A MEDICAL TRAINING DEVICE HELPING DEVELOP ULTRASOUND SCANNING SKILLS THROUGHOUT THE WORLD.

## THE CHALLENGE

Following the global success of the original ScanTrainer™, Intelligent Ultrasound wanted to expand the device's training capabilities by incorporating the option of transabdominal training whilst retaining the original transvaginal scanning capability.

The changes to incorporate the new transabdominal probe had to be in keeping with the current aesthetic of the device. The new model also had to switch easily between the two probes for the different scanning techniques.

## THE SOLUTION

To be able to incorporate transabdominal ultrasound training into the original model, the design engineering team at GX designed two different probes that could plug into the same port. The probes were engineered to include a switch to identify which probe was in use, so the haptic function would know whether to respond for transabdominal or transvaginal training.

The team at GX also re-engineered the base of the unit, making it larger and more stable in order to accommodate both transabdominal and transvaginal training methods. They incorporated an armrest for trainees to help minimise fatigue during training. The armrest's height and rotation were also designed to be adjustable, allowing for freedom of movement. A further design consideration included minimising the number of ergonomically designed clamps for ease of assembly and switching between the two scanning variants.

## QUICK FACTS

PRODUCT DESIGN

VALUE ENGINEERING

CONTROL SYSTEM DEVELOPMENT

www.gxgroup.com
+44(0)1291 673437

### THE RESULT

Re-engineering the base of the ScanTrainer™ saved Intelligent Ultrasound a significant amount of money per unit. This latest product has been well received, with GX recently supplying their third production batch of “Compacts”.

The GX team also created several auxiliary products to support the use of the ScanTrainer™ and enhance user experience.

One of these products is a moulding that’s used on top of metal training tables. This keeps the ultrasonic probe and the metallic components a safe distance apart, preventing interference in the readings. A second feature included a large plastic moulding designed to increase the gap between the table and the mannequins used for training. The moulding is cost-effective and robust enough to withstand the weight of the dummy.

Another design consideration by the GX team was a custom arm, capable of being fitted to a fully working ultrasound device to be used in clinics and hospitals. It enables the ScanTrainer devices to be used by left and right-handed people. The arm is cantilevered off a central spine to keep it stable.

Their latest design enhancement involved a stand for the training probes, ensuring the expensive equipment could be safely stored somewhere, thereby reducing the risk of probes being left out or being damaged by falling off tabletops.

## TECHNICAL DATA

### ELECTRONICS

The team electrically engineered transabdominal and transvaginal probes to plug into the same port on the haptic device. A switch in the port then identifies which probe is plugged in and which type of training is being undertaken.

### VALUE ENGINEERING

The new ScanTrainer™ incorporates an off-the-shelf armrest, modified to fit the device eliminating the need for tooling investment. The team also chose a new lower-cost material for the base that has eliminated the need for painting, thereby saving a significant amount of cost on each system.

### LOW VOLUME MANUFACTURING

The ScanTrainer™ Compact is manufactured using NC milling rather than moulding, which facilitates low volume manufacture without tooling. This ensures small changes can constantly be made to improve the product, while reducing the cost if the essential haptic part, provided by another supplier, should change.

### RAPID PROTOTYPING

The GX team rapidly prototyped the handheld transabdominal probe, modelling it for ergonomics and feel and checking the functionality of the internal switch arrangement.

### MECHANICAL & INDUSTRIAL DESIGN

The armrest was integrated into the design to ensure the device would remain stable with the weight of an operator’s arm resting on it. The armrest was also industrially designed to ensure it was in keeping with the existing aesthetic of the device. . The trans abdominal probe was designed and developed to function with the new product and integrate fully with the rest of the system.

## OUR SERVICES

- ELECTRONICS
- VALUE ENGINEERING
- SOFTWARE DESIGN
- REGULATORY SUPPORT
- RAPID PROTOTYPING
- OPTRONICS
- MECHANICAL ENGINEERING
- INDUSTRIAL DESIGN

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