

# Meet Siemens Healthineers

Siemens Healthineers: Our brand name embodies the pioneering spirit and engineering expertise that is unique in the healthcare industry. The people working for Siemens Healthineers are totally committed to the company they work for, and are passionate about their technology. In this section we introduce you to colleagues from all over the world – people who put their hearts into what they do.

## Eva Eberlein, Dipl.-Phys.

Eva comes from Baiersdorf, a small town in northern Bavaria. She studied physics at Friedrich-Alexander-Universität Erlangen, Germany, graduating in 1983 and taking a job as a research assistant in the Department of Applied Optics. After giving birth to her son in December 1984, Eva went on parental leave and returned to work in 1986. She spent 20 years as a developer in the Gradient Coil and Shim Team within the Magnetic Resonance Business Line at Siemens Medizintechnik. In 2006, she began leading the team, which was by then part of the Magnetic Resonance Business Line at Siemens Healthineers. She continues to lead the team today.



Erlangen, Germany



### How did you first come into contact with MRI?

Part of my diploma examination involved giving a talk about the similarities and differences of CT, MRI, and ultrasound. For MRI, I interviewed some of my friends – like Franz Schmitt – who were already working in the field in 1983, and I became more and more interested in this technique. MRI was new back then, and even in the early 80s it was a really exciting technology.

Two years later, I got the opportunity to start working part time in the physics group within MR at Siemens Medizintechnik in Erlangen. The group focused mainly on gradient design and shim software. That was in 1986, and I've been working in this field of Research & Development (R&D) ever since. If you're curious and eager, you don't need to change roles every three years. In MRI, you can work on the same mission for years! The topics around gradient systems and shim grew over the time and became even more fascinating. Staying in the same field makes it easy to develop a deep relationship with your customers. It also let me really grow in my role.

### What do you find motivating about your job?

Working in the field of gradient coil development involves not only drafting an electrical design that fulfills all performance parameters like gradient strength and slew rate, but also to translate that design into a buildable piece of hardware and to follow up by running the necessary tests with the gradient coil in the MRI system. This integration process is always full of challenges and surprises, but the

MR team always works together to solve these. Our ability to act as one team within R&D is one of the most motivational aspects of my job.

It was also really motivating to see how we could raise the gradient system's performance higher and higher, for instance with the Prisma gradient system or by using more than one gradient amplifier for one gradient coil (multi-GPA), as was the case with the Connectom<sup>1</sup> gradient system several years ago. And now we're translating this multi-GPA technique along with Liquid Cooling Technology into the new Gemini gradient coil<sup>1</sup> to create a clinical system, the MAGNETOM Cima.X<sup>2</sup> that reaches 200 mT/m<sup>3</sup> at a slew rate of 200 T/m/s.

Feedback from customers, especially from researchers, about the new possibilities of using these gradient systems always makes us proud.

### What are the biggest challenges in your job?

Providing gradient systems for the whole bandwidth – so for standard clinical systems, MRI systems with a focus on patient comfort like MAGNETOM Free.Max, and systems for the research community – is highly challenging. We focus on different aspects for different user groups, and superb image quality always goes without saying. Reliability is key for standard clinical systems, a large bore is important for patient comfort, and maximum performance is the main topic for the research group.

Figuring out which are the most important features for a special gradient system leads to heated debates at every

concept phase. But I think we've always found the best solution. Of course we're also thinking about an all-in-one solution that combines maximum performance with an open bore architecture – but my colleagues will solve that challenge after my time.

### What would you do if you could spend a month doing whatever you wanted?

This is a very relevant question for me: I'm going to be retiring in a couple of months, so I'll have to find an answer for a lot more than four weeks! And I must confess that I don't yet have a clear idea. I always went to work in the morning with good grace; sometimes I wasn't in the best shape when I came home, but I really never questioned

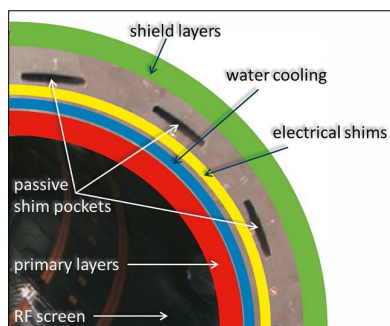
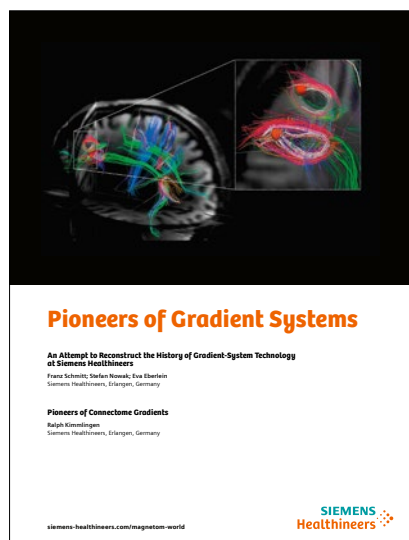
what we wanted to achieve. I enjoyed working closely with my colleagues in the gradient development team, and across MR as a whole. Our Business Line has an incredible drive – we work so hard to tackle challenges and solve them together. It's wonderful to have experienced so many successes together.

So maybe you can give me some suggestions for how to spend my retirement. Just no adult evening classes, cruises, or e-bikes, please!

## Further Reading

### Explore how Siemens Healthineers learned to make good gradients.

Read about the amazing technological advances from 1983, when Siemens Medizintechnik began to develop their first MRI product, the MAGNETOM; until today, when Siemens Healthineers provide MAGNETOM Prisma, MAGNETOM Terra.X<sup>2</sup>, MAGNETOM Connectom<sup>1</sup>, and MAGNETOM Cima.X<sup>2</sup> to the clinical and research community.



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<sup>1</sup>MAGNETOM Connectom is ongoing research. All data shown are acquired using a non-commercial system under institutional review board permission. Siemens Healthcare GmbH does not intend to commercialize the system.

<sup>2</sup>Work in progress. The system is currently under development and is not for sale in the U.S. and in other countries. Its future availability cannot be ensured.

<sup>3</sup>≥ 200 (±3% for design tolerances)