

Fujifilm SonoSite iViz

Bonding



The challenge

When Fujifilm SonoSite was developing their iViz ultrasound tablet, they asked GM Nameplate (GMN), their existing supplier for value-added assemblies and user-input modules, to help contribute to the development process for the main display sub-assembly. Being a handheld ultrasound device meant that Fujifilm SonoSite delivered increased access to care beyond the hospital environment.

In order to optimize the portability of this device, Fujifilm needed the tablet to be compact, lightweight, and thin which was a challenge with the many layered components the device required. The device needed to be impact resistant if dropped and able to operate in a range of temperatures & conditions, which was difficult to do with the limited thickness allowed.

Project goals

- Design a tablet sub-assembly that is as small, lightweight, and thin as possible
- Ruggedized display assembly with impact & scratch resistance
- Ability to function in a wide variety of environments and conditions

The solution

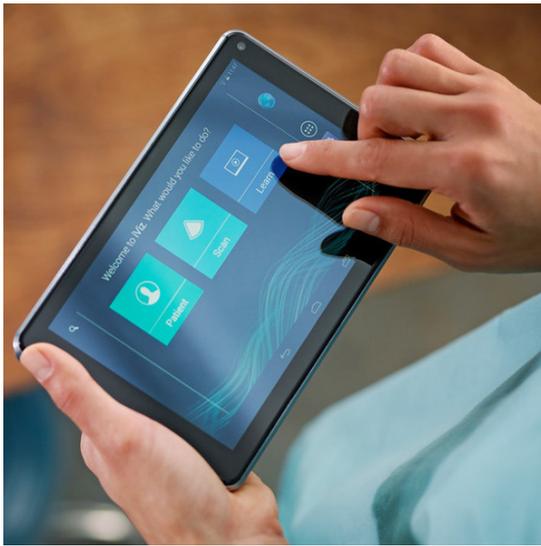
The SonoSite iViz was designed to travel with the user wherever it needed to be used. The tablet needed to be small and lightweight so it could be portable and held in the palm of a hand. The device had many layers: cover glass, multiple adhesive layers, a capacitive touchscreen, and a premium imaging display. Fujifilm enlisted GMN's help to make the tablet as thin as possible, while including all of those layers.

CASE STUDY

DECREASED ADHESIVE THICKNESS BY 60%

Being a portable ultrasound device, the iViz would be used in environments from hospitals to remote locations where healthcare is scarce, and had to be small enough to fit in a doctor's lab coat. It had to function in both cool and hot environments, and the capacitive touch screen had to function through gloved hands and contact with liquids. Like most handheld devices, accidentally dropping it is inevitable, so this device also needed to be extremely durable.

GMN was able to streamline the material management process through our strong network of suppliers to secure crucial components for the project, such as the HIE cover class. The choice of the cover glass contributed to the device's durability, both with scratches and



drops, and had curved edges which made the cleaning process easier.

However, the biggest challenge came with the bonding of the display. It was difficult to find a bonding option that had thin and consistent bond lines, didn't leave air bubbles, and was impact-absorbent all at once.

Liquid optically clear adhesives (LOCA) are frequently utilized when bonding two rigid substrates together and provide a high level of impact resistance. Assemblies built with LOCA are quite durable, but the adhesive bond lines can carry a significant thickness. Therefore, instead GMN decided to bond layers together with optically clear sheet adhesive (OCA), which significantly reduced the adhesive thickness and thus allowed iViz to be thinner and lighter. This adhesive provides a consistent thickness but can exhibit air bubbles if bonded improperly.

Therefore, when applying OCA to substrates, it is ideal to use a vacuum laminator, which is designed to remove air in a space. As a committed partner to Fujifilm SonoSite's success, GMN decided to source a new vacuum laminator for this project. GMN's engineering team designed specifications for a new laminator to be custom built and their lead bonding design engineer traveled to Asia to oversee the manufacture and validation of this new bonding equipment. Once installed at GMN's Seattle, WA Division, equipment validation activities and production for the iViz sub-assembly were underway. Now in production, the iViz ultrasound tablet has benefitted from GMN's dedication to quality and meeting customer program objectives. Through securing this vacuum laminator, GMN made the iViz sub-assembly durable, slim, and lightweight with optimal clarity of the LCD.

- ✓ **SLIM TABLET**
- ✓ **LIGHTWEIGHT**
- ✓ **ERGONOMIC**

One of the greatest benefits GMN offers to its customers is its ability to flex to meet project requirements. GMN was successfully able to integrate the components for this ultrasound device, including the capacitive touchscreen, cover glass, and LCD. With this customer-first approach, GMN's commitment to coordinated development and quality production consistently paces GMN ahead of the competition.



CASE STUDY