



## Stuttgart (visitable at short notice)

**INDUSTRIE 4.0 MIXED MOBILITY SENSING FOR SMART FACTORIES**

*Application for monitoring the interactions between people, vehicles and automated devices in a manufacturing environment through pressure sensing devices.*

**SUMMARY**

The cost for function risk management and handling in a shop floor can be lowered by utilization and integration of new materials that enable Industry 4.0. Graphene has the potential to achieve sensing requirements already at the material surface and by that decrease the need for extra sensing devices.

**CURRENT SITUATION**

The cost and risk situation in a manufacturing environment is a continuous optimization topic. Functional safety is regulated by international standardization and controlled by national authorities. Due to these reason the cost for functional safety is given.

**PROJECT DESCRIPTION**

The introduction of new materials that offer multi functionality compared to existing materials like metal, plastic or composite materials the necessary functionals safety aspects can be achieved. The protection of the safety relevant material stays and is extended by advanced materials like graphene. This adds in-situ sensing capabilities that promise extended safety services without the need for additional explicit safety sensors.

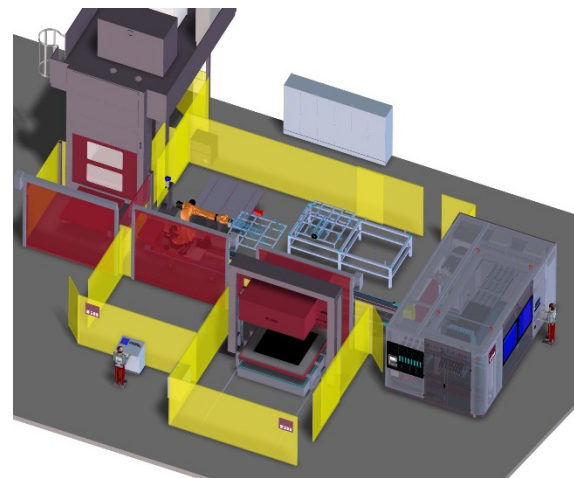
Physical demonstrators will be located both at ARENA2036 at the university of Stuttgart as well as Swinburne University of Technology in Melbourne Australia.

**REFERENCES**

<https://youtu.be/audsVYRKz9E>

**INDUSTRIE 4.0 – FEATURES**

Industry 4.0 is the networking of all, from materials and devices to the human operator. This required sensing everywhere and this need to be achieved at low cost. Graphene is an enabler.

**PARTNERS**

Universität Stuttgart



YOUR FUTURE

**ARENA2036****SOLUTION**

Industrie 4.0 enabling by new materials:

- New opportunities for safety devices by low cost materials that can be integrated in the necessary mechanical functionals safety setups
- Additional process control possible by further utilization of sensor data
- Human machine interfacing across the entire factory gets possible at a low cost enabled by Industry 4.0 interoperability that uses the sensor signals

**CONTACT**

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**STANDARDIZATION APPROACHES**

Sensor devices that are part of materials require new interfaces and cheap interoperability models. The asset administration shell supports this and needs to be internationally standardized