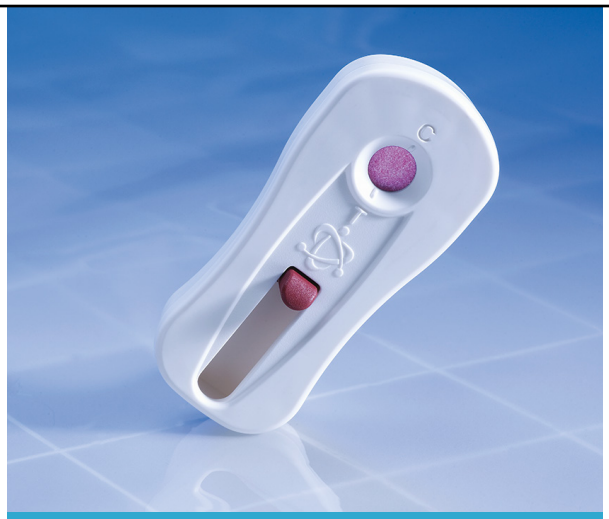
# Emerson helps Invisible Sentinel launch breakthrough food safety testing device

## RESULTS

- Invisible Sentinel is now manufacturing over 1,000 units daily, and anticipates 8-fold growth in the near term to serve an expanding global demand.
- Emerson's expertise and collaborative spirit also resulted in Invisible Sentinel achieving AOAC approval and subsequent FDA recognition.
- Invisible Sentinel was able to launch the Veriflow device far faster than would have been otherwise possible.



## APPLICATION

A device called Veriflow™ to detect food-borne pathogens at the molecular level.

## CUSTOMER

Invisible Sentinel.

## CHALLENGE

First, the new device had to demonstrate to the Association of Analytical Communities (AOAC) that it could safely, accurately, and consistently detect molecular food-borne pathogen signatures. That meant its sophisticated internal testing technology had to be 100% protected against outside contamination. And that required joining the two halves of its high-impact polystyrene housing with a highly-repeatable process that would produce a hermetic weld joint that could withstand significant pressure created by the device's internal processes, while also avoiding damage to its delicate internal mechanisms with varying melt indexes.

## SOLUTION

Invisible Sentinel brought Emerson into a collaborative partnership in the very early stages of product design.

The partners agreed that ultrasonic welding was the right course, and chose the Branson 2000X-d ultrasonic assembly system for the task. Emerson engineers went to work defining the horn and nest parameters using Finite Element Analysis (FEA), at times convening with the customer in Emerson's Connecticut development lab to refine the details.

***"With the completion of our new state-of-the-art production facility this Fall, we've been able to dramatically increase our production volume. The team at Emerson has worked with us continually to ensure that as we've increased capacity, our quality not only remained constant, but improved."***

**Benjamin Pascal**
Chief Business Officer
and Co-founder Invisible Sentinel

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The team collaborated on design of experiments (DOE), to determine best process windows using force, triggers, and distance settings to maximize energy and efficiency in the welding process.

The 2000X-d is an extremely user-friendly, digital system that allows for process parameters and control limits to be dialed in easily through a VGA touch screen interface. And its S-beam load cell and optical linear encoder provide very accurate feedback and control. The system maintains optimum melt-collapse distances that meet the requirement for repeatable welds within a 0.001"- 0.002" tolerance. In addition, the 2000X-d's monitoring capabilities will detect variations inside the device to maintain consistent, tight-tolerance welds, while protecting the delicate interior test mechanisms.

Emerson ensured the precise process parameters and once the team agreed they had a final solution, Emerson was even able to provide a loaner machine so Invisible Sentinel could begin producing units within days.

## RESOURCES

www.Emerson.com/Branson