



## Branson helps Invisible Sentinel launch breakthrough food safety testing device.

### Background

In 2006, Invisible Sentinel embarked on the development of a revolutionary device called Veriflow™ to detect food-borne pathogens at the molecular level. Such molecular-level detection typically requires a laboratory and expensive equipment, not very practical for food processors striving to meet stricter government food safety standards. In development, the Veriflow device had proven it could provide molecular-level detection of pathogens in a convenient, economical, hand-held device that did not require a team of scientists to administer. Invisible Sentinel now needed a manufacturing process to ensure consistent product quality and performance.

### 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 Branson into a collaborative partnership in the very early stages of product design.

**“Invisible Sentinel understood how our process-neutral approach to assessing the challenge would produce the best process recommendation, and how our global capabilities would support them as they expand their markets for Veriflow around the world,”** said Bob Jalbert, Branson District Sales Engineer.

The partners agreed that ultrasonic welding was the right course, and chose the Branson 2000X-d ultrasonic assembly system for the task.

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### Solution *(continued)*

Branson engineers went to work defining the horn and nest parameters using Finite Element Analysis (FEA), at times convening with the customer in Branson's Connecticut development lab to refine the details. 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.

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

### 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. Branson's expertise and collaborative spirit also resulted in Invisible Sentinel achieving AOAC approval and subsequent FDA recognition. Plus, Invisible Sentinel was able to launch the Veriflow device far faster than would have been otherwise possible. Additionally, the company has won top honors in the Pennsylvania Bio and Philadelphia Business Journal's Life Sciences Awards two years running, designating them the **"Best Mid-Stage Product Development Company in 2012."**



*"Branson has been a tremendous partner from project inception. Their expertise and attention to detail has helped us maintain the highest quality and reproducibility of our products, and we whole-heartedly recommend them."*

**Benjamin Pascal**

*Co-founder, Invisible Sentinel*