
Senger News & Focus

Senger and Associates, Inc.

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Remmele Microscopic Machining No Small Feat Company Leads Industry in Micro-machining

At Remmele Engineering, Inc., new technology is a tradition. They are constantly pushing the technology envelope to produce ever smaller (feature sizes to 0.075mm/0.003") and more complex (wall sections to 0.0375mm/0.0015")



microscopic machined components. They search out and employ the latest technology, combine it with enhanced accuracy with extremely close tolerances on features, including difficult contours and surface

finishes, all with a high rate of repeatability, in a high-production environment.

Microscopic machining is used for products with size requirements, when ultra-precision, repeatability, material strength or the design envelope dictates it.

Prototype and Component Development Services

Remmele Engineering is well equipped to handle a variety of challenges in anticipation of component production



requirements including: prototyping, process development, pre-production, initial launch production and customs and specials.

Prototyping - Remmele consistently produces parts that have never been made before. While designers understand part

function, Remmele can verify manufacturability.

Process Development - Repetitions of component design are provided to achieve optimum levels of manufacturability, cost and quality.

Initial Launch Production - Rapid ramp-up into production quantities and fast track programs enable smooth new product introductions.

Customs and Specials - Extensions of existing product families are easily accommodated.

Contour Plastics Achieves ISO 9000 Certification

Baldwin, Wisconsin - Contour Plastics, the injection molding company represented by Senger and Associates since 1996, recently announced that in September of 2001, they achieved ISO 9000 certification. Contour is one of the first injection molders in the country to receive certification of their Quality Management System to the just released ISO 9000: 2000 standards. The new standard places great emphasis on customer satisfaction, process improvement and preventative action activities. Congratulations to everyone involved!

The Senger and Associates, Inc.

Vision Statement:

*To be recognized by manufacturing
companies as the preferred sales agency
in Minnesota that operates with
the highest standards and ethics.*

Ray Products: A Leader in Thermoforming

For over five decades, Ray Products has been a world-class leader in thermoforming heavy gauge thermoplastic materials. Combining skilled craftsmen, advanced 3D CAD/CAM technology and specialized vacuum/pressure forming equipment, Ray Products is meeting and exceeding today's rigid demand for innovative product development--economically.

Advantages to Thermoforming

There are many advantages to using thermoforming:

Tool Cost Savings - This long-lasting tooling can result in significant savings when compared to hard steel tooling costs.



Finished Tool Proof in 1-2 Weeks

Fast, 4-6 Week Turn-Around Time on Production Tooling

Easily Modified Tooling

Reduced Inventory - Product may be scheduled in daily, weekly, monthly or quarterly releases.

Production Runs of 50 to 5000 Pieces

Dimensional Tolerance - .xx+.03, .xxx+.015

Pressure Forming Versus Vacuum Forming

Vacuum forming is a technique whereby a heated thermoplastic sheet is clamped in place above a male or female mold. The air between the sheet and the mold is extracted forming the 'vacuum'.

A wide variety of materials can be used by this process, i.e. ABS, polystyrene, polypropylene and PVC. The material selected will depend on a number of factors including cost, appearances and impact strength.

The principal advantages of this process to the designer are:

- Low tool cost
- Short or long production runs
- Tough, self-colored moldings requiring no further finishing

Applications include non-critical appearance covers, dunnage trays, and internal covers.



Pressure forming is a modification of vacuum forming. Among the differences between the two processes, sharper definition and tighter control radii are achievable with pressure forming. Pressure forming uses air pressure as a forming aid to increase the detail on the mold side. Air between the mold and heated sheet is evacuated while compressed air is used to force the sheet into contact with the mold surface where it forms and cools. This technique provides for forming heavier sheets from .093" thick up to .375" thick.

Pressure forming allows for features not possible with vacuum forming such as ribs, louvers, label recesses and undercuts. The mold can be textured or the part painted to obtain the desired surface finish.

Applications include high appearance covers, computer housing, microprocessor-based equipment, typically non-structural. This is an ideal application for manufacturing bezels, front panels, housing, and covers for medical devices, electrical equipment and telecommunications. Part size is usually 12" x 12" and larger.

Remmele, Ray at MDM Show

For more information, please stop by the Remmele booth (#321) and the Ray booth (#913) at the upcoming MDM show in Minneapolis on October 17-18, 2001. If you are unable to attend the show but would like more information about these or any other lines which the Sengers represent, contact Senger and Associates, Inc. at (651) 633-6040 or at www.senger-assoc.com.