

FAQs on the seminar “Measuring without Electromagnetic Interference”

Many clients have inquired about this newly designed seminar. We would therefore like to include a set of answers to frequently asked questions around the same time as the seminar description.

- What differentiates this seminar from a typical EMC seminar?
 - We take a look at frequencies ranging from kHz to just a few MHz and cables of varying lengths. Laying cable between machines and control cabinets or even between different halls requires very well-thought-out grounding concepts. EMC seminars are typically designed for computer circuit board designers. Many of the topics covered under that topic are not relevant for measurement engineers. Hardware developers deal with frequencies in the GHz range and small distances in space, namely the distances seen on a circuit board.
- Does the seminar cover interferences in the control cabinet, also differentiating between direct and alternating voltage?
 - This will definitely be part of the course. In industrial environments, EMC in particular is an important issue in control cabinet construction. Both the theory and practice of this issue is dealt with in-depth.
- Are grounding concepts covered in the seminar as well?
 - Yes. Grounding concepts especially, as well as proper implementation of such concepts, are a basic prerequisite of EMC. All system types (TT, TN-S, TN-C, IT) are covered and their advantages and disadvantages are examined. You will also learn about the effects of a faulty grounding system yourself and be given the opportunity to eliminate the interference.
- Does the seminar focus on a certain measurement technology or does it apply generally?
 - We teach content that is generally applicable, for the electrical measurement of mechanical and electrical quantities as well as for facility electronics. A broad spectrum of measurement technologies is used in the practical part of the seminar. Our signal conditioners can facilitate up to 14 different input signals, ranging from voltage measurement through to CAN bus. As a market leader in strain gages, of course we also discuss strain measurements with Wheatstone bridge circuits. Here in particular, even small couplings can result in measurement errors, since the signals range from μV to mV .
- I’m afraid that it won’t be as in-depth as I need, since the premise “Fundamental Knowledge of Electrical Technology” seems too broad to me.
 - There is no need to worry. Many years of experience in nuclear physics coupled with a knack for conveying complex facts in an illustrative and practical way mean that our seminar instructors are predestined to be highly skilled discussion partners for all things EMC.
- Is it possible to do a rough assessment of the coupling and the disturbance variables beforehand?
 - In this seminar, we perform experiments to get a feeling for these interferences and therefore get very close to an estimate. It is usually impossible, however, to estimate interference beforehand, since we will only have a very imprecise idea of many parameters, such as shielding immunity and the speed at which current or voltage changes (di/dt or du/dt)

- What needs to be considered when laying long cables between industrial halls or on large structures (e.g. bridges)?
 - We will discuss the great challenges associated with grounding as well as the challenges of laying cable between machines and control cabinets.

- I am an industrial electrician working at an industrial company, so I don't necessarily work in measurement technology per se. Would the seminar also be helpful for my career?
 - Yes, absolutely.
The seminar is also of interest for electricians.
The circuits that cause EMC problems and the circuits influenced are often very different in nature. On the one hand you have a strong current and on the other, you have measurement technology or sensitive controllers. Especially in a large company, these tasks are performed by different employees.
As an industrial electrician, you have a strong influence on the electromagnetic environment in your company.

- How do cost pressure and/or corrosion affect various grounding concepts?
 - Various aspects of this question are addressed when we cover the technical seminar topics.