

Medical Solutions

For the daily and trade press
Erlangen, 2004

Background Information: Tim technology

In 2004, Siemens Medical Solutions (Med) rang in a new era in magnetic resonance technology: the company presented a new method under the name of Tim (Total imaging matrix). For the first time, whole-body acquisitions in excellent image quality were possible in a single session. Time-consuming changes in body coils and patient repositioning were relegated to the past. The acquisition time for measurements from head to toe was reduced to just twelve minutes, considerably improving the workflow of hospitals and private practices. The first system marketed with Tim technology was Magnetom Avanto – in the meantime other MR systems are using Tim or can be retrofitted with it. For this development, the Magnetic Resonance Division received the Innovation Prize of the German Economy 2004 from Dr. Helmut Kohl, Germany's former chancellor.

The heart of Tim technology is the matrix coil concept. Up to 76 coil elements can be combined with up to 32 high frequency channels [76 x 32], resulting in noticeably improved acquisition speeds and image quality. Previously, a much larger number of receive coils were necessary for this type of overall examination. These had to be laboriously repositioned together with the patient during the examination. For the first time, Tim provides for a high-resolution

whole-body acquisition from head to toe in a single session - including up to 205 cm tall patients.

Tim opened up completely new dimensions, for example, in cancer diagnostics: in place of several partial acquisitions, Total imaging matrix provides for a uniformly high detail sharpness across the entire body which greatly facilitates the analysis of tumors and metastases distributed across several regions of the body. The same applies to examinations involving blood vessels or the nervous system. The image quality for Tim is also considerably improved by the signal-to-noise ratio which is up to 100 percent higher than previous values.

The new ability of Tim to measure patients feet-first in the majority of cases, spares patients even further. The head remains outside the bore in most cases which makes for a much more comfortable examination for claustrophobic patients.

In addition, the method enables the parallel acquisition technique known as PAT where both acquisition speed and image resolution can be increased further. This is of advantage especially when examining moving organs such as the heart or intestines. Tim enables parallel image acquisition in all three spatial directions across the entire body - without the need for specific PAT coils. The physician is able to freely select relevant areas to meet clinical questions – from individual partial regions of the body to the full anatomy - without limitations with respect to the number of maximum coils that can be connected and simultaneously used.

Siemens Medical Solutions is one of the world's largest suppliers to the healthcare industry. The company is known for bringing together innovative medical technologies, healthcare information systems, management consulting, and support services, to help customers achieve tangible, sustainable, clinical and financial outcomes. From imaging systems for diagnosis, to therapy equipment for treatment, to molecular medicine to hearing instruments and beyond,

Siemens innovations contribute to the health and well-being of people across the globe, while improving operational efficiencies and optimizing workflow in hospitals, clinics, home health agencies, and doctors' offices. Recent acquisitions in the area of in-vitro diagnostics – such as Diagnostic Products Corporation – mark a significant milestone for Siemens as it becomes the first full service diagnostics company. Employing approximately 36,000 people worldwide and operating in more than 130 countries, Siemens Medical Solutions reported sales of 8.23 billion EUR, orders of 9.33 billion EUR and group profit of 1,06 billion EUR for fiscal 2006 (preliminary figures). Further information can be found under: <http://www.siemens.com/medical>