

Access provider – Holst Centre / imec - Mario Konijnenburg-imec

Energy Harvesting - Access description

Access to Wireless Power Transfer design expertise for small receivers to charge wireless sensor nodes up to ten meters distance.



Technical offering

- Transferring power requirements in WPT characteristics
- Antenna selection, design, miniaturization and optimization
- Rectifying circuit design and power conversion efficiency optimization
- Overall WPT receiver optimization
- WPT transmitter antenna design

Main equipment

- CST Microwave Studio full-wave electromagnetic simulation software
- In-house developed diode analysis software
- Several State of the Art Vector Network Analysers and Spectrum Analysers
- Several State of the Art Signal Generators

Typical applications

Autonomous wireless sensor nodes – for home sensing and automation - are equipped with (super) capacitor power supplies. These capacitors are (semi-) continuously charged from a base station that is up to 10 meters distant from the node. One base station can power a multitude of sensor nodes within a 10 m radius.

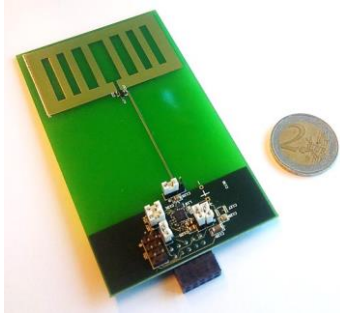
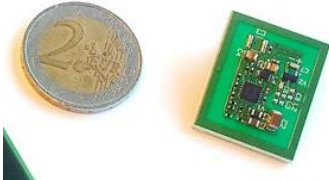
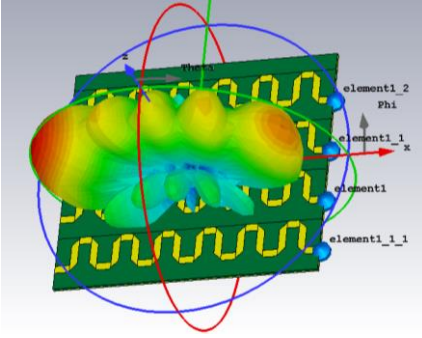
Case study

An SME or research team need to power a network of low-power wireless sensors but cannot use cabling or batteries. This can be due to retrofit specifications or harsh (industrial) environments. ENABLES will provide design and prototyping facilities for a radio wave powered solution.

Responsible

Prof. dr. ir. Hubregt J. Visser



		
<p>868 MHz / 915 MHz radio wave harvester</p>	<p>2.45 GHz radio wave harvester</p>	<p>CST Microwave Studio full-wave electromagnetic simulation software</p>
<p>Keys specifications</p>		
<ul style="list-style-type: none"> • Most efficient, most compact harvester ever reported (2014) • 100 mW, during 1 ms, every 10 s • 6 cm x 12 cm 	<ul style="list-style-type: none"> • Smallest harvester • Shielding ground plane • 24 mm x 20 mm 	<ul style="list-style-type: none"> • Simulation software • Know how in using • In house developed analysis tools for all components of WPT