

## **A PRESENCE SENSING MAT**

### **DESCRIPTION OF THE INVENTION**

The invention of a presence sensing mat defining a system comprising two separate and distinct structures which together can detect the presence of an object or a person placed or standing on the mat by measuring variances in the electrical capacity exerted on the condenser through the elements in the mat structure and the presence sensor itself.

The objective of the invention is to create a mat with a conventional appearance and measurements and which performs its function in the normal manner, but which incorporates a presence-sensing device.

The mat has two layers of conventional fabric, an upper (1) decorative layer and a lower (2) forming the backing. Between the two layers is a structure comprising a condenser made from a dielectric insulating layer (3) impregnated on both sides with latex rubber conducting layers (4). This sandwich layer forms a condenser whose variations in capacity originate from tiny differences in the distance between the conducting layers (4) when subjected to the weight of an object or person. The software transforms the variance into a signal to indicate this presence.

### **COMMERCIAL APPLICATIONS**

The technological development covers several different areas, the most important of which include textile floor coverings, electronics and ICT, there is a wide range of applications among these and related sectors.

The technology will be useful in:

- Home security
- Public access control
- Crowd control
- Monitoring event attendance
- Maximum attendance numbers
- Domotics (smart homes): front door bells, water leaks, lighting, etc.
- Teleassistance: to monitor whether an elderly person has suffered a fall or is motionless
- Entertainment: man-machine interface
- Other future developments

These applications would be of interest to companies involved in:

- Security
- Statistics
- Trade fairs, hotels, discos, video gaming, telemedicine, domotics, floor coverings, sports arenas and contract furnishing

### **TECHNICAL AND ECONOMIC ADVANTAGES**

The advantages are two-fold: the product functions perfectly well as an attractive traditional rug or floor covering while providing a non-invasive sensor system which will help to overcome the public's mistrust and discomfort when having to pass through an access control point.

The smart mat is a device which provides its manufacturer with an added-value factor and represents a competitive edge over the competition.

Depending on the type of company which uses the mat, the device represents a real improvement to the way they work: in the case of security providers or statistics companies, the mat allows the service provider to offer

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non-intrusive control of access to public spaces, and domotic suppliers, video game designers and tele-assistance providers a further addition to their range of possibilities.

### **TECHNOLOGICAL STATE OF THE ART**

The project culminated in an installation at the Valencia Habitat Trade Fair, where it was successfully used to monitor attendance and provide real-time information on how many people were inside. 10 mats were connected at entrances and exits and performance was compared to the performance of the existing system the Fair uses.

The results were satisfactory and were 90% accurate compared to traditional counting methods: efficiency of this complex system can be improved with a few minor adjustments, although manual systems require no such fine-tuning.

### **INDUSTRIAL PROPERTY RIGHTS**

The product is protected through the following patent.

- Title: Presence sensingmat
- Patent application No. 200403022
- Date of application: 20/12/2004
- Patent granted: 09/07/2007

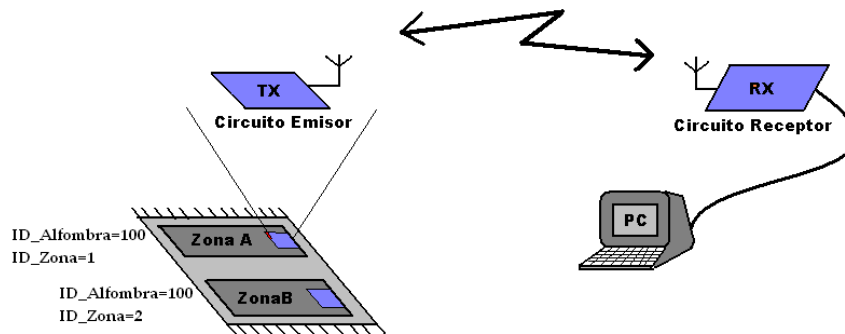
### **COLLABORATION**

Collaboration is sought from the following areas:

- Licensing agreement for the implementation and use of the technology.
- R+D agreement (technical cooperation) to improve the technology and find applications in other areas.

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### IMAGES



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