A German medical technology startup has developed a passive plug-and-play system that can distinguish tissue and provide navigation support during minimally invasive procedures. The startup is seeking licensing, distribution, and application partners.

Summary

Profile type
Technology offer

Company's country
Germany

POD reference
TODE20220725001

Profile status
PUBLISHED

Type of partnership
Commercial agreement with technical assistance
Investment agreement
Research and development cooperation agreement

Targeted countries
• World

Contact Person
Fabian Schenk

Term of validity
25/07/2022
25/07/2023

Last update
25/07/2022

General Information

Short summary

The plug-and-play passive sensory system for minimally invasive surgery creates a new real-time perception by listening to interactions between surgical instruments and human tissue. The technology can be used in various applications, as interventional needles, laparoscopic instruments or surgical robotics. The technology enables standard surgical instruments to be retained without changing workflows and can make minimally invasive procedures significantly more accurate, safe and efficient.

Full description

A German medical technology startup with a plug-and-play passive sensory system for minimally invasive surgery is seeking licensing, distribution and application partners. The system creates a new real-time perception by listening to the interactions between surgical instruments and human tissue. The technology can be used in various applications such as interventional needles, laparoscopic instruments or surgical robotics. The technology allows standard surgical instruments to be retained without changing workflows and can make minimally invasive procedures significantly more accurate, safe and efficient.

Any interaction between tissue and interventional instrument causes vibrations to propagate along the rigid instrument shaft. The startup's plug-and-play sensory system "listens" to these vibrations and provides valuable

information to the surgeon in real time. Within seconds, it attaches to (and removes from) the end of a standard instrument outside the patient's body and without direct contact with human tissue. The system provides additional sensory information and is designed to enable surgeons to perform precise and safe procedures - for the benefit of the patient. As a platform technology, the solution can be adapted to a wide range of applications.

The technology is the first to use acoustic emissions to guide medical instruments in surgery by essentially listening to the surgical instruments. Acoustic navigation assistance in minimally invasive surgery is a significant breakthrough that greatly improves minimally invasive procedures across the board.

The technology concept has been validated for use on interventional needles, guidewire monitoring, palpation, laparoscopic instrument interactions and robotic surgery, and is internationally protected by two pending patents.
The company aims to work with international clinical partners to gradually increase the previous Technology Readiness Level 5: Trial Set-up in Operational Environment and bring the product to market.

For further steps, the company is also looking for licensing and distribution partners.

Advantages and innovations

There is a lack of sensory information in minimally invasive surgery. In minimally invasive procedures, the surgeon's haptic information is reduced by 30 to 100% compared to open surgery. This can limit the identification of anatomical structures, increase procedure time, and increase the risk of injury to the patient. In addition, many minimally invasive procedures, such as laparoscopic surgical access, are performed completely blind, i.e., without imaging support, which is uncomfortable and stressful for the surgeon. Adverse events such as organ or vascular injury can lead to life-threatening complications or conversion to open surgery. In addition to increased clinical trauma and prolonged recovery time for the patient, this leads to avoidable costs for the healthcare system.

These risks are reduced by the developed system and contributes to the benefit of the patient and also the healthcare system. The technology allows standard surgical instruments to be retained without changing workflows. This leads to a high readiness for use of the system in everyday operations. The worldwide potential can be estimated at 40 million interventions with different needles per year, 13 million laparoscopic procedures per year, the projected installation of 21,000 surgical robots in 2030 and 4 million arthroscopic procedures on the knee per year.

Stage of development

Available for demonstration

IPR Status

IPR applied but not yet granted

Sustainable Development goals

- **Goal 3: Good Health and Well-being**

Partner Sought

Expected role of the partner

Expansion of clinical application and research partners to continuously improve the technology in order to achieve optimal adaptation to the product market.
Medical technology company acting as licensing partner.
Medical technology company acting as a distribution partner.

Type of partnership

Type and size of the partner

Commercial agreement with technical assistance

Investment agreement

Research and development cooperation agreement

- **SME <=10**
- **SME 50 - 249**
- **SME 11-49**
- **University**
- **Other**
- **Big company**
- **R&D Institution**

Dissemination

Technology keywords

- **01004001 - Applications for Health**
- **09001009 - Sensor Technology related to measurements**
- **09001001 - Acoustic Technology related to measurements**
- **06001017 - Surgery**
- **06001013 - Medical Technology / Biomedical Engineering**

Market keywords

- **05004006 - Surgical instrumentation and equipment**
- **05007004 - Monitoring equipment**
- **05004004 - Medical instruments**
- **05005019 - 'Surgery and Anaesthesiology**

Targeted countries

- **World**

Sector groups involved

- **Healthcare**
- **ICT Industry and Services**

Media

Images

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