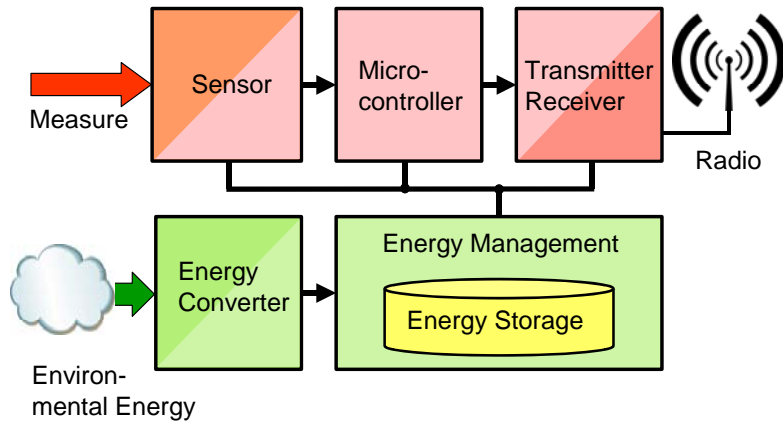


# Investigations on Performance of Components for Wireless Sensor Systems with Energy Harvesting



In summer term 2011 students of the master course Mechatronics investigated components of following manufacturers for building wireless sensors with energy harvesting: EnOcean (EO), Micropelt (MP), Mide (ME), Peltron (PT), Powercast (PC), Texas Instruments (TI).

Energy Source	Energy Converter	Energy Management	Microcontroller and transmitter	Conclusion: Minimal cycle time of the wireless sensor
Heat	TE-Power NODE (MP)	STM 110 (EO)		0,8 s, start of communication at $\Delta T = 15^\circ K$
Heat	Peltier Element PKE 128 (PT)	ECT 300 und STM 110 (EO)	STM 110 (EO)	1 s at $\Delta T = 1^\circ K$
Vibration	Piezo Elem. Voltage V21BL (ME)	STM 110 (EO)		about 2 s at stimulation with 83 Hz and accelerat. 0,1 g
Light	Solar cell and thin-film battery in kit eZ430-RF2500-SEH (TI)		in kit: MSP430 und CC2500 (TI)	5 s at light with only 320 Lux. 0,7 s at 500 Lux.
Radio Signals	Harvester P2110-EVB (PC)	P2100 (PC) and STM 110 (EO)	STM 110 (EO)	1 s near to a transmitter 868 MHz, 500 mW

All measurements were taken accurately, but we can not guarantee these values.