



UNIVERSITÀ DEGLI STUDI DI BRESCIA

Dipartimento di Ingegneria dell'Informazione



Dottorato di Ricerca in Ingegneria dell'Informazione

PhD Program in Information Engineering

**Monday May 18, at 14:30
Sala Consiliare - Ingegneria**

Professor **Thilo SAUTER**

*Head of the Center for Integrated Sensor Systems
Danube University Krems, Austria*

will give the following talk:

PCB-based Thermal Flow Sensors for Air Conditioning System Monitoring

Air conditioning systems are among the major energy consumers in buildings. Energy-efficient operation of AC systems is an important step towards better energy management in building automation, but requires efficient monitoring of the energy flows within the AC installation, which is currently still difficult because of the lack of appropriate equipment. Measurement of air flows is therefore essential, and robustness, ease of use, and cost are important issues calling for simple and effective sensor design. The talk will present ongoing research towards a distributed data acquisition system for large-scale AC systems based on low-cost calorimetric flow sensors implemented by means of commercial-off-the-shelf printed circuit board technology, where heating and temperature sensing elements are made from standard copper traces on a flexible PCB substrate. Simulation studies and experimental data will be presented that demonstrate the basic viability of this technological approach, even if it might entail some performance penalties. Furthermore, some practical issues such as optimal placement of the sensors in air ducts will be discussed.



Thilo Sauter received his Dipl.-Ing. and doctorate degrees in electrical engineering from the Vienna University of Technology in 1992 and 1999, respectively. From 1992 to 1996 he was a research assistant at the Institute of General Electrical Engineering, working in the area of programmable logic and analog ASIC design. From 1996 on, he has been with the Institute of Computer Technology, where he led the factory communications group. From 2004 to 2013, he was also founding director of the Institute for Integrated Sensor Systems of the Austrian Academy of Sciences. Since 2013, he is head of the Center for Integrated Sensor Systems at the Danube University Krems. In 2014, he obtained the habilitation (venia docendi) for the field of automation from the Vienna University of Technology and became Tenured Associate Professor. His professional expertise and research interests include IC design, smart sensors, and automation networks with a focus on real-time, security, interconnection, and integration issues. He is AdCom member of the IEEE Industrial Electronics Society and the IEEE Sensors Council. Furthermore, he is author of more than 200 scientific publications and Associate Editor of three IEEE journals. In 2014, he was elected IEEE Fellow for his contributions to synchronization and security in automation networks.

INFO: Prof. Vittorio Ferrari (vittorio.ferrari@ing.unibs.it)