# Smart Carpet for People Counting

Maintaining the social distance is crucial in times of a global pandemic. For this reason, we have developed a smart distance control system which automatically and anonymously ensures that distance between customers in the checkout area is maintained using a simple but clearly visible traffic light system. At the heart of the system is a printed sensor mat. In a further developed version, the carpet is able to perform people counting thanks to an artificial intelligence algorithm and almost 10 000 pixels. The system now can count the total number of people inside a room or a store by recognizing human steps and distinguishing those from shopping cart wheels. And the best thing is: the system is totally anonymous!
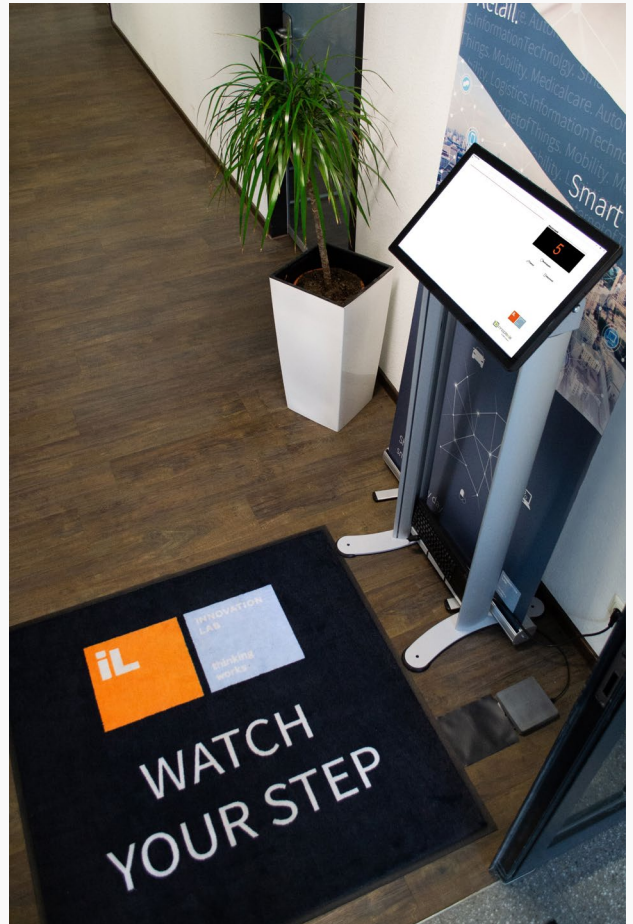
Just get in contact with one of our colleagues and ask for a quote.

IntelliStok®

IntelliStok® automated inventory management system* eliminates the need to manually check and scan Kanban-based inventory items, delivering efficiencies and cost savings that make restocking easier than ever - especially as your business grows - freeing up time and resources for warehouse and purchasing personnel to work on the important things.

Subscription-Based System
The subscription-based IntelliStok® service works with your Kanban system without requiring modification to your existing bins. We provide the hardware, software, installation support, on-going support, and system upgrades as needed. You have no investment in equipment. Once installed, IntelliStok® utilizes sensors to perform regular, automated inventory checks to detect stock levels, automatically sending secure orders to Trelleborg when stock needs to be replenished.


IntelliStok® Benefits
• Increases efficiency by eliminating the need to manually check and scan Kanban-based inventory items
• Reduces purchasing costs by automatically sending replenishment orders to Trelleborg
• Real-time inventory tracking helps prevent shortages and overstock situations
• Enables inventory levels to be right-sized and the ordering process simplified
• Improves employee safety by eliminating the need to touch common-use scanners
• Easily expanded to grow with your business as your inventory requirements increase
• Seamlessly integrates into your Kanban system without requiring modification to existing equipment

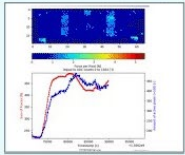# Opportunities for Printed Electronics in E-Mobility

MATERIAL
LOCTITE Force Sensitive Resistor (FSR) inks: LOCTITE ECI 7004LR, LOCTITE ECI 7004HR and LOCTITE NCI 7002
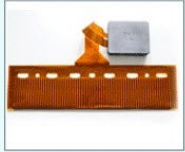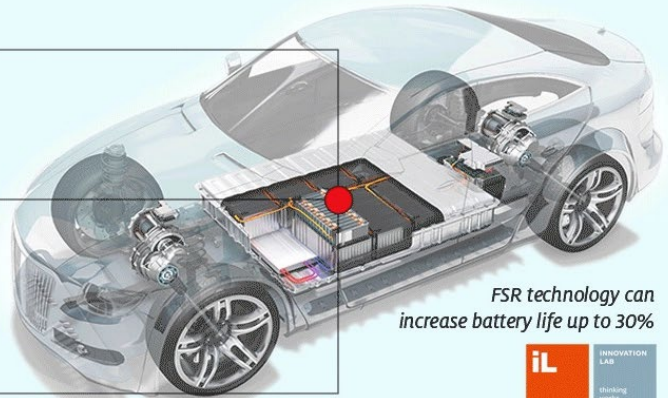
APPLICATION
Production of **Pressure Sensor Foils:** Measure the expansion and pressure distribution of the cells in the battery while charging

THE OPPORTUNITY
- **Monitor** the charging status in real-time
- **Learn** about the battery capacity and behavior
- **Understand** battery life-cycle and status of the battery health

FSR technology can increase battery life up to 30%

iL INNOVATION LAB thinking works

Henkel

Battery Health Monitoring

During the charge-discharge cycle process, a rechargeable cell constantly changes its volume – it "breathes". Via the integration of an ultra-thin and flexible pressure sensor foil, the breathing of the battery can be monitored in real-time. Thus, individual control measures can be initiated, preventing a potential overcharging, achieving cell balancing, or reading both the actual charging and the overall health status.
For our printed sensor foils, we rely on the inks by our long-standing partner Henkel. With their selection of different functional inks various features can be added to our products, providing great versatility to the applications. Thus, changes in the temperature inside a battery pack can also be easily detected. Especially, at low subzero degrees, a further feature becomes important as the battery suffers from low capacity and does not work properly anymore. Here a printed heating element can help to achieve the desired temperature necessary for starting, e.g., an e-vehicle.

OccluSense

The OccluSense system from Cologne-based company Dr. Jean Bausch GmbH & Co. KG is a prime example of a successful innovation for niche markets. OccluSense enables dentists to digitally check the pressure distribution during the biting process, the so-called occlusion. For this purpose, the WLAN-enabled hand-held device is equipped with a sensor just 60 micrometers thick incorporating no fewer than 1,018 pressure sensors. "When the patient bites or masticates during the occlusion test, the sensors can distinguish between 256 different pressure levels, which is far more accurate than with any conventional articulating paper that stains the tooth when pressure is applied," explains Managing Director André Bausch. After the measurement, the hand-held device sends the results wirelessly to an iPad and they are displayed and stored in an app.

Smart Shelf

Whether in high-rack warehouses for pallets or rapidly changing interim storage facilities, pressure or weight changes can be detected at all times by integrating pressure-sensitive sensor foils. Thus, a permanent inventory can be realized. The system then provides real-time inventory information which can be used, for example, to detect incorrect entries in the system, to avoid incorrect order picking or for automated replenishment or to optimize warehouse logistics in general. Moreover, pressure sensor foils that are placed underneath valuable goods can immediately raise the alarm if the pressure distribution changes, e.g., when items are stolen.

The measurements are performed using our pressure sensitive matrix recorded via crosstalk-less readout electronics designed by iL. The data is transmitted to a Cloud and presented in our Smart Shelf Dashboard.

The benefits at a glance:

- Autonomous inventory control
- Plausibility check
- Detection of mistakes
- Simple installation
- Favourable unit costs

Intelligent Mattress Cover for Decubitus Prevention

InnovationLab developed a intelligent mattress cover for real-time patient monitoring. The integration of printed pressure sensors and healthcare software enables dramatic risk-reduction in dangerous pressure ulcers, promoting better care in an acute-care.

• Allows caregivers to monitor patients remotely in real-time instead of requiring them to examine a patient's entire body for pressure ulcers every thirty minutes to two hours—improving efficiency and saving personnel costs

• By using local AI models and on-board computation no sensitive data leaves the device. Only critical alerts are relayed, providing patient monitoring around the clock while preserving privacy.

• Reduced incidence of pressure ulcers leads to decreased risk of costly lawsuits against healthcare professionals.

• Environmentally friendly disposable product thanks to organic electronics

Smart Seat

The integration of the pressure sensor foils in carseats enables the differentiation between people and other objects my means of artificial intelligence and pattern recognition. This information about the driver's presence forms the basis for various driver assistance and safety systems such as seat-belt reminders and emergency call systems in the event of an accident. Pressure sensors could determine whether the object in the passenger seat is a child seat and, if so, automatically deactivate the airbag.