Overview

- Monitoring of 3D airflow and other environmental parameters for a demand-driven heating, ventilation & air conditioning (HVAC) system control
- Low-cost sensors for the collection of spatial emission data
- Timesaving approaches for digital shadow creation and simulation
- Integration with existing systems
- Demand-driven control algorithms for improvement of energy efficiency and safety at work
- Deployments at four factories
- Comparison of business models for sensor-based HVAC control systems

Data Acquisition

- Highly customizable sensor node platform
- Collected values: CO2, Temperature, Humidity, Air Pressure, Particle Concentration, 3D Air Flow
- Different form factors for stationary and mobile monitoring
- Energy Harvesting to prolong node lifetime
- Multiconnectivity to increase reliability.

Integration & Business Models

- Deployments in four factories from automotive, chemical, aerospace and food industry
- Integration with existing HVAC systems and infrastructure
- Sensors for temporary stand-alone measurements
- Development of a scalable business model as an example for new platform technologies

Simulation & HVAC Control

- Low cost approaches for 3D model creation of factories
- Particle simulations to predict emission propagation
- Comparison of 0D and 3D approaches for flow simulations
- Visualization of emissions and conditions for workers
- Recommendations and aggregated data for HVAC experts
- Automated control to reach the desired tradeoff between energy efficiency and occurring emissions