

Wireless Capabilities to an IMS Portable Infrasonic Array

A Portable IMS Infrasonic Array was installed in Romania, in late September 2016, in a remote mountain area. The array is composed of four elements arranged in a stellar shape. Each element includes: equipment box with digitizer and microbarometer and power supply (charge controller and batteries); wind noise reducing system, connected to the microbarometer in the equipment box; temperature sensor and GPS antenna; external solar panels with mounting frame. In order to improve the collection of sampled data we proposed equipping this array with a wireless sensor network (WSN) operating in the sub 1GHz band. The sub 1GHz band (868 MHz for Europe) is an unlicensed ISM band and was selected for the right balance between distance and data throughput. The communication protocol selected was ISA100.11a (IEC62734) due to its industrial characteristics such as determinism, reliability, security and the possibility of star and mesh topologies. The WSN technology allows the retrieving of the data which is stored by each digitizer at any time of day or night and regardless of weather conditions or the future locations of sensors, bringing a significant improvement to the activity of data collection.

Primary author: RATIU, Ovidiu (Control Data Systems SRL)

Presenter: RATIU, Ovidiu (Control Data Systems SRL)

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