Abstract
It is a device for decreasing internal bleeding via electrical stimulation. It is a hand held, easy to use lifesaving system which both diagnoses the severity of the internal bleeding and decreases the bleeding without need of any surgical implantation or any medication. System being compact and convenient, it is ideal to be used in emergency situations.

Technical Overview
Internal bleeding of organs in case of accidents, traumas, emergency cases or surgeries is mostly fatal. Current applications for decreasing blood flow of internal organs include implementation of medical aids into or around the vessels with surgical operations, intravascular injection of biomaterials or mechanical compression. All these methods can only be applied in hospitals by healthcare providers. But especially for the emergency cases, the transfer period of the patients to hospitals may be life threatening. Furthermore, surgical applications may not be favored due to possible side effects or even sometimes may not be possible.

This technology proposes an effective and practical solution for such cases. This device uses specific combinations of the electrical stimulation frequencies and skin dermatome zones (the skin area that is supplied by a nerve) in order to decrease the blood flow of a desired internal organ. Device enables a decrease on desired organs’ blood flow by specific placement of the electrode combination over different skin dermatomes within 3 – 5 minutes.
### Technology Features & Specifications

This device comprises of two subsystems one of which is the electrostimulator with the electrodes to be placed on the skin of the patient and the other one is “input means” which outputs a skin electrostimulation map. With these features of the technology, both the internal bleeding severity is diagnosed and the bleeding area is spotted as well. Input subsystems comprise of blood pressure measurement and pulse detector units and a unit enabling the wounded area information. Therefore it guides the user where to place the electrodes via analyzing the data with the algorithm embedded in the system.

Once the severity and the spot is determined then the blood flow of the targeted organ is decreased with electrostimulation within 3 to 5 minutes via the electrodes which are to be placed on to the skin.

The system further comprises thermoelectric coolers in order to prevent skin burns that may be associated with the electric current.

### Potential Applications

The technology is applicable in:
- Healthcare Industry: In hospitals for emergency cases, surgeries etc.
- Army

### Customer Benefits

- Non-invasive and non-medicinal way of decreasing internal bleeding
- Implementable by the user without the need of a healthcare provider
- Fast (able to decrease the blood flow in 3-5 minutes)
- Cheaper than surgical methods
- Safer than invasive methods
- Organ specific

### Market Trends and Opportunities

Accidents, traumas and surgeries are the most common causes of internal bleeding of organs. According to the World Health Organization, only road traffic injuries caused an estimated 1.24 million deaths worldwide every year. And again also according to the surgical data obtained for 56 (29%) of 192 WHO member states, it was estimated that 234.2 million major surgical procedures are undertaken every year worldwide.

### Additional Technical Information

**PCT patent application:** WO 2014/183790 A1 dated 15.05.2013  
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