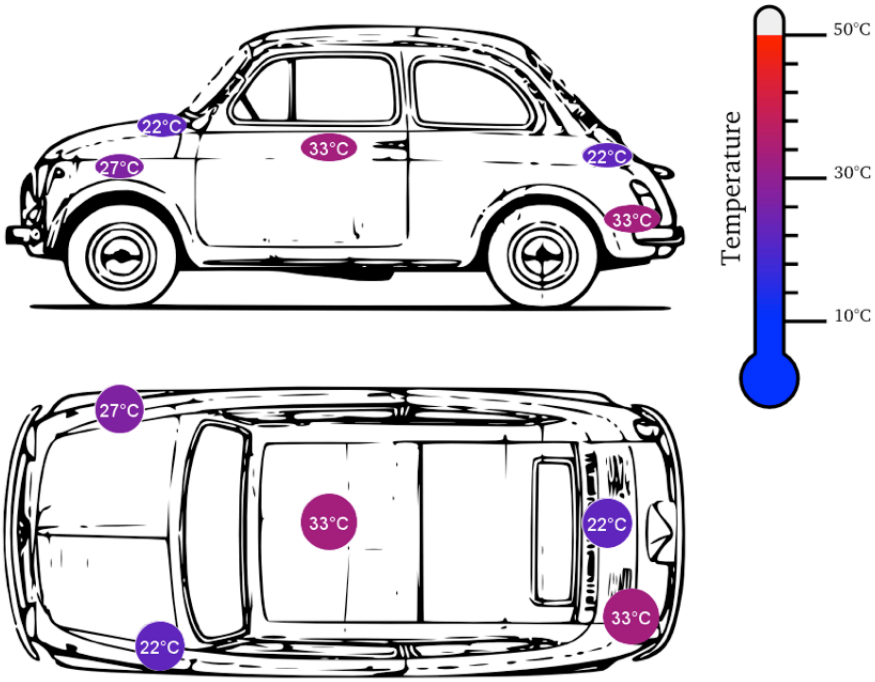
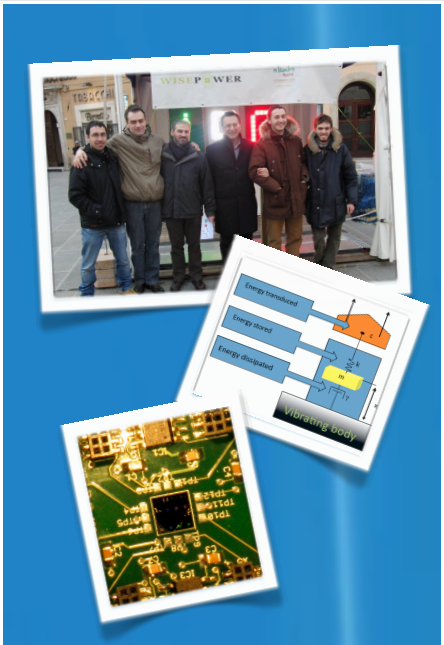
WISEPOWER

HAT - AUTOMOTIVE

Shaking, rattling and rolling: **Alternative energy** sources for wireless **ICT devices**



Communication module by Texas Instruments
Transceiver TI CC2500 2.4 GHz
Microcontroller TI MSP430F2274



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Wisepower srl presents

Hybrid Autonomous Transceiver (HAT)

for automotive applications

HATs are **energetically autonomous** devices that can be associated with a wide variety of sensors in order to measure and transmit physical quantities to a central control unit.

In the demonstrator presented here we have a number of HAT devices equipped with temperature sensors for monitoring the temperature distribution in a car.

These devices can be simply placed in different locations inside a car and do not require any wiring for powering or signal transmission. This allows for an easy repositioning in different locations if needed. The HAT-temperature sensors obtain the energy necessary for their functions both form ambient light and from car vibrations (during car motion). This energy is employed to power a temperature sensor, a computing element and a radio transmitter. The temperature data acquired by the sensors is elaborated onboard and transmitted to a central unit. The central unit (here represented by a simple tablet PC) collects the information from each HAT device and displays the resulting temperature map of the car.

The vibration energy is harvested thanks to the exclusive WISEPOWER Technology™ based on an innovative use of non-linear dynamics of piezoelectric oscillators (patents WO/2008/099437 and US2010207491) inherited from the long-standing research experience developed with NiPS Laboratory at the University of Perugia.

Thanks to this technology the efficiency of the energy conversion mechanisms is significantly increased above 300% compared with traditional linear piezoelectric oscillators.

On display
at Stand 17 at FET'11
Budapest, 4-6 May 2011