ste
The micro.sp technology

"CONNECTING INNOVATION FOR INTELLIGENT WIRELESS"

Ste
Engineering Department
2014

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Link margin budget, extreme low power consumption and high peak power are among the requirements of a robust communication: Micro.Sp technology becomes a must when the wireless sensors are powered by small lithium batteries and the management of the energy delivered to the system is critical.
The Micro.Sp approach offers the highest grade of integration and the most advanced solution for a cost effective approach to the business, contributing to reduce installation and operational costs.

Soon after having introduced Micro.Sp concept, STE has increased its penetration of market sectors such as automotive and home appliances High level of integration, extreme energy efficiency and solid know-how in software engineering are the key factors which consolidated STE position on the market.

MICRO.SP TECHNOLOGY

CUBY

Cuby: a new gateway concept

Cuby is a new STE proprietary multi-technology concept.
With just few easy steps CUBY is able to create an effective sensors network at high energetic efficiency. A wide range of different sensors can be mounted within the same system: low consumption MicroSp, 169Mhz Systems, Wireless M-Bus,Zig-Bee sensors as well as Bluetooth.
Thanks to wi-fi connection Cuby becomes a hub of the internet network.
Cuby it's a new way of thinking wireless.Thanks to Cuby we can today focus on the application itself better than thinking how to technically achieve it.
Cuby is able to autonomously all the data exchange process among devices.
Thinking about new solutions and applications both B2C and B2B will be just a piece of cake. The system is supplied along with a web-server software which enables final user to manage all linked devices. You can also constantly check-up sensors status as well as manage alrams and events.
Cuby is an outstanding starting point to kick off your idea!

The Sp.Net: network evolution

Sp.net is the new multi-technology sensors network produced by STE. Thanks to sp.net you will be able to create your own wireless infrastructure with just few easy steps while saving your money. Sp.net can include different solutions such as low-consumption MicroSp systems, ZigBee sensors, Bluetooth and WiFi which can be managed just by one fully integrated Gateway perfectly equipped to handle everything at its best. With sp.net you will be able to control any kind of sensor within any environment. A wide range of applications which go from small home sensors to bigger urban systems as well as more sophisticated use such as checking wheel pressure through a sensor placed into the tyre which sends data directly to your smartphone. Any object, no matter whether big or small, can be part of your sp.net network.

sp.net
wireless sensors

Micro.Sp Alliance

Micro.Sp: the enabling technology for a Greener and more Sustainable world.
The Micro.Sp Alliance develops and promotes a breakthrough in Energy Efficient Wireless Sensors (EEWS): based on the extremely advanced Micro.Sp technology, the new standard aims to contribute to enable the market of "Internet of Things" (IOT) and smartphone based applications as well as to monitor and control objects in the network.
Micro.Sp alliance delivers a new method of creating wireless sensors by using standard components normally available on the market, thus supporting the widespread of cost effective solutions for a large spectrum of applications.
The alliance's vision is to offer the highest grade of integration along with the most advanced solution for a cost effective approach to the business, contributing to reduce installation, operational costs and to reduce the environmental impact.
We believe in a greener and smarter world and our mission is to offer a new technology for everyone and everything.

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RF pulses

Short (2-3 µs) RF pulses can be employed to transmit data in applications where an ultralow energy consumption is of paramount importance. The data are modulated into the transmitted message employing PPM (Pulse Position Modulation) techniques. One of the major limitations of current active wireless sensor devices is that they are battery powered.
This means that they either have to be recharged or replaced periodically and that the energy delivered to the system could be relatively low.With an extraordinary high RF peak power and the extremely low mean current consumption, which are necessary conditions to design a reliable and robust RF link margin budget, the SPX machine contributes to the technology development across a multitude of areas of applications such as automotive, medical, security and logistic. And naturally leading to ubiquitous and energy efficient wireless sensors anywhere.

A new way to thinking wireless

The new wireless Micro.sp® technology for its robustness, flexibility, economy and for the intrinsic ultralow energy absorption it is particularly proved to be valuable for products related to areas of application such as Internet Of Things applications, Automotive, Home appliances sensors, Wireless sensors network, Smart City, Home building automation and many other. Micro.sp® opens up an innovative and previously unthinkable approach to wireless energy efficient low power sensor devices.

The Key concepts of Micro.Sp® Technology:

> Ultralow energy consumption.
> Low economic impact.
> High flexibility enabling remote monitoring of any type of sensors.
> Active RF remote detection.

a new tire revolution

SENSING A WORLD OF THINGS

Ste TireTech Department

STE TireTech department, part of the STE holding, is the higly qualified engineering branch dedicated to innovation in data-telemetry for tire and carcass applications. Since it was established, STE tyretech main core business is the engineering and development of energy efficient wireless sensors applied to carcass. An innovative method of data transmission and radio-wave propagation in-carcass was recently demonstrated, which promises to lead to more energy-efficient and smaller form factor ITS devices.

A new tire revolution.

Energy efficiency and integration in autonomous wireless sensors matters greatly. STE is leading the pace of innovation: a technology that serves future trends in sensing a world of things is now available. And this "new tire revolution" means bringing intelligent innovation to a world where energy efficiency makes the difference: micro.sp™ is the innovation that makes the tire technology intelligent.

Aiming to redesign the clouds of wireless sensors through the most innovative approach to energy efficiency.

micro.sp

When moving from standard packaging attached to tyre stems to a mechanical complex inside the tyre carcass, the form factor becomes a key feature:
STE, recently designated as R&D partner of one of the world's largest tyre maker, is committed to develop an innovative method of data transmission applied to tyres.
According to recent experiments conducted by STE on radiowave propagation in carcass, a new PPM modulation scheme has demonstrated an extremely higher energy efficiency along with a greater RF robustness.

TPMS
TIREPRESSURE

Pervasiveness of intelligent wireless is having a tremendous impact on the way we live our life, conduct businesses,communicate together, and many other areas of life.
This market pervasiveness is increasingly demanding innovations able to support new trends on the heterogenous market.

home appliances

Wireless SENSORS
LOW CONSUMPTION

AUTOMATIC METER READING

ACTIVE RFID & ACCESS CONTROL

HOME APPLIANCES

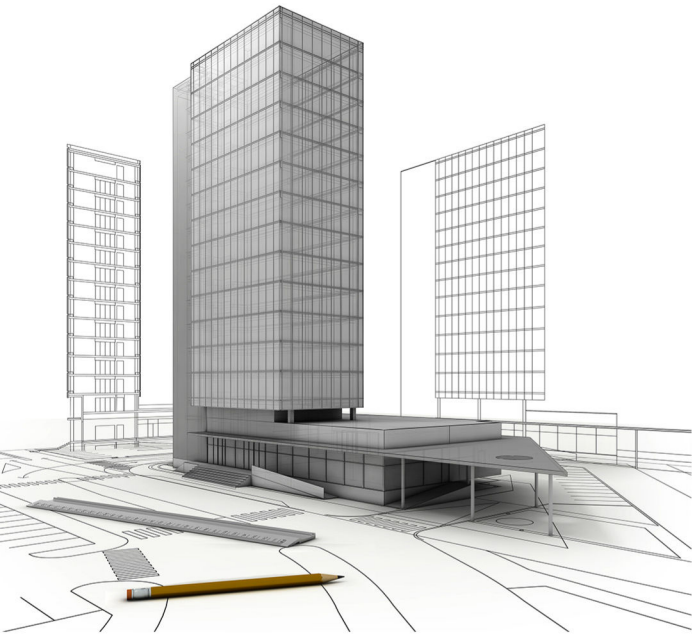
INDUSTRIAL

HEALTH CARE

SOCIAL ALARMS

AUTOMOTIVE

micro.sp alliance



Inventive step

STE research demonstrated that the success of the clouds of autonomous wireless sensors depends on the reduction of the average energy consumption: It must be of at least two orders less than existing approaches and this means to move from the scale that ranges in mA down to a scale that is measured in nA.

And a more efficient PPM scheme seems to be the future step in WSN: the next decade of technological progress will witness a generational change in the way to approach system level design, with a natural replacement of traditional OOK, ASK or FSK modulation scheme in favour of a more reliable and energy efficient PPM modulation.

This will guarantee efficiency not only in energy consumption and form factor integration, but also in facilitating the migration from standard battery cells to more efficient, reliable and compact energy harvesters.

Innovation

Due to its widespread effect, innovation is an important step for the progress; and when an innovative idea requires a better business model, a real experimentation approach increases the chances of market success.

Since when it was established as a valuable R&D in radiofrequency, STE is aiming to help spur new applications and innovations that can lead to a better market growth in areas such as industry, transportation, medical, engineering and logistic.

STE focuses on the added values of certain products, processes or services with attention to research and development of "breakthrough" and patent applications in RF technology.

Market growth

Soon after introducing micro.sp® concept, STE has increased its ability of penetrating market industries in sectors such as automotive and home appliances.
Key factors that has allowed STE to consolidate position in the market are referred to highest level of integration, extreme energy efficiency and solid know-how in software engineering which correspond to leverage of economical savings today seen as the purest challenge.