BioSpectrum
the business of Bi
24 years of leveraging the business of Bio
www.biospectrumindia.co

Neoscan Solutions launches MRI scanner for babies

20 May 2021 | News

The certification process with a CE mark is expected to be completed before the end of 2021



Neoscan Solutions has invented an MRI scanner for babies. The smaller and lighter MRI scanner can be placed directly in the children's ward of the hospital. Key to the much smaller design is the use of digitizers and AWGs by Spectrum Instrumentation that offer sub-nanosecond, coherence precision to generate the scanner signals and capture the results.

Neoscan will be shortly installing its first devices in German hospitals where it can be seen in operation by prospective customers as it takes images of babies. The certification process with a CE mark is expected to be completed before the end of 2021.

Says Stefan Roell, Founder, Neoscan Solutions in Germany, "We have designed an MRI scanner specifically for newborns and infants which means that the hole in the middle is only 30cm in diameter, not 60cm. As a result, the scanner is much smaller (170cm x 150cm x 110cm) and can go through standard doorways. With a weight of only 2000 kg, it can be located on standard floors and, needing only ten square metres, it can be installed in a spare room directly on the children's ward. Carrying a sleeping baby only a few meters to the MRI is a big advantage, saving a long journey through the building and the need for sedatives to keep the baby motionless for the scan."

"As a start-up, we could not afford to create specialised hardware and so we used this route of high quality, standard cards providing a platform to run our software on," added Dr Roell.

Firstly, to shrink the size, the team had to develop a dry magnet that would create the standard 1.5 Tesla field inside the hole, but without requiring liquid helium. This is done by an inner, cylindrical magnet generating 2.5T and then an outer cylindrical magnet that counteracts the
inner field to provide strong, active magnet shielding so that there is no stray magnetic field left beyond about 1m from the device's cover.
The second innovation was in control electronics. Current MRI scanners typically require three big racks of specially developed electronics, that have been custom designed and built by the MRI manufacturer. Neoscan Solutions chose a different approach. The team used a PC that runs the software that Neoscan has created plus high-end measurement PC cards from Spectrum Instrumentation.

The signals for the MRI are generated by the M4i.6620-x8 and M2p.6546-x4 AWGs (Arbitrary Waveform Generators) and then analysed using an M2p.5968-x4 digitizer. The system used Spectrum's SCAPP
software drivers that enable a Graphics Processor with 5000 cores to perform the parallel processing, instead of using only 8 or 16 cores of a normal CPU.