

TECHNOLOGY CLUSTER ELECTRICAL ENGINEERING TECHNOLOGY (ESAT)

Reliability for Mechatronics and ICT



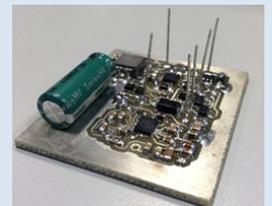
EMC, EM-modeling, thermal & mechanical behavior, antenna measurement, PCB design, signal integrity, HALT testing, power quality.

Infrastructure: EMC shielded rooms: anechoic chamber, partially lined screened chamber and reverberation chamber, measurement and test equipment for the most common EMC emission and immunity tests, Several measurement set-ups to determine the Shielding Effectiveness of material, gaskets and housings, HALT chamber, Climate chamber and shaker

Wireless & Mobile Communication

Indoor localisation, context awareness, secure wireless sensor networks, visible light communication, wireless power, energy harvesting, embedded design for mobile communications, RFID, M2M (Machine to Machine), IoT (Internet of Things), multi-touch multi-user interactive wireless information panels

Infrastructure: Agilent 4285A precision LCR-meter, Tektronix Logic Analyser TLA600, Rhode & Schwarz ZVL3 Network Analyser



Energy and Automation



Stand-alone (hybrid) power systems, renewable energy sources, rational energy consumption, electrical safety, photovoltaics, EV Charging systems, pedelecs and e-bikes, Industrial data communication, Profibus/ Profinet, model predictive (embedded) control.

Infrastructure: Test set-up for outdoor PV measurement according to standard 61853-1, variable speed Genset 50kVA, hybrid genset 25kVA with intelligent battery pack, test set-up for EV charging infrastructure, 5kW test platform for smart-grid applications, scale model for tests on high voltage protection system, protocol independent setups for Ethernet en RS485, detailed diagnostic and logging facilities for Profibus DP and Profinet systems

Light&Lighting

Optical characterisation of objects and light sources, appearance and visual perception, LED and OLED technology, indoor lighting, impact of lighting control on energy savings, optical design of luminaires, optical modelling of fluorescence and scattering, ray tracing

Infrastructure: integrating sphere, spectrograph, calibration standards, NF goniometer, BSDF set-up, luminance and colorimetric camera, power analyser, ray tracing software, perception test room



Embedded & Artificially Intelligent Vision Engineering

Computer vision, AI, embedded systems, GPU, FPGA, industrial automation, product inspection, traffic monitoring, eye tracking, microscopic imaging, surveillance, land surveying, 3D photogrammetry, real-time recognition, active blind spot camera, model-Based HW/SW co-design, vision-based automatic wheelchair navigation, OpenCL



Advanced Integrated Sensing lab

Multimodal sensing, chip design, radiation hardening, microwave sensing, audio signals, acoustic modeling, biomedical signal processing, machine learning, AAL, EEG

Knowledge Centre for Energy

Rational energy use in buildings and greenhouse cultivation, nano-grids, demand side management, renewable energy sources (PV, wind), smart grid

Embedded Systems & Security

Embedded security on FPGAs and low cost processors, secure digital ASICs, secure reconfiguration of FPGAs, secure licensing of hardware IP, secure low-cost sensor networks, EDA tools for cryptographic hardware & software, remote learning platforms for FPGA

e-Media – Human Computer Interaction & Serious Gaming

Technology for human computer interaction, physical computing, tangible & playful interaction for physical therapy and rehabilitation, soft user interfaces and e-textiles, gesture and activity recognition with motion sensors and 3D cameras, EMG and ECG data analysis, wearable and ambient sensing, single board computers



EMC-RF-PCC (EMC - Radio-Frequencies & Product Certification Center)

ISO17025 Accredited Laboratory for testing, calibration, certification and research in EMC, Mechanical and Climatology testing and Electrical Safety.

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The research groups of the Technology Cluster Electrical Engineering Technology (ESAT) are active on the Technology Campuses in Diepenbeek, Geel, Ghent, Group T Leuven, Ostend and De Nayer Sint-Katelijne-Waver. In 2017-2018 the research of Campus Ostend will move to a new Campus in Bruges.