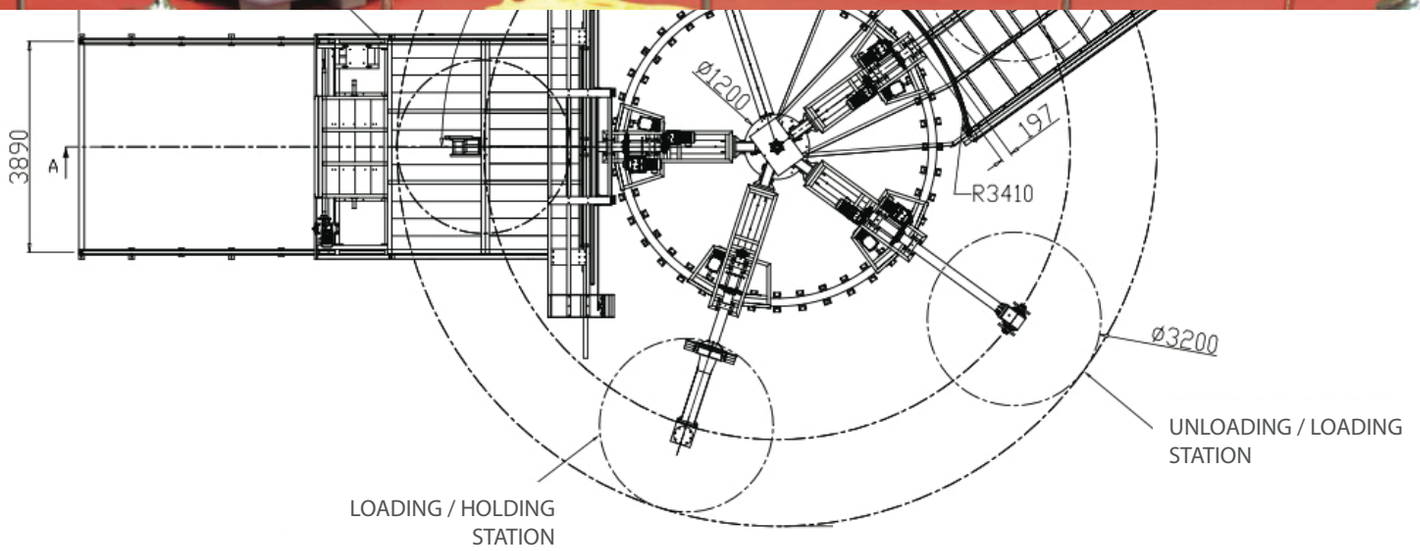




SOCIETY OF ASIAN ROTOMOULDERS

AFFILIATION OF ROTATIONAL MOULDING ORGANISATIONS

MPlast®

We at M PLAST, feel honoured to have led the rotational moulding revolution in the subcontinent.

For more than **35 years**, we have dedicated ourselves towards providing our esteemed customers with services and equipments of unmatched value.

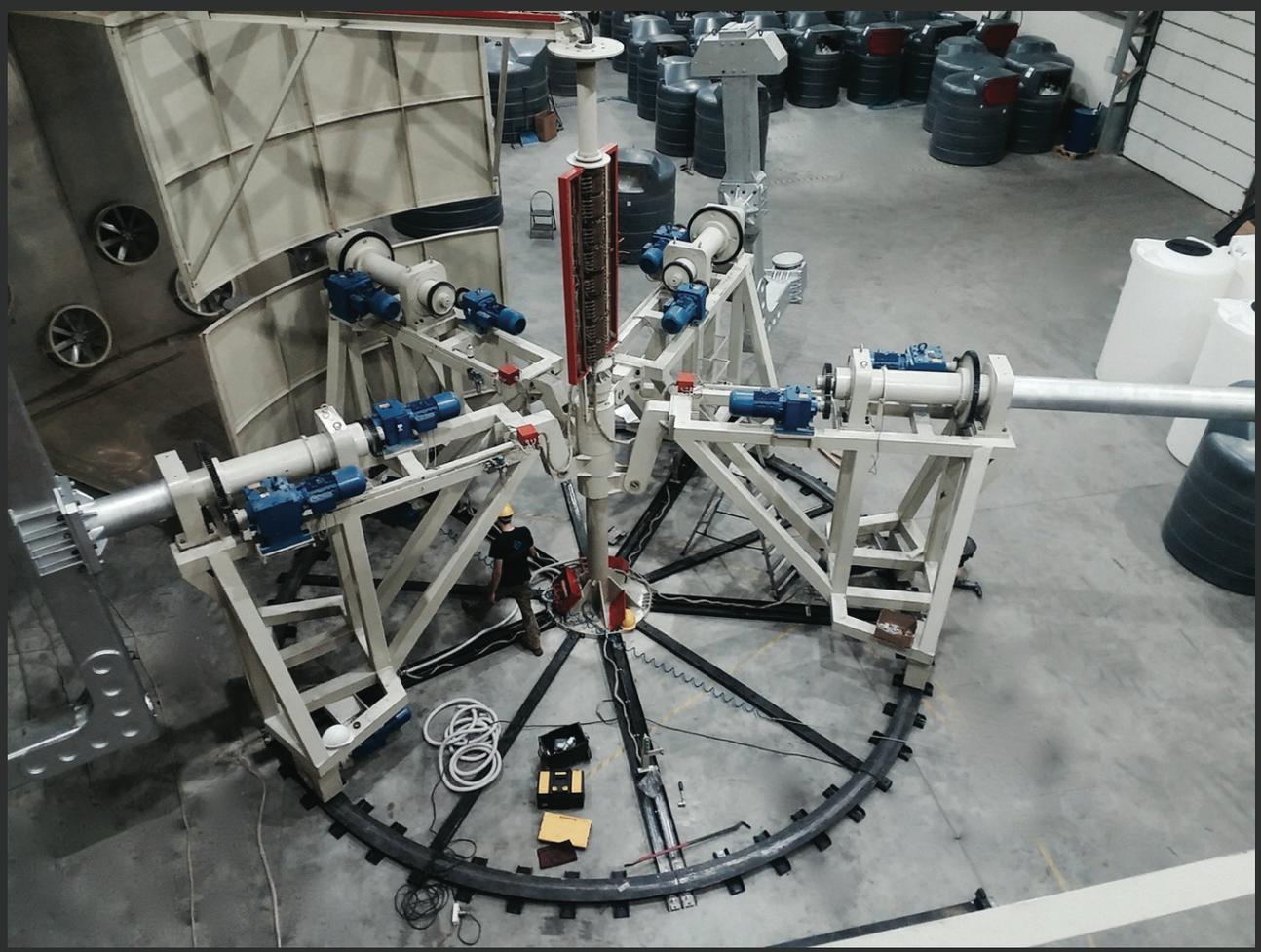
With customers in over **50 countries** and more than **400 installations** over the years, we have gained a deep insight into industry's requirements.

We believe that rotational moulding is not just a process, but a means to serve the society with products of unmatched value. Hence we are committed towards building efficient solutions, pushing the boundaries of the process and its applications.

Over the years, our never ending quest to improve efficiency of our machines has led to a Research and Development Center which complements our state of the art manufacturing plant. Our in-house CAD, CAM and CAE capabilities have allowed us to build thermo-mechanical solutions of unmatched value for the rotational moulding industry.

Located just 20 Kms from **New Delhi**, the capital of India, we support our clients with the expert knowledge, skills and experience needed to facilitate and implement their most ambitious goals.

Come ! Let's Explore Ideas and Possibilities Together!



Rotational Moulding

Rotational Moulding has literally reshaped the entire plastics industry. Without it, neither would we have many of the products we have today, nor would we enjoy the quality, durability, and versatility we have come to expect from plastic products.

The Process:

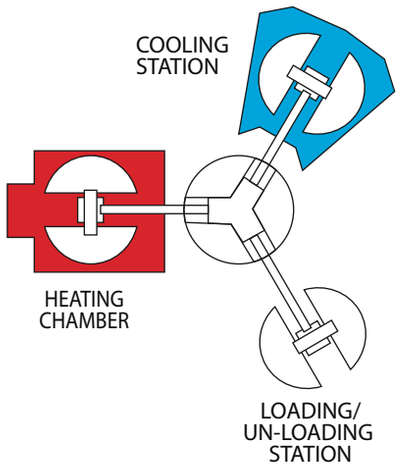
There are four steps in the rotomoulding process:

• Mould is charged with a predetermined amount of polymer and clamped.

• The charged mould is moved into an oven where it is heated and simultaneously rotated around two axes in two perpendicular planes. During the heating cycle the polymer melts, fuses and then takes on the shape of the mould.

• When all the powder has fused into a homogenous layer on the walls of the mould cavity, mould is moved into the cooling station where is it cooled by air.

• The mould is removed from the cooling station, opened and the finished part is removed. The mould is then prepared for the next cycle.



Typical applications :

• Commercial, industrial and agricultural storage tanks

• Material handling and construction equipments

• Automotive accessories

• Garbage bins and containers

• Ice-boxes, coolers, food trolleys, medical storage boxes

• Playground equipments, furniture items, toys

• Portable outhouses and toilets

• Boats, canoes and kayaks etc.

Advantages in comparison to other Moulding Techniques :

• Cost for moulds and tooling is relatively low.

• There is little or no waste due to resin scrap.

• Wall thickness and piece weight can be easily controlled/ modified.

• Assures uniform wall thickness.

• Pieces with intricate contours and undercuts can be easily moulded.

• Virtually any size piece can be rotationally moulded.

• Yields pieces with excellent surface detail and finish.

• Products are virtually stress free, except for slight shrinkage forces.

• Identical or similar items or different sections on one piece can be moulded at the same time in different colors on a single arm.

• Plastic or metal inserts can often be moulded as integral parts of the item.

• Double wall construction is feasible.


PALLET

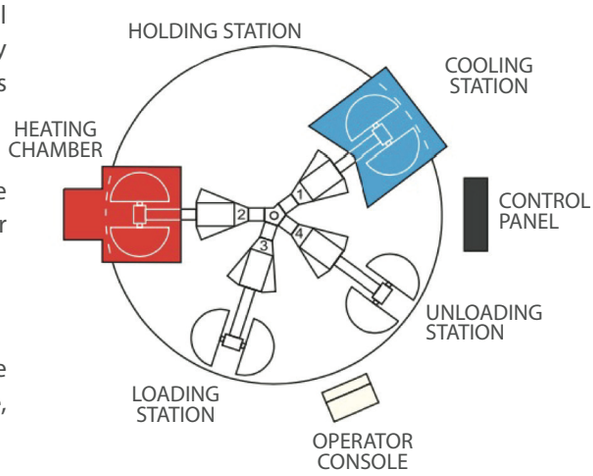

UREA TANK


ROAD BARRIER


SEPTIC TANK

INDEPENDENT ARM CAROUSEL MACHINES

M PLAST's ROTAPLAS STAR series of independent arm carousel machines offer highest productivity in it's class with maximum flexibility – a unique combination to have in your production facility in today's volatile and demanding environment.

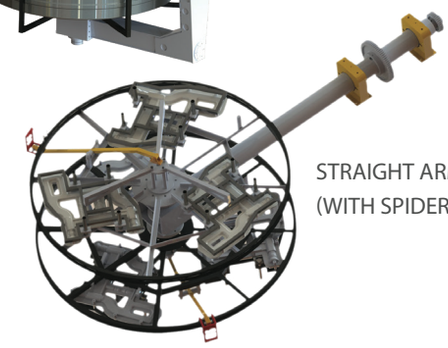


A must-have machine to manufacture products with different cycle times, this machine allows to choose optimal processing parameters for production of different articles, different materials and different thicknesses. Suitable for a wide product mix and multi-layer products.

The machine offers independent mould carriages having separate drives for each mould carriage that can be indexed forward / reverse, programmed and controlled independently.

A typical independent arm machine would have a Heating Chamber, a Pre-Cooling / Holding Station, Cooling Station, Unloading Station and a Loading Station. The machine has a Main Control Panel housing the PLC and other electronic and electrical items and an Operator Panel.

The machine allows automatic and independent control of time and temperature for each arm, and therefore for each mould or moulds configuration - allowing better control.



A Typical Working Cycle includes :

- Heating the mould inside the heating chamber
- Holding Station / Pre-Cooling Station
- Cooling Station equipped with axial fans mounted on a structural frame
- Unloading Station
- Loading Station for next cycle or for a subsequent layer

For maximum flexibility, available upto 6 stations.

Number of stations = Number of arms + 1 or 2 (depending on the customer's requirements)

Standard Features :

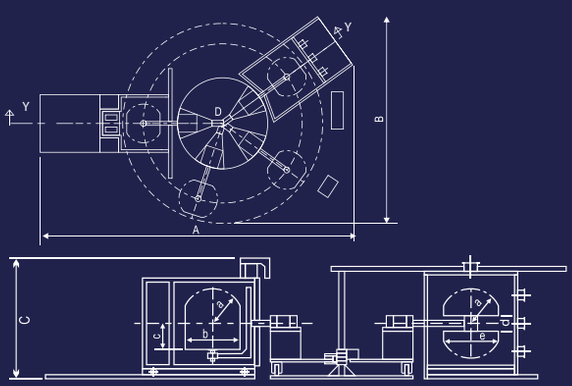
- Highly efficient thermal insulation
- High loading capacity of arms for running heavy moulds
- A combination of straight and offset arm configuration with inbuilt interchangeability
- Electronically controlled burners suitable for different types of fuels
- Heating with a high velocity recirculation blower
- Oven temperature measurement and real-time adjustments
- Oven having doors
- Cooling with free-standing fans
- Primary and secondary rotation through gears and geared motors controlled by drives
- Individual carriage movement controlled by proximity sensors
- Possibility to mould upto 4 layers
- Operator touch screen in the preferred language of the operator
- Recipe storage and retrieval
- A Diagnostic module allowing access to machine's PLC for remote troubleshooting connected through internet.

Optional Features :

- A cooling chamber at the cooling station with/without the doors
- Water mist spray in the cooling chamber
- Water re-circulating pump
- Arms with air injecting lines for use of drop-boxes or venturi system
- Arm rotation angle monitoring system
- Pre-programmed arm dwell-time
- Monitoring the Internal & Peak Internal Air Temperature
- Unloading Table
- Pillar Cranes / Gantry Cranes
- Working Platforms – manual / semi-automatic / automatic / adjustable height

Control Systems :

- All machines are controlled via a well-tested software capable of being updated as a result of continuous improvements and innovations
- Industrial touch screen interface
- Audible and visible alarm systems with necessary safety-interlocks built in the PLC program
- Extractable flash memory for production data storage
- Password protection at various levels to protect data from un-authorized changes



INDEPENDENT ARMS MACHINE

MODEL NO.	a	Øb	c	d	Øe	A	B	C
4I A- 1400	700	900	300	400	1100	10750	7500	2750
4I A - 1800	900	1400	450	450	1600	13000	8300	3500
4I A - 2200	1100	1800	560	450	1900	16500	11000	4000
4I A - 2700	1350	2250	800	450	2400	17750	11500	4500
4I A - 3200	1600	2750	975	625	2950	22250	14750	5200
4I A - 3600	1800	3100	1080	675	3250	23000	15000	5750
4I A - 4000	2000	3550	1300	775	3700	25500	16500	6350
4I A - 5000	2500	4550	1750	800	4700	33500	22000	7500

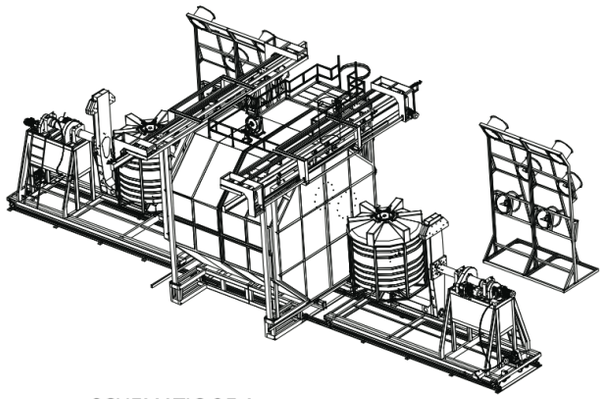
*Approx Dimensions in mm
*Dimensions are subject to change.

ROTAPLAS Shuttle Machines

Ideally suited for production of large parts of different cycle times, ROTAPLAS Shuttle Machine has an added advantage of lesser floor space requirement.

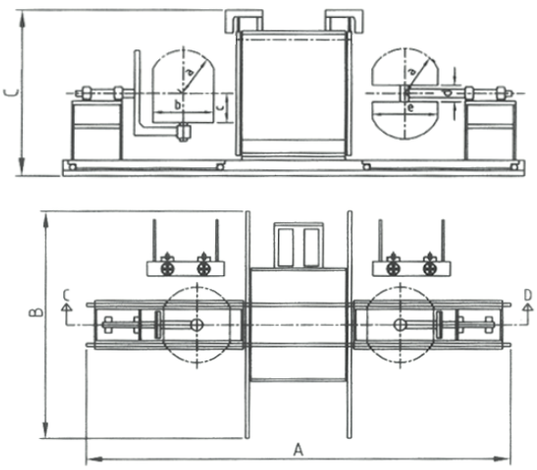
Possible configuration with 1 or 2 carriages, with central oven and two stations on either sides for cooling/loading/unloading.

The same arm can do two consecutive cycles, while the other is either waiting or is being serviced.



SCHEMATIC OF A
TWO-SIDED SHUTTLE MACHINE

Technical Data



SHUTTLE MACHINE								
MODEL NO.	a	Øb	c	d	Øe	A	B	C
2TA-1400	700	900	300	400	1100	10000	3600	3300
2TA-1800	900	1400	450	450	1600	12000	4600	4000
2TA-2200	1100	1800	560	450	1900	13500	5500	4600
2TA-2700	1350	2250	800	450	2400	15000	6500	5700
2TA-3200	1600	2750	975	625	2950	16500	7700	6200
2TA-3600	1800	3100	1080	675	3250	18000	8500	6700
2TA-4000	2000	3550	1300	775	3700	20500	9500	7300
2TA-5000	2500	4550	1750	800	4700	24000	11500	8500

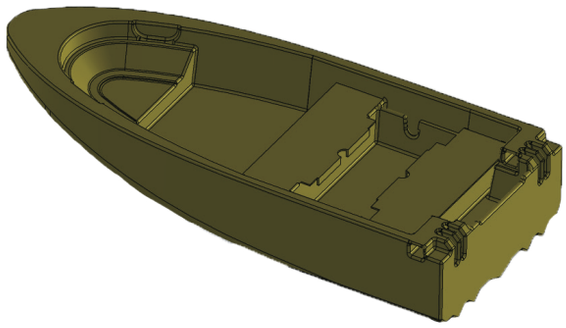
*Approx Dimensions in mm
*Dimensions are subject to change

ROCKING OVEN ROCK 'N' ROLL MACHINES

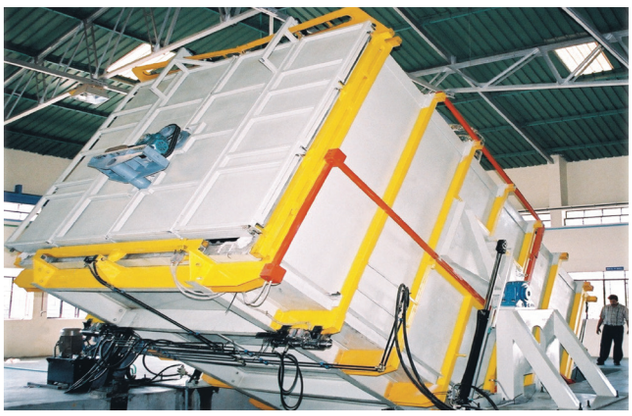
MPLAST Rocking Oven Rock 'n' Roll Machine (ROTAPLAS RO Series) is the perfect solution to the recurring problems encountered with Open flame machines. Open flame machines cause non-uniform heating leading to degradation of polymer which results in loss of desired mechanical properties for plastic products. Additionally, this machine is much more energy efficient in comparison to an open flame Rock 'n' Roll Machine.

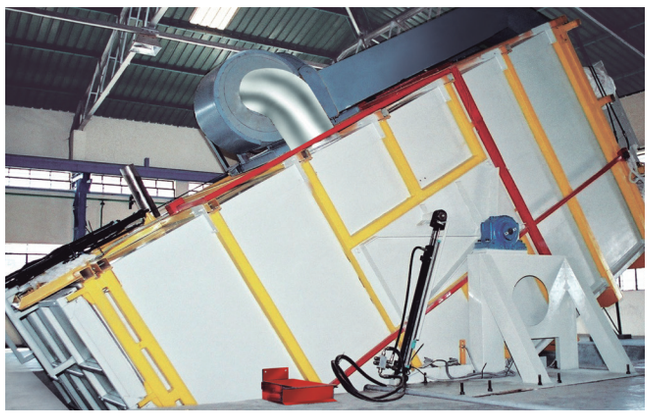
ROTAPLAS RO Series machines are most suitable for manufacturing of high quality large sized products like :

- Boats, Kayaks & Canoes
- Playground Slides
- Vehicle Bodies and Car sheds
- Porta Cabins
- Marina Systems
- Grain Storage Tanks
- Large capacity Water Tanks



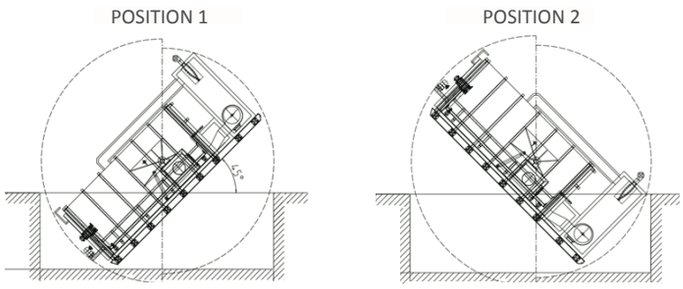
MPLAST Rocking Oven Rock 'n' Roll Machine allows you to achieve uniform heating of the mould with hot air convection, leading to uniform heating without degrading the polymer.





Standard Features

- Sturdy and reliable design.
- Double skin stainless steel construction oven.
- Fail safe burner control.
- Direct drive geared motors.
- Variable speed A.C. drive having auto reversible facility.
- Hydraulic power pack for rocking & other movement having proportional control valve gas/Air injection facility.
- Microprocessor based machine control having multiple time, temperature, speed setting possibility.



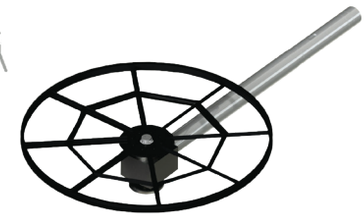
Moulds

The quality and the tolerances on a rotationally moulded part are dependent upon the quality and precision incorporated into the mould. Selection of type of rotational mould is hence critical.

The selection of type of mould may depend on the size, shape and surface finish of the piece to be moulded, as well as the number of moulds made for a particular piece.

Since very little pressure is exerted in the rotomoulding process the cost of a rotational mould is less in comparison to injection or blow moulds.

TYPICAL SHEET METAL MOULD FOR HORIZONTAL TANK

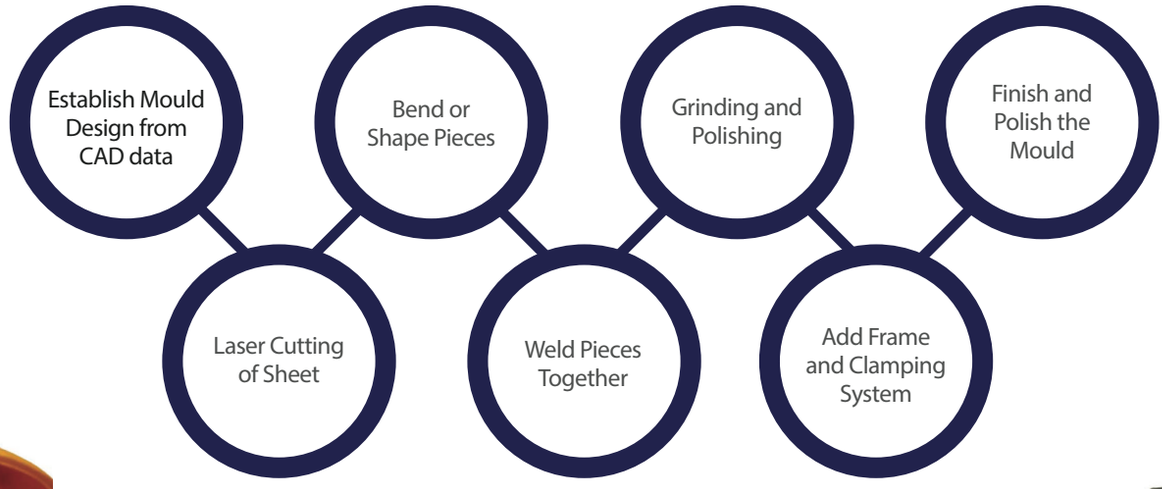


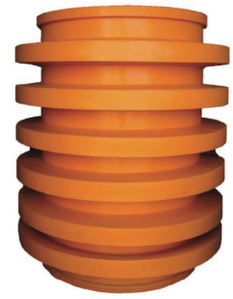
SPIDER FOR MOUNTING MULTIPLE MOULDS ON A STRAIGHT ARM

Types of Rotational Moulds

- Sheet Metal Fabricated
- CNC Machined
- CNC Machined cum Fabricated

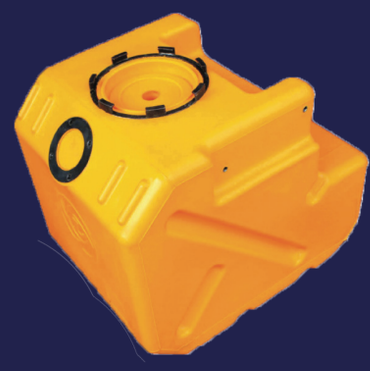
Sheet Metal Moulds – Procedure



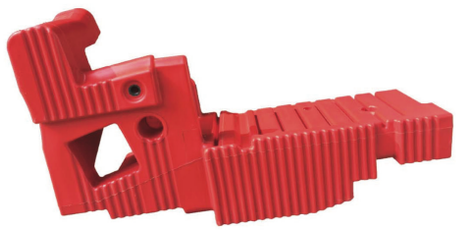


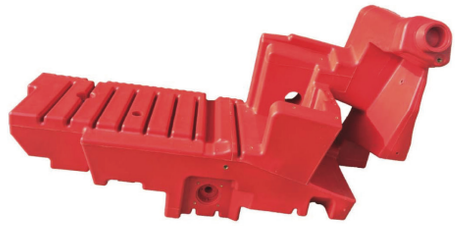
CNC Machined Aluminium and Mild Steel Moulds - Procedure

3D CAD Model	Develop or obtain a 3D geometry model.
Decide Machining	Decide machining operations and cutter-path directions.
Generate NC Code	Run CAM software to generate the CNC part program.
Transfer Program	Download the part program to appropriate machine
Produce Mould	Run the program and produce the mould.
Mould Finishing	Finish the mould with appropriate surface finish, mounting, inserts etc.



THREE AXIS CNC VERITCAL MACHINING CENTR

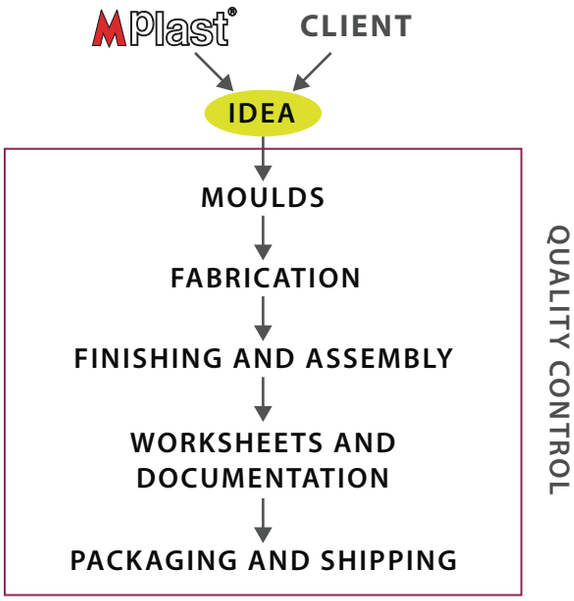




Custom Moulded Products

Rotational moulding is a wonderful process for developing prototypes for any of your ambitious projects. If you are new to the process, we can help you develop new products before you decide to make a commercial commitment that requires significant resources and funding.

A large part of our resources are dedicated to the study, design, and manufacturing of prototypes of our clients' products.



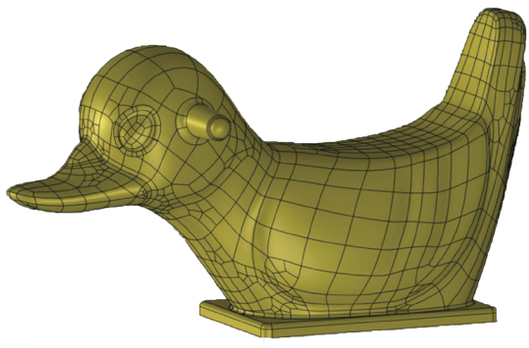
GOT AN IDEA ?
WE WILL HELP YOU BRING IT TO LIFE !

Step 1: PRODUCT CONCEPT DESIGN

Our rotational moulding product concept designers can create 3D models of a product based on initial discussions with the customer. The model is then provided to the customer for input or approval. This iterative process continues until the customer approves the final design.

Some of the important questions to consider are :

- Who will be using the product?
- How will it be used?
- How often will the product be used?
- Under what environmental conditions will it be used?
- How will the installation procedure or regular maintenance procedures affect the product design?
- How can we reduce the cost of logistics by refining the product design?
- Are there any regulatory requirements?

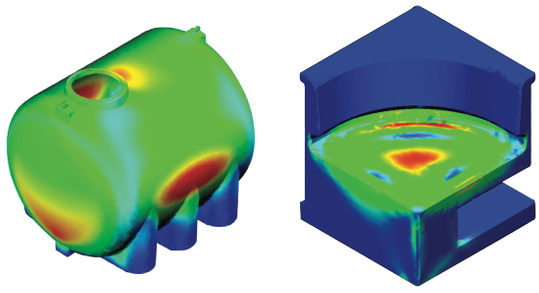


3D CAD MODEL

PRODUCT

Step 2: MOULD MANUFACTURING

The quality of a mould determines the quality of the product you will make. If you don't have a good quality mould, your product can never be good quality. Our mould manufacturing team will produce the best quality mould that your application requires.



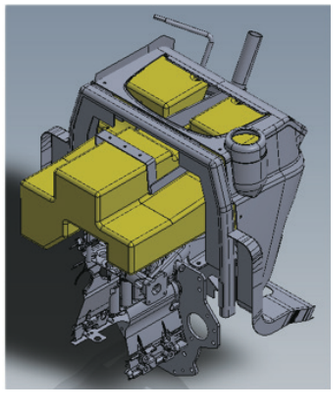
TYPICAL FEA STRESS AND STRAIN PLOTS

Step 3: MANUFACTURING

Our manufacturing team works together with the best available resources to manufacture your product. Well-trained machine operators will be assigned the job, based on their knowledge and experience in a particular process. This ensures that your products are produced using the best available resources. The result is the highest quality product possible.

Step 4: FINISHING

Finishing can include parting line trimming, surface polishing, cutting, assembly, installation of additional components, additional graphics, welding, foaming - to name a few.



CONCEPTUALISATION OF FUEL TANK

Step 5: WORKSHEETS AND PROCESS DOCUMENTATION

We will document the proper procedures and practices so that you can manufacture the product in your own production facility in the future.

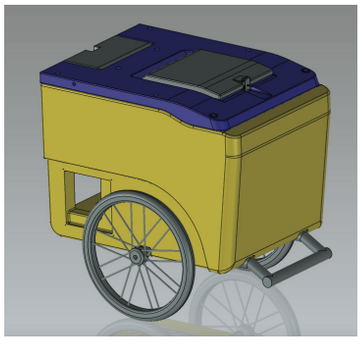
FUEL TANK

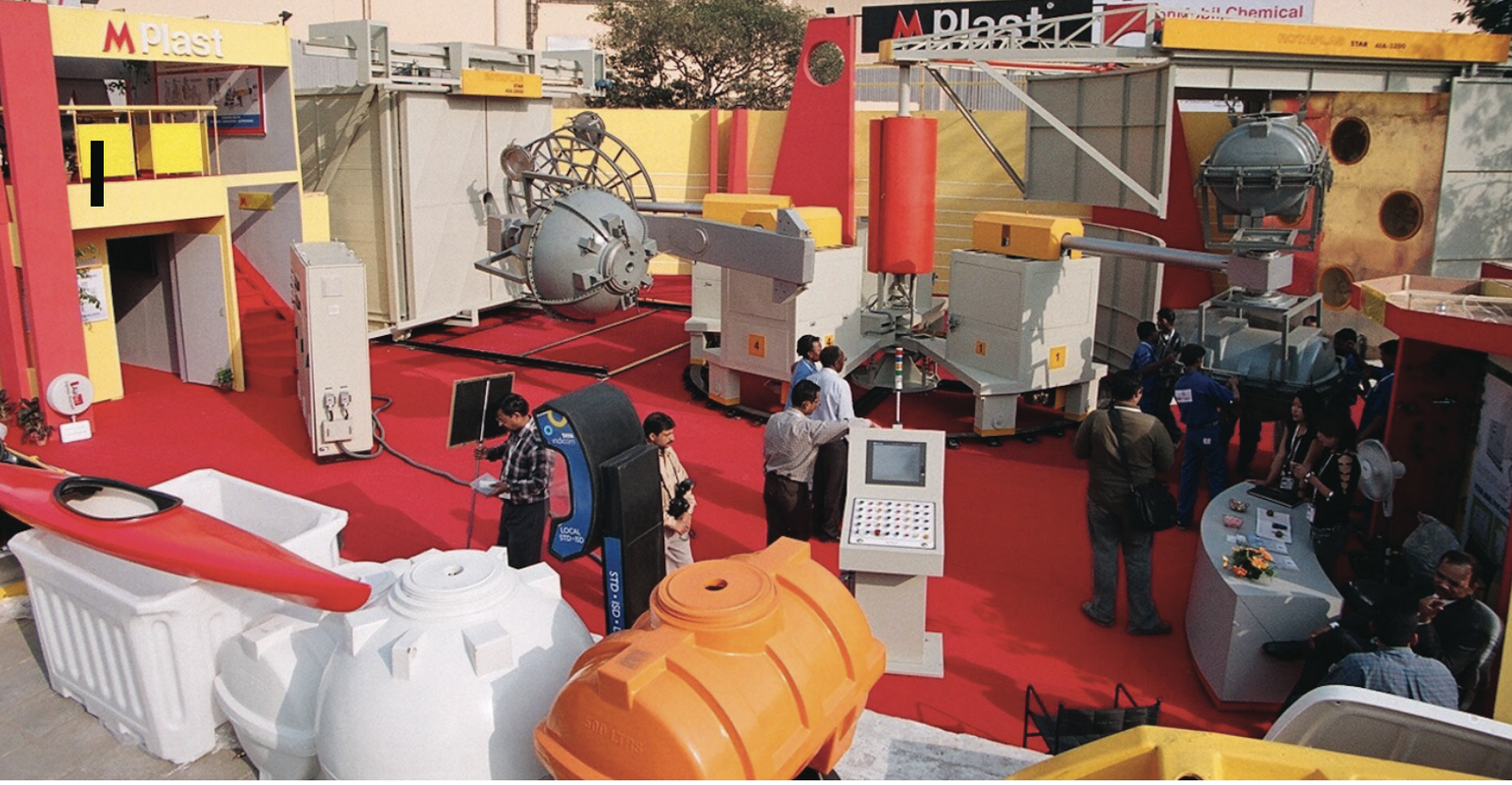
Step 6: PACKAGING AND SHIPPING PROCESS

Product specifications are not complete until decisions are made about packaging and shipping the product. It is very important to define how the product will be packaged and shipped. Once the procedures for product finishing, boxing, and packing into pallet boxes are completed, the products are ready for shipment.

QUALITY CONTROL AND VALIDATION

Quality control's best practices continue to be applied according to industry standards, which continue to be refined at each step of the process.





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MACHINES| MOULDS| DESIGN | SOLUTIONS

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