



THERMOFORMING MACHINERY

WORLD HEADQUARTERS



Serving global markets since 1982, MAAC is the world's largest machinery manufacturer focusing exclusively on sheet-fed thermoforming equipment.

MAAC's new facility and manufacturing systems provide the lowest manufacturing costs in the industry. Shortening manufacturing time by 50% has proven to be the single largest savings in the new cost cutting plant. The resulting benefits are; the most technically advanced equipment, for the lowest price and fastest delivery in the industry.

EXPERIENCE

Over 100 combined years in hands-on thermoforming.

Over 25 years in twin-sheet pressure forming.

Over 45 years in thermoforming machinery design.

CAPABILITIES

Turn-Key projects (from part design to production).

Capacity to manufacture 40 rotary machines at once.

Capacity to operate 12 electric machines at peak power.

Capacity to operate 2 natural gas machines at once.

Intricate MAAC Machines built in 6 weeks.

4 week start to finish deliveries on Comet Single Stations.

Guaranteed next day delivery on clamp frame.

Over 100 application specific options.

Custom machinery.

High volume customer part runoffs.

35 student classroom for machine training and seminars.

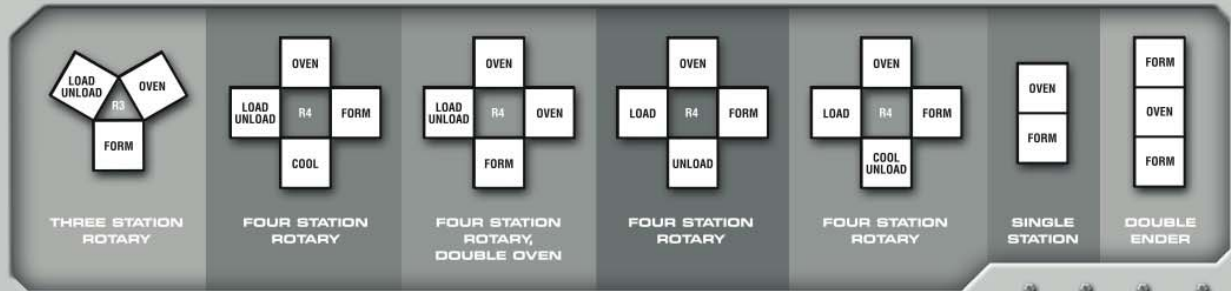
Prototyping and material testing.



590 Tower Boulevard • Carol Stream, IL 60188 • (P) 630-665-1700 • www.maacmachinery.com

MACHINE TYPES & SIZES

STANDARD MACHINE TYPES



MAAC MACHINE SIZES

| SIZE | SQ' | SS | R3 | R4 | SIZE | SQ' | SS | R3 | R4 | SIZE | SQ' | SS | R3 | R4 |
|------|-----|-------|----|----|------|-----|-------|----|----|------|-----|-------|----|----|
| 3x4 | 12 | 9x12 | 15 | 20 | 5x8 | 40 | 13x16 | 23 | 28 | 7x7 | 49 | 12x20 | 26 | 31 |
| 3x5 | 15 | 10x12 | 16 | 21 | 5x9 | 45 | 14x16 | 24 | 29 | 7x8 | 56 | 13x20 | 27 | 32 |
| 3x6 | 18 | 11x12 | 17 | 22 | 5x10 | 50 | 15x16 | 25 | 30 | 7x9 | 63 | 14x20 | 28 | 33 |
| 3x7 | 21 | 12x12 | 18 | 23 | 5x11 | 55 | 16x16 | 26 | 31 | 7x10 | 70 | 15x20 | 29 | 34 |
| 4x4 | 16 | 9x14 | 17 | 22 | 6x6 | 36 | 11x18 | 23 | 28 | 7x11 | 77 | 16x20 | 30 | 35 |
| 4x5 | 20 | 10x14 | 18 | 23 | 6x7 | 42 | 12x18 | 24 | 29 | 7x12 | 84 | 17x20 | 31 | 36 |
| 4x6 | 24 | 11x14 | 19 | 24 | 6x8 | 48 | 13x18 | 25 | 30 | 7x13 | 91 | 18x20 | 32 | 37 |
| 4x7 | 28 | 12x14 | 20 | 25 | 6x9 | 54 | 14x18 | 26 | 31 | 7x14 | 98 | 19x20 | 33 | 38 |
| 4x8 | 32 | 13x14 | 21 | 26 | 6x10 | 60 | 15x18 | 27 | 32 | 8x8 | 64 | 13x22 | 29 | 34 |
| 4x9 | 36 | 14x14 | 22 | 27 | 6x11 | 66 | 16x18 | 28 | 33 | 8x9 | 72 | 14x22 | 30 | 35 |
| 5x5 | 25 | 10x16 | 20 | 25 | 6x12 | 72 | 17x18 | 29 | 34 | 8x10 | 80 | 15x22 | 31 | 36 |
| 5x6 | 30 | 11x16 | 21 | 26 | 6x13 | 78 | 18x18 | 30 | 35 | 8x11 | 88 | 16x22 | 32 | 37 |
| 5x7 | 35 | 12x16 | 22 | 27 | 6x14 | 84 | 19x18 | 31 | 36 | 8x12 | 96 | 17x22 | 34 | 39 |

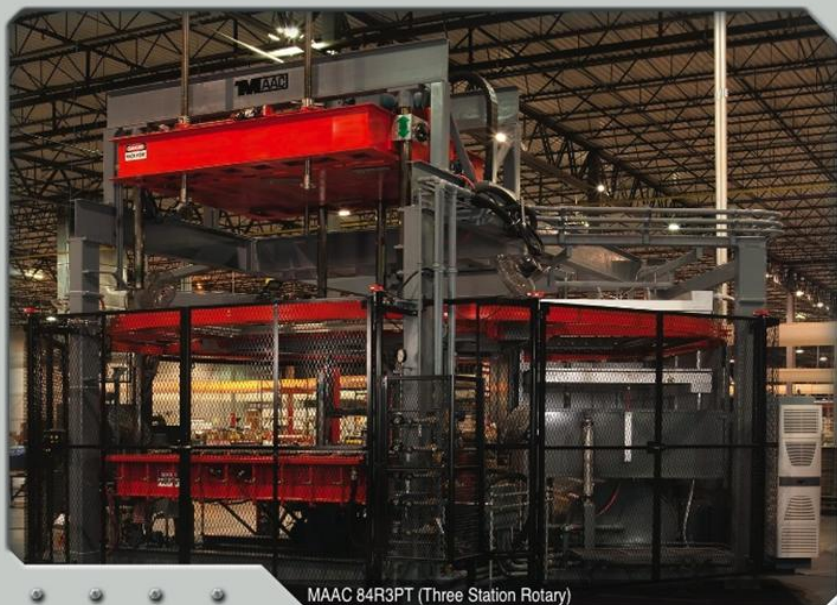
SQ'= Forming Area SS= Width x Length of Single Station R3/R4= Diameter of Rotary

Custom sizes and custom machines available.

MAAC designs and builds four models of thermoforming machinery: three-station rotaries, four-station rotaries, single-stations and double-enders. Each model has over one-hundred application specific, subassembly component options that may be integrated into the final product. Each model is available in thirty-six standard sizes ranging from 3' x 4' up to 10' x 20'. We also produce an ASP machine (30"X 36") that is popular for prototyping and smaller parts. The size of a MAAC machine is equal to the maximum mold it will accept. With all MAAC systems designed for specified cycle times, our thermoforming systems are noted to exceed production rates of competitive machines.



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MAAC 84R3PT (Three Station Rotary)

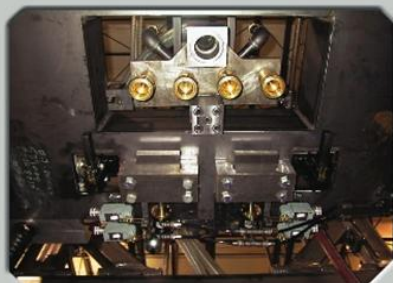
FORM STATION

Variable speed motorized platens.

Absolute Encoders store platen positions and motor speeds.

Standard air-assist pressure forming.

Platen strokes up to 70".



QUICK CHANGE PACKAGE

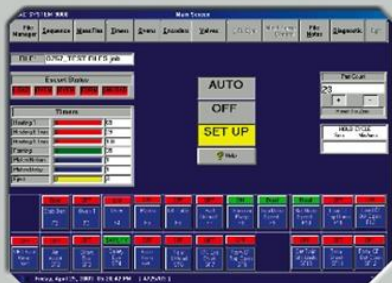
Adjustable clamp frames.

Automatic mold locks and locating cones.

Servo Proportional valves store all valve settings in a job profile.

Encoders store platen positions and motor speeds in a job profile.

Platen plumbing with quick disconnects for rapid vacuum, air and water connections.



"SYSTEM 9000" CONTROL SYSTEM

Windows Operation

10 preprogrammed techniques.

MAAC FLEX programmable software.

Color graphics.

Liquid Crystal Display Screen.

Unlimited file recipe storage.

Extensive diagnostic and monitoring system.

Integrated phone modem.



OVEN STATION

Exclusive Breathable Oven Design

Fully insulated, double wall construction oven walls and doors provide excellent heat retention and draft resistance.

Highly zoned ovens provide maximum control for all thermoforming applications.

Ovens are 18" larger than maximum sheet size.

Built-in infrared pyrometer in top oven.





MAAC 85R4DPT (Four Station Rotary with Insertor)

HIGH PRESSURE FORMING

Air Cell Lock-Up high pressure forming is done with machinery specifically designed for this process. This technique extends both platens, locking them to each other, then inflating air cells under a floating plate attached to the bottom platen. This method provides the force necessary to create a high pressure seal. High pressure forming is the amount of detail in a part that 60 PSI and up will create using 50 PSI from air pressure and 10 PSI from vacuum. This technique can produce parts with definition rivaling the appearance of injection molding. Material distribution, zero degree draft angles and sharp undercuts are other considerations when choosing this process.

Twin Sheet Knit requirements dictate using this process. High pressure twin sheet forming is the amount of knit that 50 PSI and over create between two mold surfaces.

TWIN SHEET FORMING

MAAC Three Station Rotaries utilize the Single-Oven Twin Sheet technique. This process consists of two sheets to a frame; one upper, one lower, and a single index.

MAAC Four Station Rotaries can utilize the Single-Oven Twin Sheet technique and the Double-Oven technique. The Double-Oven technique requires a four-station rotary and is used on heavier gauge materials. This process consists of one sheet to a frame and a double index, with the first sheet retained by the bottom mold.

DISTINCTIVE FEATURES

- Electric index.
- High sheetline design.
- Semi-automatic load/unload.
- Allen-Bradley ControlLogix PLC
- MAAC/Siemens TEC 480 oven control.
- Zone burnout display.
- Infinitely variable speed platens.
- Swing Arm with LCD touch screen.
- Tool weights up to 12,000 lbs.
- 2 day training program.
- Oversized platens, ovens and vacuum tanks.

ATTRACTIVE OPTIONS

- CE specification.
- Tracking ovens.
- Digital imaging.
- Automatic loading and unloading.
- Automatic tool changer.
- Sheet sag removal.
- Articulating clamp frames.
- Light curtains and light stacks.
- Automatic Lance Adjustment

PRESSURE FORMING OPTION

- Zero deflection, I-Beam platens.
- 150 PSI rated air cells.
- Air activated lance locks.
- 2" aluminum plate on bottom platen.
- 1/2" steel plate on top platen.
- Core pull assemblies for blow pin actuation and internal air pressure.
- Single-oven twin sheet
- Double-oven twin sheet.



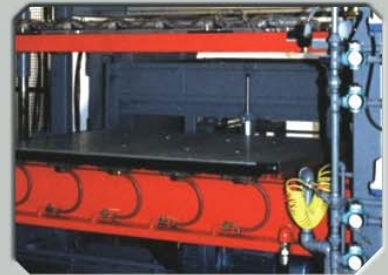
MAAC SHUTTLE



MAAC Model 64S

FORM STATION

- Variable speed motorized platens.
- Absolute Encoders store platen positions and motor speeds.
- Standard air-assist pressure forming.
- Platen strokes up to 70".



QUICK CHANGE PACKAGE

- Adjustable clamp frames.
- Automatic mold locks and locating cones.
- Servo Proportional valves store all valve settings in a job profile.
- Encoders store platen positions and motor speeds in a job profile.
- Platen plumbing with quick disconnects for rapid vacuum, air and water connections.



"SYSTEM 9000" CONTROL SYSTEM

- Windows Operation
- 10 preprogrammed techniques.
- MAAC FLEX programmable software.
- Color graphics.
- Liquid Crystal Display screen.
- Unlimited file recipe storage.
- Extensive diagnostic and monitoring system.
- Integrated phone modem.



OVEN STATION

- Exclusive Breathable Oven Design
- Fully insulated, double wall construction oven walls and doors provide excellent heat retention and draft resistance.
- Highly zoned ovens provide maximum control for all thermoforming applications.
- Ovens are 18" larger than maximum sheet size.
- Built-in infrared pyrometer in top oven.





MAAC 43SPT (Single-Station)

HIGH PRESSURE FORMING

Air Cell Lock-Up high pressure forming is done with machinery specifically designed for this process. This technique extends both platens, locking them to each other, then inflating air cells under a floating plate attached to the bottom platen. This method provides the force necessary to create a high pressure seal. High pressure forming is the amount of detail in a part that 60 PSI and up will create using 50 PSI from air pressure and 10 PSI from vacuum. This technique can produce parts with definition rivaling the appearance of injection molding. Material distribution, zero degree draft angles and sharp undercuts are other considerations when choosing this process.

Twin Sheet Knit requirements dictate using this process. High pressure twin sheet forming is the amount of knit that 50 PSI and over create between two mold surfaces.

TWIN SHEET FORMING

MAAC Shuttles utilize the **Single-Oven Twin Sheet** technique. This process consists of two sheets to a frame; one upper, one lower, and a single index.

DISTINCTIVE FEATURES

- Allen-Bradley ControlLogix PLC
- MAAC/Siemens TEC 480 oven control.
- Zone burnout display.
- Infinitely variable speed platens.
- Swing Arm with LCD touch screen.
- Tool weights up to 12,000 lbs.
- 2 day training program.
- Oversized platens, ovens and vacuum tanks.

ATTRACTIVE OPTIONS

- Double-ender
- CE specification.
- Tracking ovens.
- Digital imaging.
- Semi-automatic loading and unloading.
- Automatic loading and unloading.
- Automatic tool changer.
- Sheet sag removal.
- Articulating clamp frames.
- Light curtains and light stacks.
- Automatic Lance adjustment.

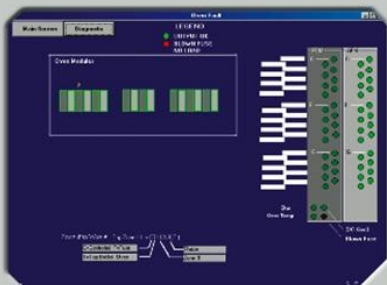
PRESSURE FORMING OPTION

- Zero deflection, I-Beam platens.
- 150 PSI rated air cells.
- Air activated lance locks.
- 2" aluminum plate on bottom platen.
- 1/2" steel plate on top platen.
- Core pull assemblies for blow pin actuation and internal air pressure.
- Single-oven twin sheet.





MAAC System 9000 swing arm controller with LCD



"SYSTEM 9000" CONTROL SYSTEM

Windows Operation

- 10 preprogrammed forming techniques.
- MAAC FLEX programmable software for creating custom forming techniques.
- Unlimited storage of files.
- Integrated phone modem — remote programming.
- Extensive diagnostic and monitoring system.
- Smart timers — prevent improper value.
- Visual escort monitoring of open frame positions.
- Multilevel programmable security access.
- MAAC/Siemens TEC 480 oven control.
- Top and bottom oven compensation.
- Graphic encoder display.
- Scaled oven overlay showing operator entered sheet and mold size.
- Data acquisition.
- Time and date stamped notes/history files.
- Zone burnout display and diagnostics.

"TEC 480" THERMAL ENERGY CONTROL

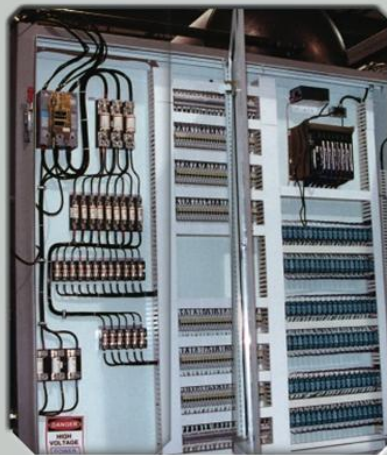
100% Solid State 480 Volt oven power control system.

Replaces 7 components per zone with plug and play module.

Reduces cabinet space by 60% or more.

Before — 6'x10' Cabinet

Old Solid State Relay Oven Panel with Circuit Breakers



After — 6'x4' Cabinet

MAAC's New TEC 480



COMET ROTARY



The new Comet Three Station Rotary (CR3) maintains similar specifications to the Comet Single-Station and Double-Ender. The CR3 comes standard with fully zoned upper and lower ceramic ovens.

Comet Three Station Rotary machines come standard with an automatic lift table for ease of loading and unloading heavy and/or large sheets of material.

Comet Three-Station Rotaries are available with sheetlines ranging from 58" up to 84". Platen strokes begin at 30" and go up to a full 100" of travel.



Comet C85R3

ATTRACTIVE OPTIONS

- Variable speed programmable platens and lift table.
- Built in Infrared Pyrometer in top oven.
- SERIES 2000 adjustable clamp frames.
- Billow eye.
- Application specific oven elements and zones.
- Electric Index.
- Custom voltages.
- CE specification.
- Quick mold change.



Comet Model C85R3

DISTINCTIVE FEATURES

- Heavy-duty carbon steel tubing.
- MAAC breathable oven design.
- Exclusive color changing ceramic upper and lower ovens.
- Four post motorized platens top and bottom.
- Swing-Arm controller with LCD touch screen.
- Easy to use GE/Fanuc PLC with fully automatic preprogrammed sequencing and unlimited file storage.
- MAAC aluminum clamp frames.
- Semiautomatic loading & unloading.
- Fully supported mainframe.
- Guarding package.
- Adjustable lower oven.
- Integrated modem.
- 1 day training program.
- Most cost effective prices!



COMET SHUTTLE



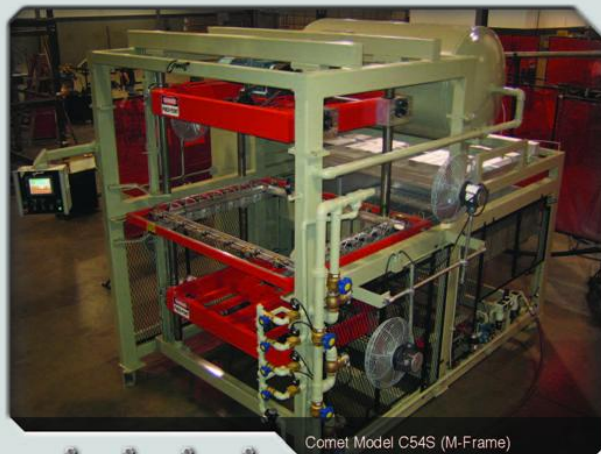
The next generation of Comet Thermoforming Machines is here. Designed and manufactured by MAAC, the name Comet says it all; Experience, Expertise and Longevity.

Comet Single-Stations (CS) and Double-Enders (CDE) are available with IN-STOCK to 4 week deliveries and our most cost effective prices. This is the first time a machine of this caliber has ever been offered at such a low price!

With quick shipments, a 1-year warranty and MAAC's award winning training program, the Comet line is certainly the thermoformer's best alternative to used machinery or rebuilt machinery.



Comet Model C64S (C-Frame)



Comet Model C54S (M-Frame)

DISTINCTIVE FEATURES

Available in M-Frame and C-Frame Platforms.

Heavy duty carbon steel tubing.

MAAC breathable oven design.

Instant On/Instant Off Quartz ovens reduce electrical consumption by 50%.

Motorized upper and lower platens.

Variable speed electric index.

Swing-Arm controller with LCD touch screen.

Easy to use PLC controller with fully automatic sequencing and unlimited file storage.

MAAC Aluminum Clamp Frames.

Space saving Footprint.

One-Piece construction: plug and play, no assembly required.

Integrated modem.

1 day training program.

Most cost effective prices!

ATTRACTIVE OPTIONS

Double-Ender

Variable speed programmable platens.

Built in Infrared Pyrometer in top oven.

SERIES 2000 Adjustable Clamp Frames.

Quick mold change systems.

Billow eye.

Application specific oven elements and zones.

Custom voltages.

CE & CSA specifications.



APPLICATION SPECIFIC OVENS

MAAC's exclusive, computer command breathable oven designs are custom engineered for every size and model, to ensure maximum heat control. The MAAC system provides the industry's fastest cycle times, with proven energy savings up to 70% on anticipated energy costs. MAAC oven systems are available with all heating element options.



CERAMIC



QUARTZ



SOLAR PANEL



HALOGEN

MAAC Ovens are 100% solid state, fully insulated with double wall construction and come standard with a safety/sag eye. Standard MAAC ovens are available in Single, Double and Triple Element zones. Custom configurations are available for application specific processes.

MAAC Software provides the ability to select up to 100 individual heat settings by a percentage value (0-99) for each oven zone. This permits individual zone settings to be configured for utilization of Zoning and Profile Heating techniques. The complete oven pattern can then be saved to a job file and reloaded the next time the product is run. This provides repeatability not only from cycle to cycle but from job to job. With the compensation feature, an entire oven pattern can be adjusted up or down by a percentage value without changing the original settings. Ease of use makes MAAC control systems ideal for all operators.

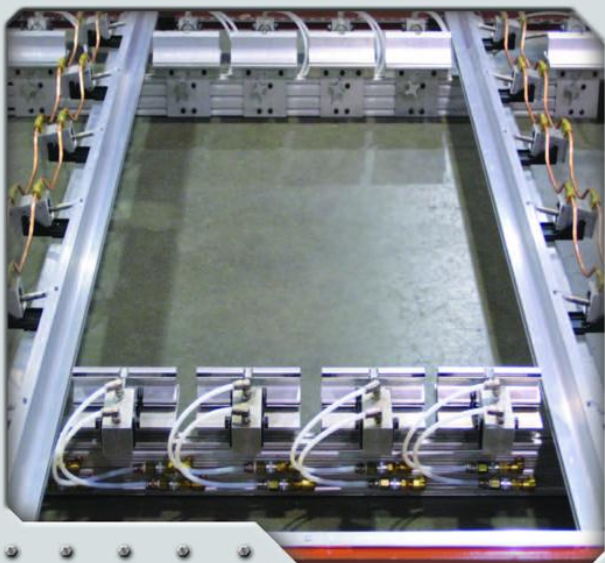
MAAC Oven Designs contain one upper bank and one lower bank. This provides the ability to heat the sheet from both sides. Bottom ovens and their doors are insulated for heat retention and resistance to drafts. Sheet temperature sensing is setpoint controlled with a non-contact infrared pyrometer. The MAAC oven system is available with all element choices.

ELEMENT SELECTION GUIDE

| | Ceramic | Quartz | Solar | Halogen | Calrod | Gas Cat | Rating Guide |
|----------------------------------|---------|--------|-------|---------|--------|---------|--------------------------|
| Zoning Ability | 10 | 10 | 6 | 9 | 5 | 3 | 10 = Highest Flexibility |
| Zone Cost | 10 | 10 | 5 | 2 | 10 | 5 | 10 = Lowest Cost |
| Energy Cost | 9 | 8 | 7 | 4 | 3 | 10 | 10 = Lowest Cost |
| Direct Emitter Surface | 6 | 6 | 10 | 4 | 3 | 10 | 10 = Largest Surface |
| Fast Thermal Response | 6 | 9 | 4 | 10 | 4 | 2 | 10 = Fastest Response |
| Element Cost | 9 | 8 | 5 | 2 | 10 | 4 | 10 = Lowest Cost |
| Element Cost Efficiency after 24 | 10 | 10 | 10 | 10 | 6 | 8 | 10 = Highest Efficiency |
| Replacement after 24 Mo. | 10 | 8 | 10 | 5 | 10 | 8 | 10 = Least Replacement |
| Replacement after 60 Months | 10 | 8 | 10 | 4 | 10 | 1 | 10 = Least Replacement |



ADJUSTABLE CLAMP FRAMES



SERIES 2000 CLAMP FRAMES

The newest version of our popular extruded aluminum clamp frame gives new meaning to quick change. These frames eliminate the need for storing and replacing different short frames for every sheet width. The system will handle your maximum sheet sizes down to 6" X 4" in 1/4" increments. The clamp frames can be arranged for either bottom or top loading.

The SERIES 2000 frames utilize our standard clamp frame components with other off-the-shelf items to accomplish what every thermoformer wants: the ability to vary the length of the clamp frames. This system reduces clamp frame set up time to under 5 minutes.

ADVANTAGES OF THE SERIES 2000

Standard MAAC clamp frame components: cylinders and extrusion can be interchanged with our standard clamp frames.

The sheet is gripped on a single plane, there is no offset in the corners.

Position of the clamp frames can be noted and stored along with the part menu in the notes section and easily returned to the exact position the next time the product is run.

No tools are required for any part of the adjustment.

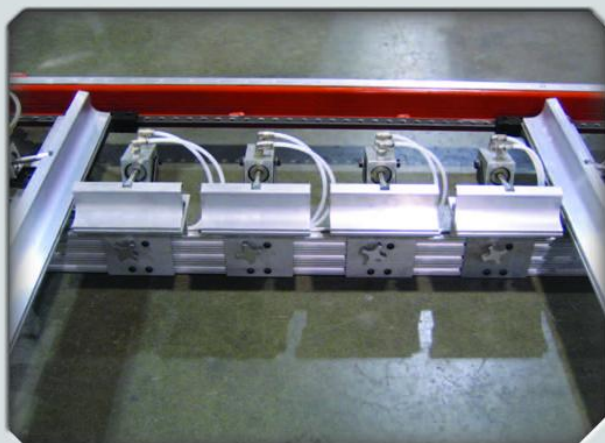
Large airflow passages ensure quick even operation of the cylinders.

Requires approximately 3/8" of material to be clamped meaning less waste and trim.

No steel pin bars. All aluminum, meaning better heat transfer.

Light-weight and cost effective when compared to competing systems.

No need to store all those different size clamp frames.



MAAC has designed numerous types of application specific clamp frames. We have over 30 different systems which have been developed to help thermoformers save time and money, while giving them maximum flexibility. Call us, we are here to help.



CLAMP FRAMES



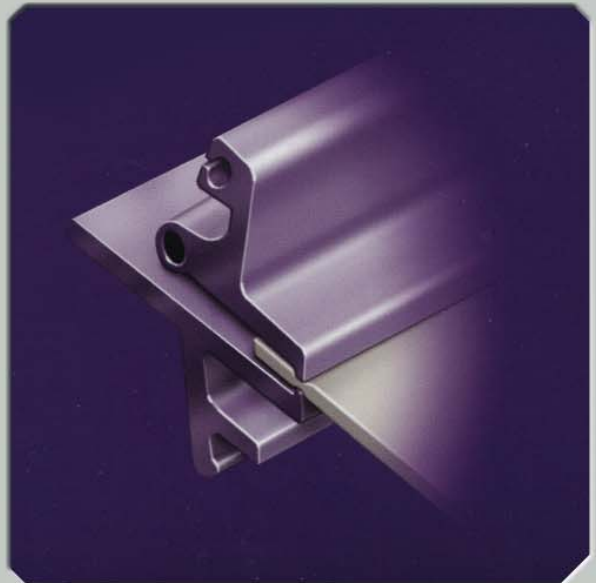
LET MAAC HELP YOU GET A GRIP ON 20% MATERIAL SAVINGS

MAAC'S Edge Clamp Frame System Offers Many Significant Advantages:

- Only requires 3/8" material to be clamped.
- Less waste and trim.
- Easy setup within minutes.
- Fully adjustable quick frame changes.
- Maximum holding power.
- Can retrofit to any machine.
- Always available in stock.
- Most cost effective.

The major benefit of MAAC'S Edge Clamp Frame system is the need for less material to be clamped. MAAC's system requires that only 3/8" of material be held, compared to the 1" to 1-1/2" on competitive systems. This translates into significant material savings for the user, average of 4% to 12%, and as high as 20% in some cases. This sheet size reduction also results in cost savings associated with material trimming, regrind, transporting and storage, not to mention the labor, energy and maintenance required to carry out those functions.

MAAC'S Clamp Frame is constructed of aluminum rather than steel, which helps the system to absorb and dissipate heat better and faster. This durable unit requires no maintenance. The heavy-duty aluminum clamps offer maximum holding power, keeping the plastic sheet in place and ensuring that precise forming tolerances are met while maintaining repeatability.



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ROYCE ROUTERS — 5 AXIS CNC



* Trade in & replacement programs are available

DISTINCTIVE FEATURES

Trim parts in less than half the time with 300% more speed. Bridge speed is 2,500 IPM, table speeds are 2,000 IPM and the Z Axis Speed is 1,500 IPM

Harmonic drives accurate to .3 arc minutes on B & C axis

Unique plug & play, one piece construction

Largest, heaviest, most accurate machine base

Air and vacuum storage incorporated into machine frame

36.5" Z axis clearance with 39" travel

24,000 RPM, air cooled, 7.5HP dual spindle motor.

Pendant mounted advanced Fagor controls

All aluminum Z axis – less weight, less inertia

Air conditioned electrical enclosure

Tool tip air blow off

Standard front shield

+/- 720° rotation on C axis

+/- 360° rotation on B axis

Automatic oil lubrication system

Automatic vacuum valves

IN STOCK – 8 WEEK DELIVERIES!

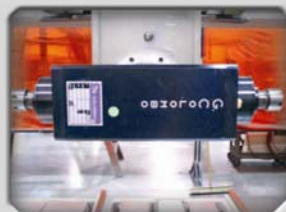
Royce Routers

SPEED • ACCURACY • REPEATABILITY

Imagine completing production runs three to four times faster. Imagine acquiring only one or two pieces of equipment instead of four or five. IT IS POSSIBLE WITH ROYCE ROUTER.

Royce Router Model R55T5A is the first mass produced 5-Axis CNC Machine specifically designed for secondary trimming in the thermoforming industry. Royce Routers are designed, manufactured, sold and serviced by MAAC Machinery.

The R55T5A is a twin-table machine featuring two (2) 60"x 60" tables. The tables can be operated independently or as a single 120" x 60" table.



24,000 RPM Spindle



Advanced "Fagor" Controls

ATTRACTIVE OPTIONS

Automatic tool changers

Vacuum pumps

48" Z axis clearance

Installation

Training

Part programming/part runoffs

Trim fixtures

Quick change fixture packages

Complete perimeter guarding

Tool setting & breakage detection



SPEED • ACCURACY • REPEATABILITY

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SPECIFICATIONS FOR ROYCE ROUTER MODEL #R55T5A

| | |
|--|--|
| Table Size | Two (2) 5'x5' or One (1) 5'x10' Tandem |
| Z Axis Height | Z Axis 39" |
| Maximum Part Size | 70" x 124" or two 70" x 62" |
| Number of Axis | 5-Axis |
| Standard Spindle | 24,000 RPM, Air Cooled, 7.5 HP Dual Spindle |
| Spindle Speed Range | 0 – 24,000 RPM |
| B Axis – Harmonic Drive | +/- 360 Degree Rotation |
| C Axis – Harmonic Drive | +/- 720 Degree Rotation |
| Control System | Fagor 8055 CM Turbo with 11" LCD Screen |
| Electrical Cabinet | 480 Volt, 60 Hertz – Air Conditioned |
| Automatic Lubrication System | Automatic Oil Lubrication |
| Speed: Bridge (X Axis) | 2,500 Inches Per Minute |
| Speed: Tables (Y & V Axis) | 2,000 Inches Per Minute |
| Speed: Z Axis | 1,500 Inches Per Minute |
| Speed: C Axis | 70 Revolutions Per Minute |
| Speed: B Axis | 40 Revolutions Per Minute |
| Repeatability | +/- .002" |
| Guarding | Standard Front Shield Included |
| Modem | Built in for Remote Diagnostics |
| Troubleshooting & Diagnostics | Built in Diagnostics for Controls & Drives |
| One Piece Plug & Play | No Installation Required |
| Vibration Resistant Leveling Pads | Four (4) Provided for Quick & Easy Leveling |
| Optional – Hand Held Teach Pendant | Quick and Easy Manual Programming |
| Optional – Automatic 8 Tool Changer | 24,000 RPM, Air Cooled, 10HP Single Spindle |
| Optional – Vacuum Pumps | 10HP and 15HP Dry Rotary Vane Pumps |
| Optional – 8 Piece Tooling Package | Eight (8) Tool Holders and Eight (8) Collets |
| Optional – Increase Z Axis to 48" | Z Axis Travel & Clearance up to 48" |
| Optional – Training | Available at MAAC, Onsite & through Fagor |
| Optional – Part Programming/Part Runoffs | Available before, during and after the sale |
| Optional – Trim Fixtures | Full in house tooling capability |
| Optional – Quick Fixture Change | Automatic Fixture Locating and Hold Down |
| Optional – Complete Perimeter Guarding | Polycarbonate Guarding with Dual Doors |
| Optional – Tool Setting & Breakage Detection | Renishaw Non Contact Instrumentation |



SPEED • ACCURACY • REPEATABILITY

