

# Technology offer

## Energy autonomous smart window with integrated contactless NFC technology

### Field of use

Access control, remote control, sensor systems and smart windows

### Current state of technology

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### Patent status

Patented

### Publication

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### Reference

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### Background

Windows and doors are important components of every home. The basic function of doors is to enable access to the interior of a facility, flat or room, while windows preliminary provide natural lighting and ventilation of the interior of a facility, flat or room. Both doors and windows however also present a particular security challenge, because they enable potential access also to undesired persons. Another challenge presented by windows and doors are energy losses of the building. It is therefore important to find a compromise between optimal ventilation and acceptable energy losses.

### Description of the invention

The core of the technology is a procedure that enables remote access control and management of smart home windows and doors with the use of a mobile phone, tablet or a web interface. The system has an autonomous power supply, provided with a photovoltaic cell. Alternatively it may be connected to a regular AC power supply. The system consists of a smart window with in-built control electronics and central control unit and is specific by the fact that it enables wireless management and remote smart window sensor and actuator control via user's mobile phone, equipped with a data communication interface and a special mobile application and/or through a web browser running on any device. The technology may be used in various applications in home automation, such as smart windows and doors. The researchers have yearlong experiences in developing home automation solutions as well as energy efficient gadgets. With the help of IT experts at the University of Maribor, they were also able to develop a proper software solution, which supports and enables the technology.

### Main advantages

Unlike other technologies that are addressing the same technical problem as it enable a range of additional smart window functionalities, such as various monitoring sensors, window position monitoring, alarm functions support and window components control. Additionally it enables direct user interaction with the use of NFC technology through sound modulated data. The energy autonomy and the ease of use allow for a quick integration of the system into existing window frames. Due to low cost of its production the smart window can replace regular windows in a larger scale than it could ever be imagined.