

ORBITAL PROCESS COLDFORMS FASTENERS

An electrical and electronic equipment maker needed a production system for assembling a hinged cover made of thermoplastic.

The system needed to form pan heads simultaneously on four molded studs made of ABS material to secure the hinged section and eliminate metal fasteners. To avoid the possibility of contamination when used, the appearance of the joint had to be flawless. No gaps were allowed between the formed heads and the mating plastic hinge, or between the hinge and the container base. Any ridges, bulges

burn or melt marks, or any spots or discoloration on the formed studs, or the adjacent hinge and container areas, were unacceptable.

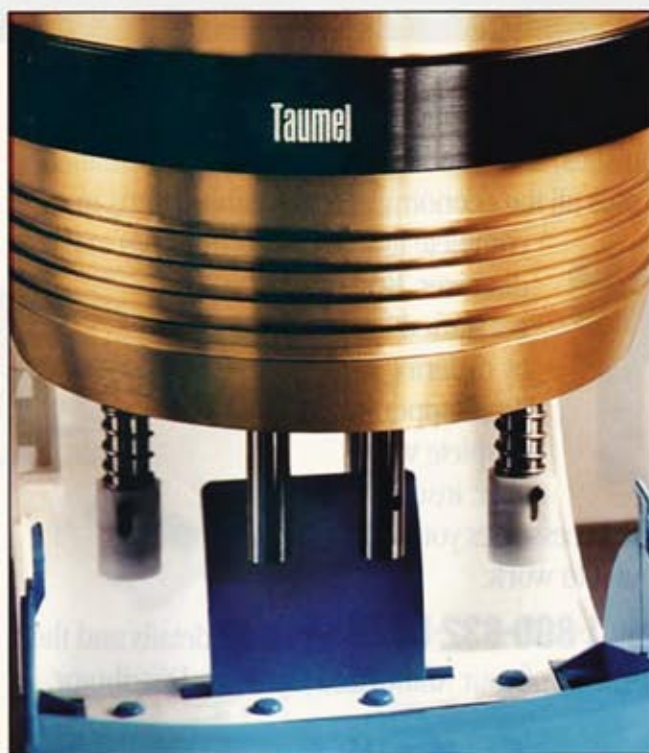
Taumel Assembly Systems of Patterson, NJ was contracted to supply a multi-point forming machine for the job. The machine uses the orbital headforming process pioneered by them to form the shaped heads on the protruding plastic studs. Integral pressure pads keep the hinge fully seated prior to the forming operation. The four non-spinning orbital form tools extend to clear the protruding 2" center blade and side legs. The cycle time to form all four pan heads in one operation is 1.2 sec, or six times faster than the welding method used earlier. Hinge tightness, flatness, uniformity and finish of the formed plastic heads met all requirements. Taumel's T-500 machine, with the inline multi-point system MS-83, generates no heat, noise, vibration or melting odors, and consumes much less energy than the welding method used earlier.

Wider Applications

Single spindle and multi-point forming equipment from Taumel have been used successfully for coldforming and flaring pins, posts, lips, ridges,

studs, shafts, spacers, hubs and bushings in solid, tubular, rectangular and square shapes in many engineering thermoplastics. Typical engineering polymers/composites and resins that feature rigidity and good dimensional stability include ABS (acrylonitrile-butadiene-styrene), polyamides, polycar-

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The forming operation showing the four shaped heads on the molded studs.

bonates, polymer acetal and many other mineral/glass (fibre) reinforced grades and blends. Testing a material for a specific coldforming application is the best approach. ABS is often the material of choice. Polystyrene (often too brittle), polyethylene (often too flexible) or similar materials with poor dimensional stability, are not suited for coldforming.

Multi-point heading machines follow the same basic concept as Taumel's orbital forming machines. They feature silent forming of all malleable material, with variable cycle times, spindle stroke and heading pressure. The machines also perform heading operations without shaft deformation, forming free-moving swing joints to within 0.001".

Taumel Assembly Systems

Circle 159 for more information

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