



# Inductive tyre sensor

## power supply and communication

### Problem

Tyres represent the most important subsystem for lateral, longitudinal, and vertical vehicle control. All relevant forces and torques besides aero dynamical ones are transmitted between the road and the car by the tyres. Sophisticated tyre sensor systems are developed for delivering a large amount of information on the tyre operation state including forces, tyre-road friction, wheel load, length of tyre contact patch, aquaplaning, road surface conditions. The tyre sensor system and communication require a relatively large electric power for operation.

### Invention

VTT has developed an inductive powering system for devices in a rotating wheel. The system allows a continuous powering up to 0.3 W and communication in the licensefree bands of 6.8, 13.56 or 27 MHz. (Patent pending).

### Solution

The inductive power supply consists of four partly overlapping receiver coils embedded in the tyre, optimised voltage rectifiers, as well as feed coil, amplifier and oscillator in the vehicle chassis. The substantial continuous power delivered into the tyre allows equipping the tyre or the wheel with a number of sensors, performing signal processing in the tyre and communicating the sensor data with a radio transmitter. The inductive power system lends itself also to the communication; in the same way as in 13.56 MHz inductive radiofrequency identification systems.

VTT has a working prototype of this invention.



### Why partner with VTT?

#### 10 reasons for technology partnering with VTT

1. Key factor in Finland's success story with a track record to prove it
2. Licensing and co-venturing opportunities
3. Portfolio of more than 1,000 patents and inventions
4. New business and product concepts based on strong IP and world class research
5. Combined experience of more than 2,000 motivated researchers in eight focused areas of technology
6. Active member in hundreds of scientific & business communities
7. Excellent track record as coordinator and partner in EU projects
8. Collaboration with TOP 50 R&D companies in Finland
9. Global R&D partnership with 50 Fortune 500 companies
10. Market driven multi-disciplinary solutions

### Additional information

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