

TECH OFFER

Robotic Capsule Endoscope For Gi Tract Inspection



KEY INFORMATION

TECHNOLOGY CATEGORY:

Electronics - Lasers, Optics & Photonics

Electronics - Radio Frequency

Electronics - Actuators

Healthcare - Diagnostics

Healthcare - Medical Devices

Healthcare - Telehealth, Medical Software & Imaging

TECHNOLOGY READINESS LEVEL (TRL): TRL4

COUNTRY: UNITED KINGDOM

ID NUMBER: TO174098

OVERVIEW

The capsule endoscope (CE) has revolutionised gastrointestinal (GI) tract inspection. Traditional endoscopy requires a camera on the end of a cable to be inserted into the patient, with understandable anxiety prior to the procedure, additional risk during the procedure, and considerable discomfort both during and after the procedure. In contrast, CEs are pill-like miniature cameras, taken orally like any pill medication in an easy and angst-free manner, prior to travelling through the body and imaging the GI tract with minimal discomfort. Using these images, clinicians can make routine diagnoses of a range of diseases, including bowel cancer, Crohn's Disease and ulcerative colitis, to name a few.

However, CEs travel through the digestive system in a passive manner. This limits the utility of the device in terms of speed,

positioning and overall control. Therefore, a capsule endoscope capable of locomotion has been developed by our researchers. Using impact forces, friction in the GI tract is overcome and allows control over speed and positioning when inspecting the GI tract. Further, the underlying locomotion technology is likely applicable for delivery of other cargo, such as other miniaturised medical devices or drugs.

TECHNOLOGY FEATURES & SPECIFICATIONS

The technology comprises an electromagnetic driven rotor to enable impact locomotion and radio frequency equipment to enable remote control. One embodiment has this as a device capable of housing a third-party capsule endoscope, imparting the ability to move for current capsule endoscopes on the market. Another embodiment features the electromagnet, rotor and radio frequency equipment included in a new capsule endoscope.

POTENTIAL APPLICATIONS

The main market is GI tract inspection but the device may also be applicable for localisation of other miniaturised medical devices or drugs.

MARKET TRENDS & OPPORTUNITIES

The global capsule endoscopy market was forecasted at \$750M USD with a compound annual growth rate of 9%, expected to reach \$890M USD by 2022. The large market size and high growth rate is attributed partially to the patient-driven adoption of minimally invasive procedures. This is especially true in markets such as the US, with advanced healthcare infrastructure, favourable reimbursement policies, and rising prevalence of GI disorders and colorectal cancer.

BENEFITS

Capsule endoscopy has been revolutionary for patients – removing much of the anxiety, discomfort, pain and embarrassment from endoscopy procedures. However, it has introduced new challenges for clinicians as control of the endoscope position is lost, location of sites of interest must be interpreted based on the images themselves and real-time investigation of sites of interest is not possible. A manoeuvrable capsule endoscope retains all the benefits for patients achieved from the adoption of passive capsule endoscopy but gives control back to clinicians during the procedure.