GE’s Silent Scan Dials Down MRI Noise to a Whisper

GE Healthcare

Doctor visits tend to be quiet affairs, unless an MRI exam, or a root canal, is on the agenda. An MR scanner can generate noise in excess of 110 decibels, enough to rival a rock concert. There is a good reason why this happens. “An MRI scanner is like a huge version of a speaker in your home,” says engineer Bryan Mock, who manages GE Healthcare’s MRI products. “They both have magnets inside and a coil of wire that carries electric current,” Mock says.

The current that flows through the coil inside the speaker creates a magnetic field that moves a magnet attached to a flexible membrane that generates sound. The MR scanner uses changes in the current to generate a magnetic field to image the body. Since the coil and the magnet inside the MRI scanner are fixed in place, the machine does not play Bach, but vibrates and makes noise.

MRI manufacturers traditionally minimized the noise by muffling it with foam or rubber. “But that’s just covering it up,” Mock says.

Two years ago, a team of engineers at GE Healthcare in Waukesha decided to snuff out the noise at the source. They developed a combination of hardware and software called Silent Scan that brings MR scanner noise near background sound levels around 77 decibels. “It’s a completely new way to image,” Mock says. “It’s like going from techno beat to ambient music. They both make you feel good in the end, you just get there differently. Your speaker is still working but the membrane is not moving as much.”

The technology works by minimizing changes in the current during the imaging process. Smoother current means fewer vibrations and less noise. “How we change the magnetic field is really the breakthrough of the Silent Scan technology,” Mock explains. He says that the software is changing the current “a tiny amount for every bit of information that we need.” New, “extremely stable” hardware helps to reduce the vibrations even further and eliminate bad images and image artifacts. “You need both pieces to work correctly for the machine to be quieter and give good images,” Mock says.

Hospitals in the U.S. and in Europe are already working with Silent Scan. Spectrum Health in Grand Rapids, Michigan, was the first hospital in the world to implement the technology. It also used the software as part of research collaboration with GE Healthcare. “The response from our patients has been very gratifying,” says Spectrum Health radiologist Dr. Mark DeLano. “The scans are essentially silent.”

Patients told DeLano that “the Silent Scans don’t make any noise are greatly preferred compared to the hammering sound of conventional MRI scans. This reduces their anxiety about the procedure.” He says that he is “particularly looking forward to providing this to our pediatric patients, claustrophobic patients, and our patients being scanned in the operating room where the noise of the traditional MRI can be disruptive.”

Silent Scan does not solve the root canal problem, but it can give patients going for an MRI scan more peace of mind.

Source URL (retrieved on *07/10/2014 - 11:21am*):
http://www.mdtmag.com/news/2013/09/ge%E2%80%99s-silent-scan-dials-down-mri-noise-whisper