

Benchtop Permanent Magnets

ClearCut Medical integrates Kanfit NMR for intra-operative margin assessment during breast cancer surgery

ClearCut Medical Ltd. is a medical device company that developed the ClearCoast™ system, a novel portable MRI scanner for intraoperative margin assessment during cancer surgery, with Breast Conserving Surgery (BCS) as the first application. To date, ClearCut has conducted multiple clinical studies in Europe, the United States and in Israel on hundreds of patients pointing to the clinical value of the ClearCoast™ system.

The Challenge

Breast cancer is the most commonly type of cancer, accounting for one in eight cancer diagnoses worldwide. In 2020 alone, 2.3 million new cases of breast cancer required surgical procedures. When surgery is performed and a breast tumor removed, it is critical that no cancerous cells remain at the margins. Up until now, doctors would take tissue samples for a pathology examination, send them to a lab for analysis and wait anywhere between a few days to a few weeks for results.

The ClearCut system, based on MRI technology, provides on-the-spot, real-time analysis of the tumor cells. If cancerous cells are detected, the surgeon can excise the cancerous tissue while the patient is still on the operating table. This eliminates the need for the patient to return to the hospital at a later date for second procedure. In addition to reducing patient distress, the system increases hospital efficiency and reduces medical costs.

ClearCut wanted a magnet that would fit and integrate within its compact MRI scanner system so doctors could perform on-the-spot assessment during breast cancer surgery. While many off-the-shelf NMR permanent magnets were available, none met ClearCut's system requirements. As a result, ClearCut searched for a customizable solution that was not prohibitively expensive and which met their technical specifications.



Kanfit Benefits

- A customizable solution, with in-house development and manufacturing that meets customer requirements.
- Serial manufacturing in small quantities.
- Standalone, compact, lightweight benchtop units that are easily transportable.
- Strong electro-magnetic field of 1.2T.
- Ideal for R&D and laboratory analysis for life sciences, food and agriculture, petrochemical, pharmaceuticals, biotechnology, clinical research, materials sciences, and more.
- Significantly less expensive than standard MRI systems.

Kanfit's Solution

ClearCut turned to Kanfit, a company with over 35 years of engineering and manufacturing experience for the aerospace and medical device industries, to develop a desktop NMR magnet for integration into its portable MRI scanner. The major obstacle was optimizing the shimming process in order to eliminate field impurities and achieve accurate homogeneity of the magnetic field gradient. "It was a complex process that required changes to the shimming software codes," explained Shachar Fine, EVP of Business Development, Marketing & Sales. "Thanks to the expertise of our R&D team, we were able to reduce shimming time from two months to just a few days. This significantly cut down on manufacturing time."

To date, ClearCut's system with the Kanfit NMR magnet, is in use at medical centers and hospitals in Israel and in Germany.

"I would highly recommend Kanfit. That's not to say that things always ran smoothly. But they are experts in the field of customizable, permanent magnets. They worked closely with us to develop a cost effective, tailor-made solution to meet our specific requirements. Our system is now used during surgery of breast cancer patients. We are confident that with small modifications to both our scanner and to Kanfit's magnet, we can build other systems that will work for all types of cancers in hospitals and operating rooms throughout the world."

—**Boaz Dovrin, VP of R&D and Operations, ClearCut Medical**

About Kanfit

Kanfit is a manufacturer of detailed and primary parts, ready-to-mount assemblies and subassemblies for the aerospace and medical device industries. With over three decades of experience working with composite materials, Kanfit provide customers with a full-service solution ranging from product specification to 3D modelling to serial production. The company prides itself on its short response time and is an authorized supplier to leading aerospace companies, including Bell Textron, Boeing, Gulfstream, IAI and Lockheed Martin.

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-  Established in 1986.
-  A privately-held company.
-  Over 190 employees.
-  12,000 sq. m. (130,000 sq. ft.) manufacturing facility.