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# The bugs in the carpet are RFID

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One of Germany's best-known makers of vacuum cleaners and carpets aims to tap a new market: intelligent flooring embedded with wireless chips.

Vorwerk & Co. Teppichwerke is launching a textile flooring underlay equipped with RFID (radio frequency identification) tags, Vorwerk spokesman Thomas Weber said Friday.

"After three years of research, we're launching field tests with several companies that intend to use our smart-floor technology," he said. "We're now able to mass-produce the product."

The RFID-enabled flooring underlay is the result of a "thinking carpet" project launched together with German chip maker Infineon Technologies in 2003.
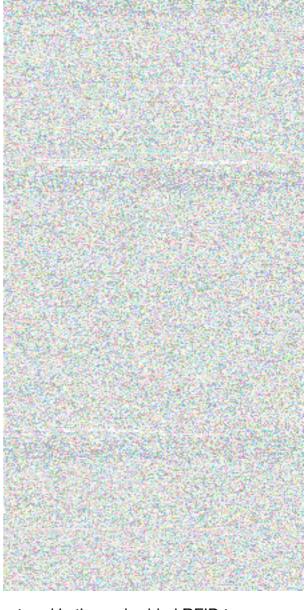
The smart-floor underlay can be used to perform a number of tasks, such as navigating automated transport systems in buildings, according to Weber.

In a first step, together with InMach Intelligente Maschinen, a robot manufacturer, Vorwerk is offering a bundled "smart-floor" package consisting of the RFID-enabled underlay, robots, and software.

The underlay enables robots to orient themselves in a room and move toward precise targets on the floor, using information stored in the embedded RFID tags, according to Weber. Systems administrators can manage the robots from a central point, sending data to them from a control PC via Wi-Fi or Bluetooth, he said.

The RFID tags consist of a microchip joined to an antenna coil and attached to an ultra-thin sheet of polyethylene terephthalate (PET) plastic. Each tag has its own ID

number, which can be detected and identified by the robot's integrated RFID reader from up to 10 centimeters. The power required for reading the tags is supplied by the robot; the tags are passive, requiring no electrical voltage.

Industrial floor cleaning could be one application. Data stored in the chips direct the robot to areas that have to be cleaned and away from those already cleaned.

Vorwerk intends to market its smart-floor system to numerous groups, including building managers, hospitals and nursing homes.

In a next step, the company aims to connect the RFID tags to form an intelligent network that can track movements and respond, according to Weber. The networked tags could be used to help secure floors from intruders or detect nursing home patients who have fallen on the floor, he said.

The smart-floor technology was demonstrated at the Cebit trade show in Hanover, Germany, which ended Wednesday.

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