

Fabricated Foam Provides Solution to Design Requirements

Product Solves Problem of Fluid Collection
Management in Hysteroscopic Procedures



Until now, fluid collection in hysteroscopic procedures has been hard to track. Pocket drapes don't adequately capture fluids, but just as often, fluids are simply allowed to spill on the floor. Without knowing exactly how much fluid has been lost, medical staff have a tough time determining—and compensating for—patient fluid levels. It's a critical factor, because fluid overload can lead to unwanted post-operative complications.

A fluid collection device that takes the guesswork out of measuring spilled fluid volumes—and that is specifically designed to withstand tough operating room conditions—has been introduced

by Promethean Medical Technologies. The new Promethean Fluid Control Island™, placed on the floor beside the operating table, collects fluids normally lost to drapes or the floor. The fluids are suctioned to collection canisters for measurement and testing. Besides aiding in fluid measurement, the Fluid Control Island also helps to reduce the risk from contamination. Fluids collected on the tray can be disposed without contact. In addition, drier floors are safer for the operating room staff, and reduce clean-up and operating room turnaround time.

As a researcher in the field of organ transplant, Allan Robinson has spent enough time in

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operating rooms to know how messy they can get. He started Promethean Medical Technologies based on his idea for a device that would collect fluids and aid in fluid measurement. "I wanted to develop a product that would take a proactive role in wet procedures," said Robinson. "The Island is an intervention solution because it simplifies the procedure and eliminates the after-the-fact problem of measurement and contamination."

A major design criteria for the tray was that it had to be both flexible and stable. "We knew that people would step on it and probably even roll a chair across it," said Robinson, "The tray had to give, yet still maintain its shape so it could collect fluid. Plus, it had to be foldable for easy discarding, yet not crack and leak fluid every-where."

Though he had the idea, the application and the solution, Robinson needed to enlist a foam fabricator to provide prototype development and engineering expertise. He found the quick turnaround time and expertise he needed at pinta foamtec's Medical Specialties Group.

pinta foamtec is a custom foam fabricator, providing a variety of services such as coating, laminating, die-cutting, waterjet cutting and molding, to carry a product from concept to the market. The more than 40-year-old company also offers assembly and packaging services in their Class 10,000 cleanroom.

Through a combination of design, material know-how, and prototyping, pinta foamtec engineers were able to meet Promethean's performance criteria. Using a non-porous polyethylene foam was a given. The material has "memory" so that it always returns to its original position; it is also easy to mold. Other materials, such as most plastics, become rigid from molding and therefore don't offer the flexibility of foam.

pinta foamtec engineers provided stability by designing molded support ribs to run diagonally across the surface of the tray as well as a half-inch molded bevel around the perimeter. The ribs also support an anti-splash polyester mesh drape over the top of the tray. The mesh drape doubles as a sieve to separate solid matter from fluids.

A drape attached to one side directs fluids into the tray and eliminates the need for pocket drapes. To carry captured fluids from the island to the canisters, a vacuum collector is attached to a punch-out cavity in the back of the island. With a maximum fluid retention capacity of 100 cc, the non-sterile island folds in half without breaking so it can be discarded without leaking.

"The tray meets all the performance criteria I had in mind for the product to work successfully," said Robinson. "Together with their materials, die-cutting and molding solutions, pinta foamtec provided the expertise I needed. They met the deadlines I asked for, and they carried the process through from concept to finished product," he said. The result is a flexible foam solution that provides a simple and cost effective answer to a common operating room problem.