

Power Electronics, Functional Integration

Topics



- Efficient battery charging technologies
- Energy efficient vehicle grids
- Mechatronic drives and integration technologies
- Efficient control, power electronics, packaging and converter design
- Characterisation and application of power semiconductor devices
- dc-dc-converter, dc-ac-converter



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Power Analyzer / Digital Power Meter

Yokogawa WT 3000

- highly accurate power and efficiency measurement

Specification:

- basic measurement accuracy: 0.01 % of measured value
- frequency range 0.1 Hz bis 1 MHz
- 4 input channels
- signal analysis, FFT-analysis, flicker analysis, cycle-by-cycle meas. Function
- Storage of sampled signal data
- interfaces: Ethernet, RS-232, USB, GP-IB



Source: Yokogawa

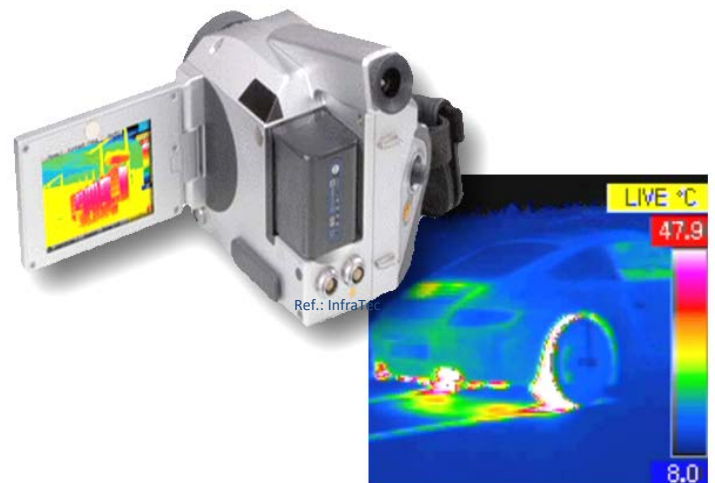
Thermography System

InfraTec VarioCAM hr Inspect 680 S

- analysis of surface temperatures in dynamic and static processes

Specification:

- resolution (detector) 640x480 pixel
- spectral range 7.5...14 μm
- meas. range -40...1200 $^{\circ}\text{C}$
- thermal resolution <0.03 K
- recording with 0.25...60 Hz



Source: InfraTec



Electro-chemical analysis equipment

- test of battery systems



Source: Vacuum atmospheres BioLogic und Comsol

Electric machines, drives and power electronics lab

- E-machines/drives test benches
- vehicle grid simulator
- power electronics test benches
- concentricity analysis
- digital power analysers
- dynamic electronic sources and loads for experimental simulation of effects in vehicle grids
- battery tester
- test setups for characterisation of power semiconductor devices under lab and climate conditions

Specifications:

- high voltage source 3kV/10A
- low voltage source 15V, 3000A
- 2 rotating ac-converters 10-100Hz, ... 920V, 100kVA
- 2 rotating dc-converters ... 460V, ... 125kW
- bi-directional dc-source up to 1.200V
- 3 bi-directional dc - sources 30kW, up to 750V
- bi-directional, high-dynamic dc-source 40kW
- 1~ac-source up to 6kHz (sinus), 5kW
- passiv loads





Flexible analysis system for the static characterization of power electronic components

Keysight Technologies

B1505A Power Device Analyzer/Curve Tracer

Specifications:

- Compliant with IEC 61326-1 / EN 1326-1 and IEC61010-1 / EN 61010-1
- CE certified
- Power range: 500A/3kV
- Measurement of on-state, forward and transfer characteristics of power semiconductor devices
- Measurement of forward and reverse blocking characteristics of power semiconductor devices
- Measurement of input, output, reverse and transfer capacitances of power semiconductor devices biased up to 3kV
- Measurement of gate-charge-characteristics of e.g. Power MOSFET, IGBT for devices rated up to 500A/3kV
- Measurement of parasitics of packages and circuit carriers (PCB, ceramics)
- Integrated main processor based on Windows 7, HD drive and GUI

