



# Electronics Centre in Halmstad - ECH

# About Electronics Centre in Halmstad – ECH

Electronics Centre in Halmstad (ECH) is a strategic effort created by Halmstad University in collaboration with regional companies to meet the challenge of digitalization. The integration of “intelligence” in ordinary things gives a substantial added value and a competitive advantage that represents an important opportunity for renewal of traditional Swedish Industry. The introduction of integrated electronics in traditional products requires a large transformation of competence, and completely new areas of knowledge must be integrated in old organizations. Electronics Centre in Halmstad offers resources like advanced electronic laboratory, prototyping facilities and EMC test facilities. Electronics Centre in Halmstad is also a venue for innovation, education and research in the field of electronics.

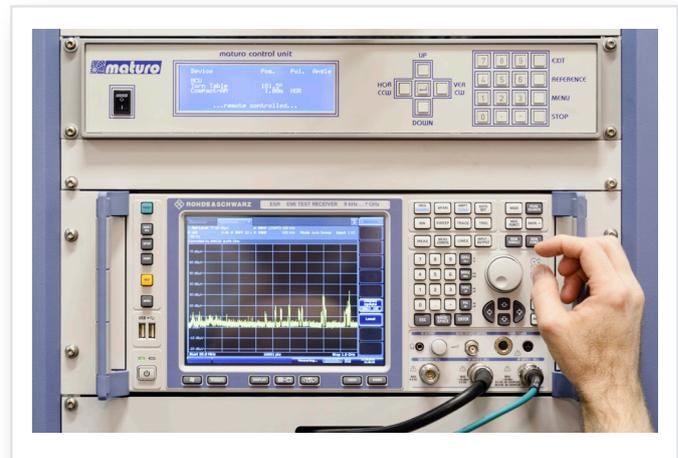
**Internet of Things (IoT)** is a network of physical objects, “things” embedded with electronics, software and sensors. Connectivity to provide greater value and service by exchanging data with the manufacturer, operator and/or other connected devices. Examples of application areas are: health technology, traffic and transport systems, process industry, high-performance signal processing, experience industry, security and surveillance.

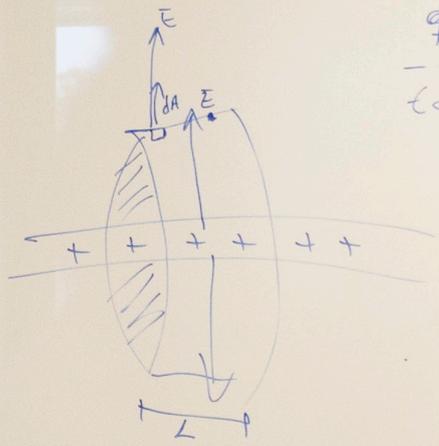
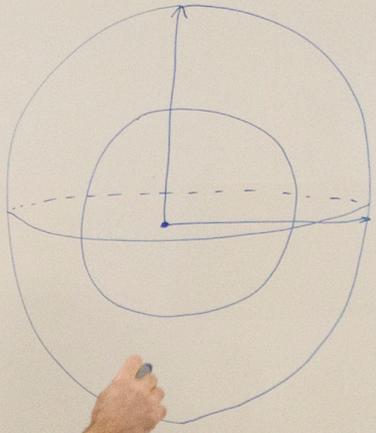


## Services ECH Testing and Measurements

The test site is state of the art including one 3 meter semi-anechoic chamber (SAC) and one shielded room (5.8m x 5.8m x 3.0m). The instrumentation and measurement systems offers good conditions to perform fast EMC/radio testing.

We can help you testing most products in accordance to the regulatory requirements of Europe and America. We also provide rapid pre-tests (pre-compliance), debugging, troubleshooting and performance optimization.





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Feynman

INTRODUCTION TO

## EMI/EMC Testing

Standard for conducted and radiated Emission tests:

- CISPR 22 (EN 55022 "European Standard")

Standard for conducted and radiated Immunity tests:

- CISPR 24 (EN 55024 "European Standard")

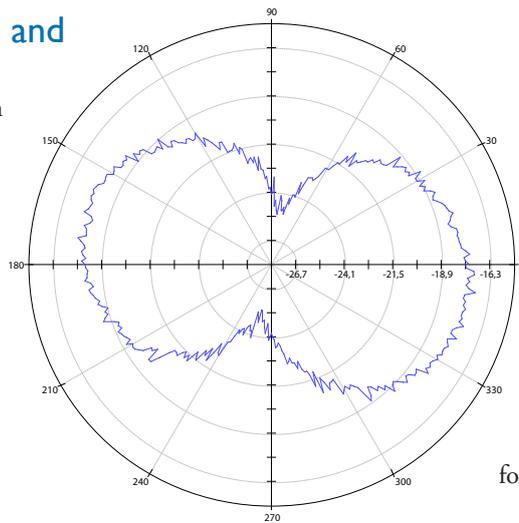
## Radio Devices (Wireless) Testing

The available equipment support all radio tests up to 6GHz, and it is possible to put in additional equipment to the test site for more advanced measurement/test projects. As examples the semi-anechoic chamber (SAC) is used for experiments with 66 GHz radar, Bluetooth, WiFi, ZigBee, and other short range radio equipment.

## Antenna Radiating Pattern and Impedance Matching

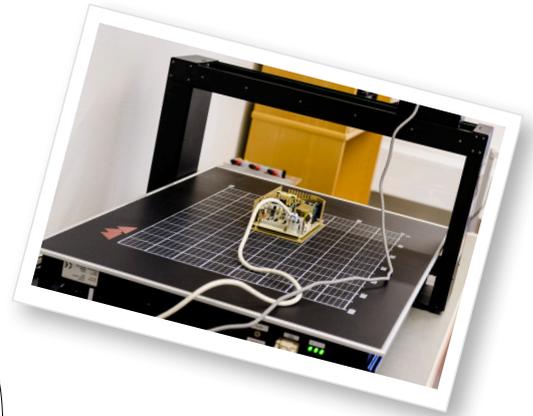
Our semi-anechoic chamber (SAC) can also be configured as a full anechoic chamber (FAC) by putting in ferrites and absorbents on the floor. This feature enables us to perform antenna measurements.

- Antenna patterns
- Antenna efficiency measurements
- Absolute gain
- Design and evaluation for antenna designers and embedded system integrators



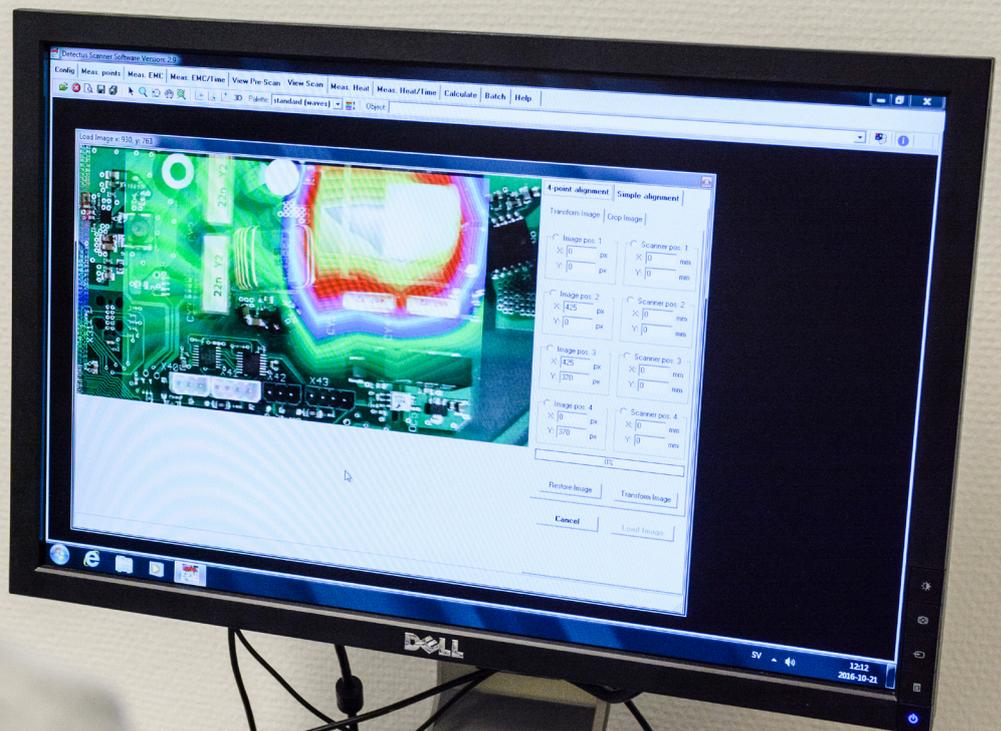
## Nearfield Measurement and High Resolution Heat Scanning

An EMC near field scanner is included in the test site facility and can be used to complement far field measurements, for example when sources for emission- and immunity problems are hard to identify on a product. Besides detecting and analyzing EMC/EMI behavior from the device under test, a High Resolution Heat Scanner gives possibilities to characterize heat distribution on the device.



## Climate chamber

Verify the resistance of your device to environmental influence of temperature. For all radio enabled electronic devices and products there are regulatory demands for tests of temperature influence.



## ECH Contract Education – advanced education and training

Electronics Centre in Halmstad (ECH) is part of Halmstad University and can by that affiliation provide a broad spectrum of contract educational and training initiatives for industry and other actors. The content of courses and seminars offered by ECH are reflected by a mixed experience from academia and industry. **ECH contract education** provides everything from seminars in broad technology areas to customized courses in specific and very narrow subject areas. **ECH contract education** can also provide advanced tail ordered education for industry in the form of industrial PhD programs, and research preparation and orientation programs for small and medium sized companies (read more about **Prepare** and **EISIGS** in info box). These programs are especially designed for long term transfer of qualified knowledge and unique competence to small and medium sized tech companies.

### Prepare

Prepare is a program to increase the understanding of advanced research and enable more people in SME companies to qualify themselves for PhD studies. A one year prepare program include seminars, courses and other activities that aim at preparing as well the PhD student candidate as his/her organization to be a recipient and utilizer of state of the art research results. An outcome of the year can also be a smaller research- or development result for a company specific product.

### EISIGS

The embedded and Intelligent Systems Industrial Graduate School (EISIGS) is training doctoral-level researchers that have both technical depth and a broad understanding of industrial requirements, the innovation process and which innovations that can lead to business opportunities. EISIGS is aligned with the largest research environment at Halmstad University, Halmstad Embedded and Intelligent Systems Research (EIS) as well as with the University's major research initiative, Research for Innovation. An important feature of EISIGS is that it builds strong long term bonds between academia and industry by aiming for efficient and focused cooperation on the training of new, independent and highly qualified researchers (PhDs) that understand, advance, and champion embedded and intelligent systems.

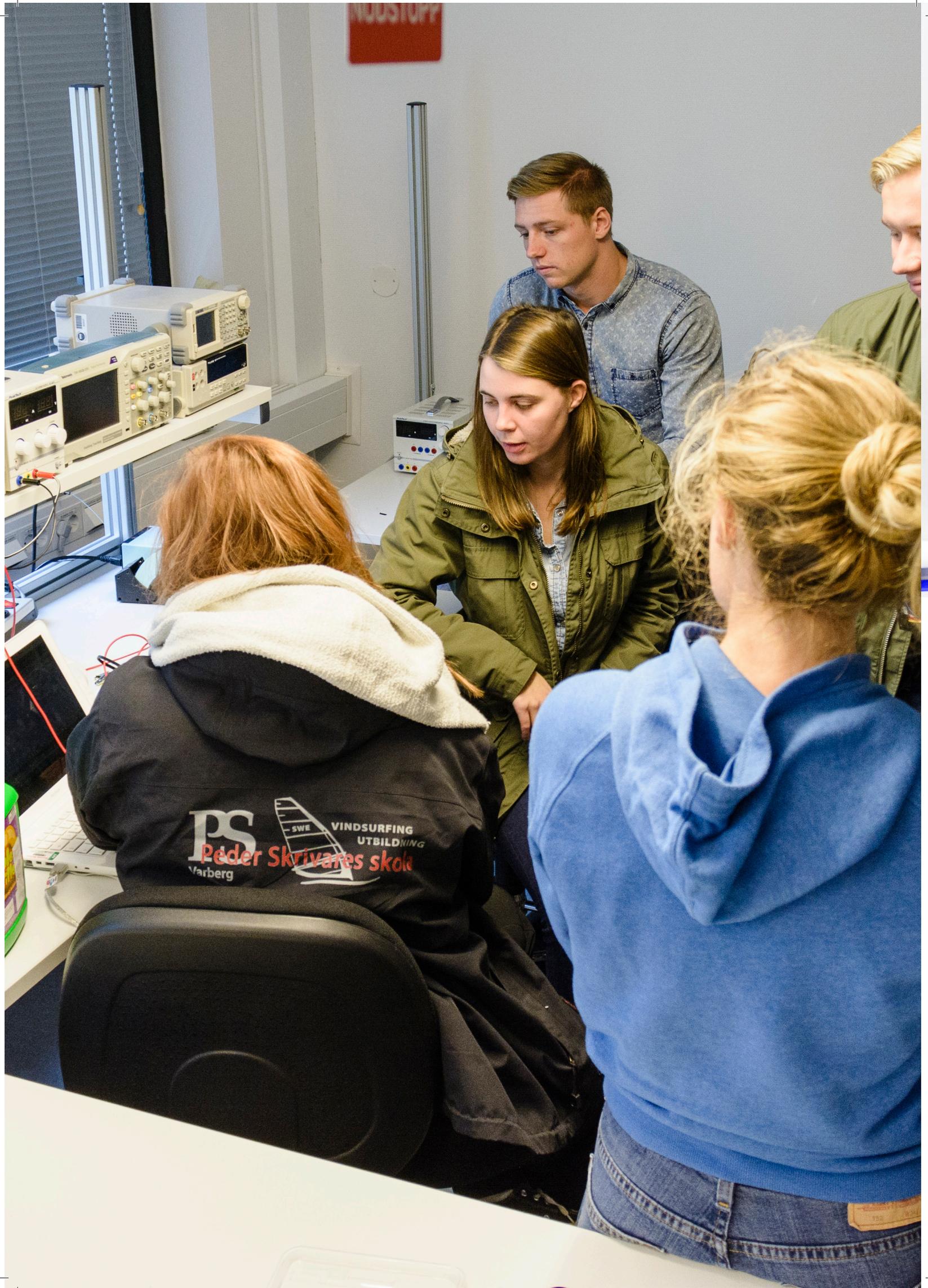
## ECH Contract R&D – applied research

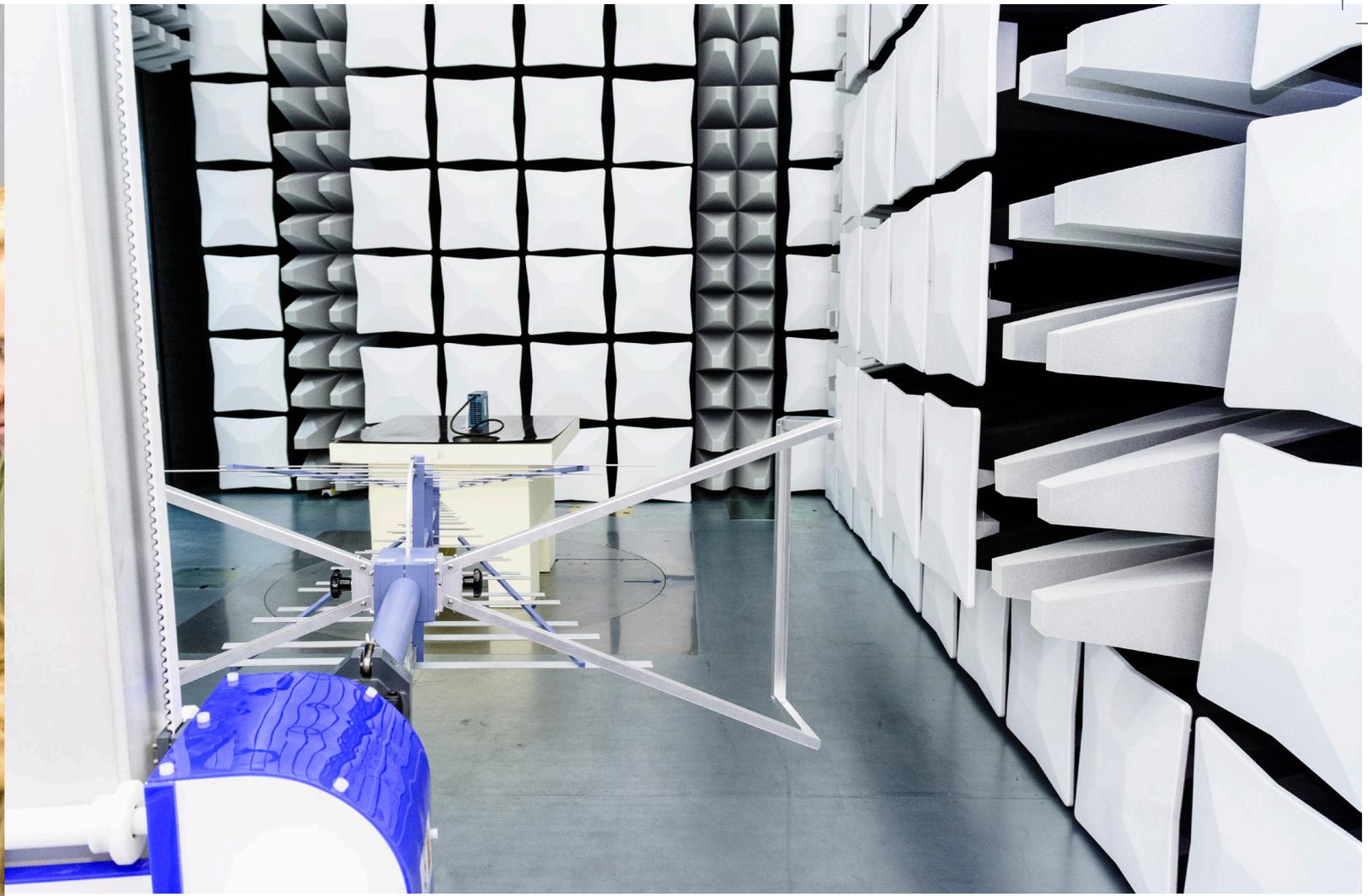
**ECH Contract R&D** is a service that provides advanced consulting and applied research. This is often conducted in the form of developing prototypes and technical consulting in product development and tests. Areas of expert competence are: electronic building practice, low power C-MOS design, remote sensing (RADAR systems), radio electronics and communication systems, Internet of Things (IoT), electromagnetic interference (EMI) and electromagnetic compatibility (EMC). Projects performed by **ECH Contract R&D** span from really small projects, a couple of hours of measurement or tests, up till several thousands of man-hours. Small projects are often pure contract R&D projects while large R&D projects often are organized as collaboration projects with external funding from research agencies or other funding sources.

## ECH R&D space – On site localization

**ECH R&D space** provide a collaborative environment were startups, small and medium sized companies in intensive research and development phases have the opportunity to localize project groups or entire company on site. **ECH R&D space** offers resources like fully equipped office spaces with infrastructure, access to electronic laboratory and workshop for product prototyping. **ECH R&D space** is an environment set up to promote research and development of innovative tech solutions in the area of electronic systems. The aim of **ECH R&D space** is an open innovation arena that promotes knowledge aggregation and development of innovative tech solutions through collaboration.







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