

# Smart Footwear Sensors

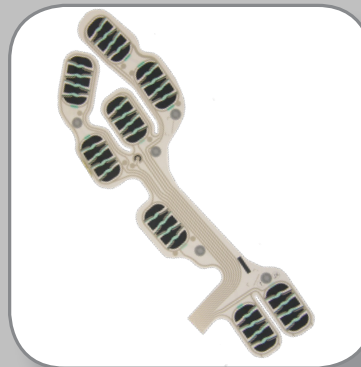
IEE's Smart Footwear Sensor insole provides in-field dynamic monitoring of foot plantar pressure.

Connected to a wearable electronic module, the Smart Footwear Sensor insole provides data from a customized number of pressure sensing cells. The data can then be sent for analysis to a remote terminal, e.g. smart phone/watch or computer.

## Enabling technology for a wide range of applications

IEE's Smart Footwear Sensor can be used in a number of ways, including as a:

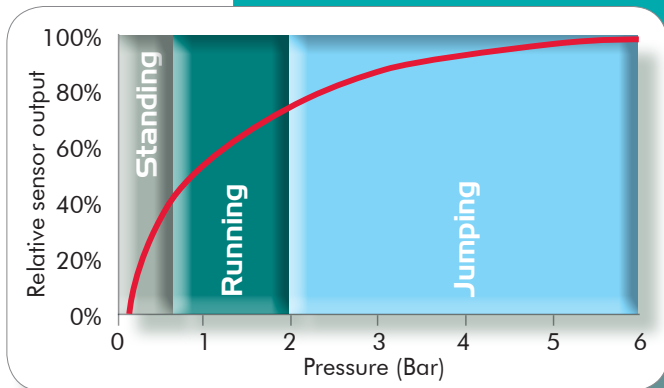
- rehabilitation tool – after a patient has had an operation or experienced a stroke.
- diagnosis tool – for in-field, long-term effect monitoring (posturography).
- prevention tool – for individual, daily monitoring (e.g. diabetes foot).
- training tool – for in-field, sports-specific posture monitoring.



## Key Advantages

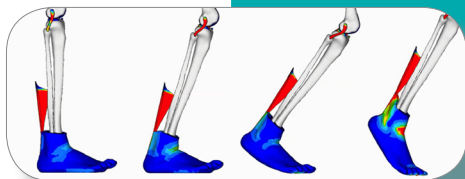
- **High dynamics:** IEE's Smart Footwear Sensor is sensitive to a wide range of pressure, from walking and running to jumping activities.
- **Robust technology:** IEE's technology has been validated for environmental and mechanical durability.
- **Industrial sensing solution:** more than one million sensors have already been produced.
- **Design freedom:** IEE's Smart Footwear Sensor can be custom designed according to the required applications.
- **Easy integration:** IEE offers a sensing solution that is less than 0.5 mm thick, and has enhanced flexibility and integration possibilities.

## High-dynamic pressure sensing technology

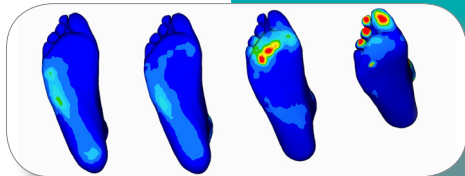


- IEE's Force Sensing Resistor uses electrical resistance, which varies as a function of the pressure applied to the sensor cell. The sensor can measure punctual plantar pressure up to 6 Bar.
- The cell response has a low hysteresis.
- The sensor cell can withstand more than one million activation cycles.

IEE HD cell response curve

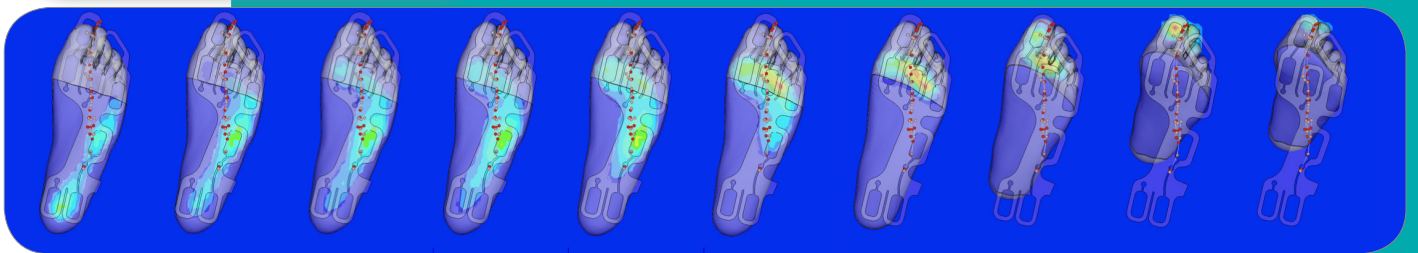


Stress FF- MS- HR- TO-Phase



### Sensor design basics: simulation model of foot-to-ground interaction based on Finite Element (FE) analysis

- Development of a hip-leg-foot 3D model for the study of the transient plantar pressure distribution during a human gait cycle.
- Sensor design simulation for accurate detection of the Center of Pressure.



## About Us

IEE is a worldwide pioneer in passenger presence detection and one of the leading suppliers of advanced automotive interior sensing solutions. Founded in 1989 and headquartered in Luxembourg, it has operations in Europe, America and Asia.

The innovation driven company has a long history in developing and manufacturing cutting-edge sensing systems for automotive industry, building management and eHealth. IEE employs 4,100 people worldwide and more than 10% of the company's workforce is engaged in Research & Development.

For more information, please visit [www.iee.lu](http://www.iee.lu) or send an email at [iee@iee.lu](mailto:iee@iee.lu)