

Vibration welding improves speed, consistency, weld strength, and lowers costs for appliance manufacturer

RESULTS

- Process speeds and repeatability meet production demands
- Large parts made with challenging resin get consistent weld quality
- No consumables are needed in the joining process
- Multiple parts and different tools run on the same machine



APPLICATION

Assembly for automatic dishwasher spray arms

CUSTOMER

Home appliances manufacturer

CHALLENGE

A manufacturer of automatic dishwashers needed a plastics joining process to assemble two halves of the upper and lower spray arms used in their machines. The process needed to be fast enough to meet production requirements, and offer consistent, repeatable, watertight welds that could stand up to the agitation and flow of pressurized hot water as well as the intense heat of the drying cycle.

The design of the spray arms presented a variety of assembly challenges. The parts were to be made of polypropylene resins that do not glue together well. The parts were also too large to allow them to be joined by ultrasonic welding, a method the manufacturer was familiar with in other applications.

Mechanical assembly options requiring consumables such as screws and gaskets would add unacceptable costs to the process. Manual assembly also added steps to the assembly process that would slow throughput. The need to involve a human operator in the manual assembly would increase labor costs for training and introduce an element of unpredictability to the process, but, automating the manual process to achieve the required consistency would be prohibitively expensive.

SOLUTION

The manufacturer turned to Branson Ultrasonics' vibration welding technology available from Emerson for a solution. Branson produces a wide variety of plastics joining technologies and demonstrated to the manufacturer how vibration welding could overcome its process challenges.

Repeatability rules

Branson vibration welders available from Emerson weld large, contoured plastic parts with speed, high quality, repeatability, and cost savings.

Vibration welding has the ability to melt and weld a large volume of material. It has the capacity to produce a strong, hermetic seal on large parts with complex contours like those presented by the spray arms.

The manufacturer also produced various dishwasher models, and so needed a technology that could cost-effectively produce spray arms of different sizes and shapes. The flexibility of vibration welding machines coupled with Branson's tooling expertise gave the manufacturer the ability to easily interchange different tools to weld different parts using the same welding machine.

Vibration welding also provided the speed, weld quality, and repeatability the process required, and with no consumables needed, vibration welding answered every challenge the manufacturer faced.

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