Primary Applications for Patented Technologies are:

Surgical Tissue Grasping

This family of devices has been extensively tested in clinical cases in concert with Clinical Innovations, Inc, Murray Utah and research presentations have established this clinical alternative.

US 6,641,575 B1 Nov. 4, 2003	**Surgical vacuum instrument for retracting, extracting, and manipulating tissue** This patent covers insertion of a manipulator probe with a vacuum cup tip that can effectively work like a clamp, but a-traumatically manipulate, transfix, retract, dissect or withdraw tissue from a body cavity/peritoneal cavity. The device used a hand-held pump to activate and re-set the vacuum pressure which was seen as an early clinical drawback. However, tissue manipulation with the vacuum cups through a 10mm sheath was seen as helpful for ovarian cyst management and cholecystectomy dissection laparoscopically when licensed to a prior vendor for sale.
US 8,409,214 B2 April 2, 2013	**Portable regulated vacuum pump for medical procedures** This is a comprehensive method patent with a system claim that covers an auto-regulated pump that controls end-units that apply vacuum via cavity/cup containers that serve as tourniquets, surgical manipulators, or other vacuum related medical procedures such as vacuum assisted vaginal deliveries. It is evident through RFID technology, the pump auto-senses which clinical scenario the operator is using the pump, because the "cup" is pre-tagged via RFID. Safety parameters from the package insert of the devices could be pre-programmed into the software for precise controls. The method to monitor pop-off event risk and mitigate and track such events can be recorded.
US 9,138,216 B2 Sep. 22, 2015	**Portable regulated vacuum pump for medical procedures** This patent defines a portable pump and a method of control related to controlling the flow of blood. There is a pulsatile flow control in cases where a wound or a bleeding site is controlled with positive and negative pressure to allow diastolic filling under the cup to allow clotting agents to enter the area. Thus, this is not a static vacuum with negative pressure overcoming the systolic pressure under the wound. The other application of positive pressure is when the cup constricts under negative pressure, another channel can apply positive pressure under the cup to further compress the wound to achieve slowing or arresting the flow of blood or manipulate tissue inside with positive pressure as well.

Vacuum Tourniquet

US 7,935,094 B2 May 3, 2011	**Vacuum instrument for slowing or arresting the flow of blood** This patent is a comprehensive vacuum tourniquet method patent for wound sites, bleeding vessels and bleeding in a body cavity through many embodiments.
US 8,608,714 B2 Dec. 17, 2013	**Vacuum instrument for slowing or arresting the flow of blood** This is an enhancement of Patent 094 (above) which addresses the method of removing accumulated pooled fluid or blood inside the cup via a check valve. This will maintain the vacuum generated with a mechanical pump.
US 8,915,894 B1 Dec. 23, 2014	**Vacuum cup for delivery of agents during vacuum treatment** This patent covers embodiments to create a collapsible cup that will contact the tissue target for treatment and integrate a medicant bead (bead can be a bead shaped sponge or canister).

Manipulation, Extraction (Obstetrics)

US 9,186,444 B2 Nov. 17, 2015	**Portable regulated pressure devices for medical procedures** Autoregulated Pump patent using negative and positive pressure applied to a body or a fetus. Using positive pressure to deliver an "agent" or manipulate the vacuum cup using a sensor. Claim 20 auto-regulates the vacuum during a fetal delivery to maintain the vacuum according to parameters set in the pump, keep a seal to eliminate vacuum egress or leakage. There is a description of using both positive and negative pressure relative to the fetal or maternal condition.