

Long-Term Maneuverability – Relocatable MRI

Canon Medical recently installed its first relocatable MRI in Europe. The system, which incorporates a Vantage Fortian 1.5T MRI, was commissioned by a private healthcare facility in Norway. It will enable the clinic to start offering much needed MRI imaging services while its expansion is completed over the next few years. VISIONS explores how the new development went.

The relocatable MRI, which incorporates a new Fortian MRI scanner, is uniquely available through the Refurbished and Mobile Imaging Solutions Department of Canon Medical Systems Europe.

“Canon Medical System Europe’s Refurbished & Mobile Imaging Solutions combines a unique set of skills and capabilities, and in this groundbreaking case, has extended its expertise even further, collaborating closely with the MR team at Canon to deliver the first relocatable MRI,” said Johan Vochteloo, Director of Refurbished & Mobile Imaging Solutions. “Our highly specialized branch excels in bringing new high quality options to customers that fit their unique and diverse challenges.”

Scanin is a small private diagnostic center located in Arendal in southern Norway. It was established in 2022 by Ron Astrup, CEO, to provide diagnostic services. He started Stoa Fysikalske Senter 18 years ago, a facility for therapeutic services in physical therapy, including musculoskeletal (MSK), for patients in the surrounding area. At Scanin there are currently two radiologists and two radiographers.

“I started this new center of physical therapy straight after I completed training as a physiotherapist almost 20 years ago. I had been working with a lot of Norwegian athletes from elite level including Norway’s top cycling team and first division football and handball teams, through to ordinary sporters,”

said Ron. “We now have 10 physiotherapists, a radiologist, and a masseur therapist and specialize in the treatment of musculoskeletal problems.”

“Eight years ago, I started doing ultrasound myself to support this work,” he continued. “However, I realized that we needed more options in the practice. Southern Norway is quite large and it takes quite a time for patients to schedule in an MRI via existing services, as well as travel to it. In addition, I thought that MRI was something we could do better from here.”

Expansion

However, Scanin is expanding with the development of a new 2,000 m² center under construction alongside its existing building.

“Building our new facility will take two to three years to complete, but I wanted to have our MRI capabilities up and running sooner,” said Ron. “Canon Medical Systems Europe and Tromp Medical, Norway (Distributor of Canon Medical Systems Europe) came up with a solution – a relocatable MRI - I am very happy, because it solves the issue and we didn’t have to think about all the details inside the container. We are relative beginners in MRI, and designing and equipping the unit was one less thing we had to think about.”

The solution incorporates a new Vantage Fortian 1.5T MRI system featuring innovative workflow



The installation of Canon’s first relocatable MRI in Arendal in southern Norway.



Canon's relocatable with the Vantage Fortian 1.5T MRI, in Arendal, Norway.

solutions, image enhancement, and accelerated scan technology, housed within a fully equipped, relocatable container.

"This was the first time we had a request for an installation of a MRI system in a relocatable," remarked Mark Herfst, Project Manager at Canon Medical Systems Europe. "Each relocatable is designed specifically for an end user and tailor-made for a specific region. The environment

can have serious impact on the image quality of the magnet in an MRI. The relocatable for Norway was equipped with floor heating, heating for the protection of water-pipes, condense lines, and an Arctic Type A/C to avoid freezing up the condenser."

"In order to avoid any issues, we measured upfront if any disturbance in the electromagnetic field was applicable that could affect the working of the MRI's magnet later on," he continued.

An old oil tank located under the desired position of the MRI was removed. The floor of the relocatable was carefully designed and partly constructed in stainless steel to avoid shimming issues. All the ferromagnetic steel was evaluated and approved. Specially designed steel shielding was required for correcting the 5Gauss back into the relocatable to meet the European regulations for magnetic field lines in public areas.

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Ron Astrup, CEO at Scanin, Arendal, Norway.



And besides the steel layers, a copper layer was integrated in the walls, floor and roof these layers to meet a damping rate of 100dB. This enables optimum images without artefacts from outside to be produced.

“In addition, together with Scanin, we also decided on specific options, such as no changing cabin, a larger desk, quench pipe outlet direction, exterior design and interior color scheme,” added Mark.

Careful installation

The unit was installed on site in July this year. It required careful positioning because of the presence of heavy cranes and containers in the direct vicinity of the relocatable, which might have disturbed the magnetic field. Canon proposed two suitable positions for the relocatable on site.

“The location chosen by the customer posed some physical challenges as it was on a hillside close to a cliff, but we were able to propose construction of a base frame for the relocatable to provide suitable structural support,” said Mark.

The relocatable unit, which was 4.1 meters in width, required special road assistance over the entire route from the production site in Wroclaw,



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Poland to Arendal, Norway. With the use of heavy rigging cranes, unloading the unit went smoothly.

Another challenge was the electrical compliance of the relocatable with the local regulations, but the whole electrical design was completed according to Norwegian standards.

Once the container unit was installed, the MRI could be introduced a couple of weeks later and

staff at Scanin were trained in using the new system soon after.

“We carried out training on site with the help of Canon,” said Hans Petter, Senior Product Manager, Tromp Medical, Norway (Distributor of Canon Medical Systems Europe).

“The new radiographer hired by Scanin was appointed on August 1, 2023. The training went well and it was repeated after a few weeks.”

“Canon’s Refurbished & Mobile Imaging Solutions combines a unique set of skills and capabilities, and now also delivers the first relocatable MRI.”

Johan Vochtloo, Director of Refurbished & Mobile Imaging Solutions, Canon Medical Systems Europe.





New imaging and workflow capabilities welcomed

Following training, Ron and his team have taken time to set up protocols with Canon's Vantage Fortian and is now fully operational.

"We have had a good response on the new MRI capabilities of the Vantage Fortian from doctors in the south part of Norway as well as our own radiologist and radiographers, and our patients," remarked Ron."

"I am impressed by the enhanced image quality possible with Canon's Vantage Fortian at Scanin," said Nazeer Dareez, Radiologist at Scanin. "It utilizes Advanced intelligent Clear-IQ Engine (AiCE) technology, which leverages deep learning reconstruction (DLR) technology to deliver noise-free images, especially when the procedure needs high-resolution images, highly accelerated scan time, and/or both simultaneously. by removing noise and restoring SNR. It enables me to see clear details of anatomical structures and tiny abnormalities that

we previously were having challenges to visualize. The focus of the clinic will initially be on high quality musculoskeletal imaging, in addition to neuro and spine examinations."

"I like the automated scan procedures, which confirms set-up steps and saves time," added Marianne Rognli, Scanin's Radiographer.

Support at every step

While the project has been realized through the collaboration between Canon Medical Systems Europe, Tromp Medical, JMP and Lingetrans,

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Canon Medical support and service continues to lead Scanin ahead with integrating the Fortian into full service.

"Support from Canon has been very good throughout," said Ron. "I could tell straight away in our research for an MRI partner that they were able to give us the assistance that we needed. It is so important to have a good personal relationship with the vendor. I felt strongly that Canon wanted this as much as we did. We continue to have excellent support in use of the system." //