



Built environment facing climate change



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REHVA 13<sup>th</sup> HVAC World Congress  
26 - 29 May, Bucharest, Romania

BUILT ENVIRONMENT FACING CLIMATE CHANGE

**Indoor Environment Design for Smart Buildings workshop**

# **Halton Vario system design for smart indoor climate**

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**Session: WS 9 / 28 May 2019**

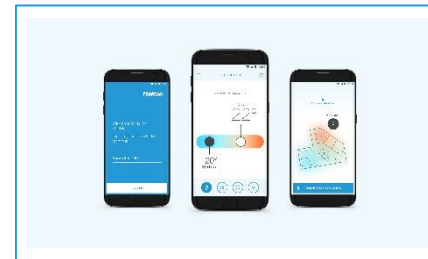
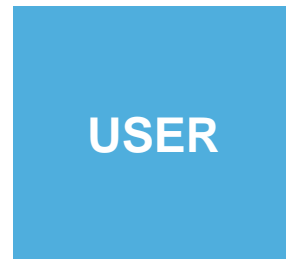
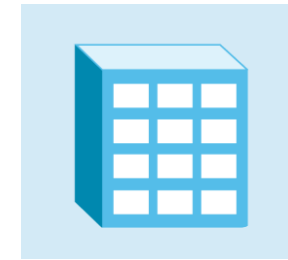
# Halton Vario System Principle

## Demand-based indoor climate system

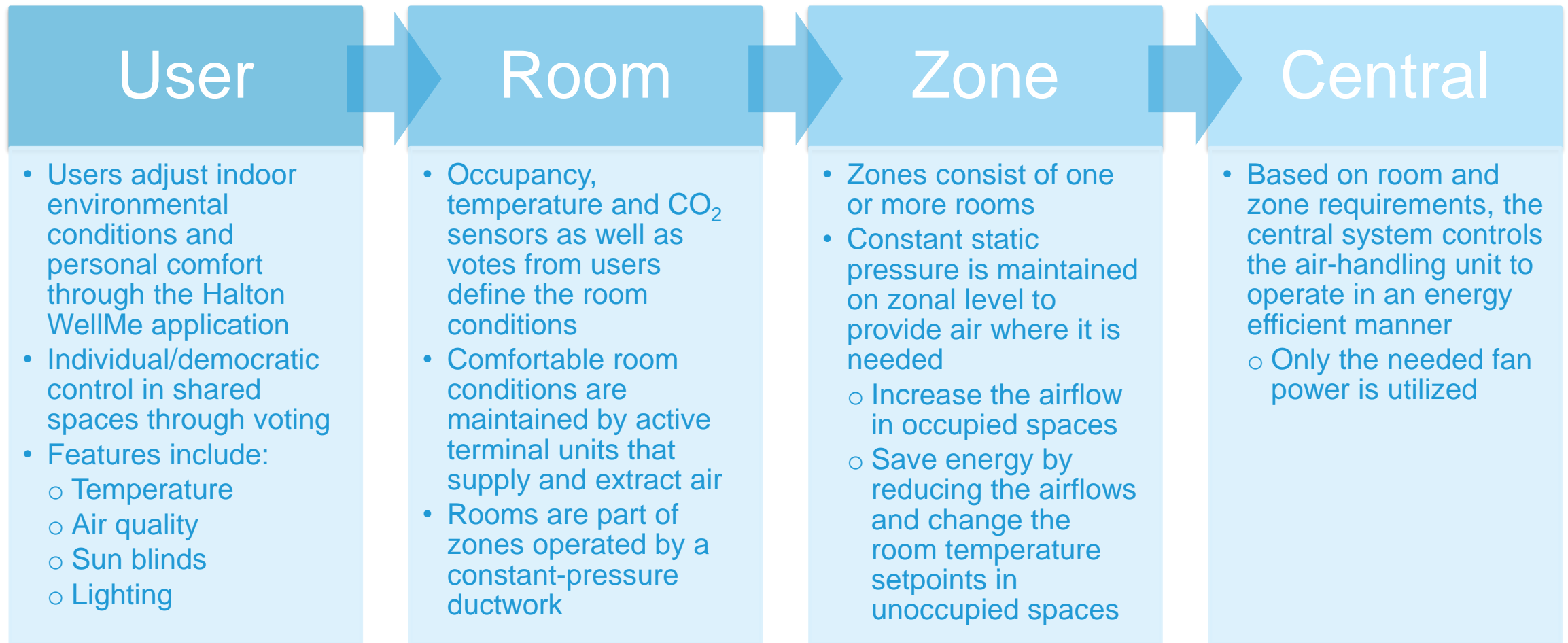
- Performance based on guaranteed occupant comfort at all times
  - Intelligent room units with control through occupancy, temperature and CO<sub>2</sub> monitoring
  - Individual/democratic control of comfort conditions

## System control on central, zonal, room and user level

- Operation principle:
  - Air handling unit optimizer
  - Constant pressure ductwork
  - Intelligent terminal units
  - Variable airflows
  - Indoor climate monitoring
  - Comfort control for all space occupants



# Halton Vario Operation Principles



# Halton Vario Solution Structure

## Halton Vario

**Controls**

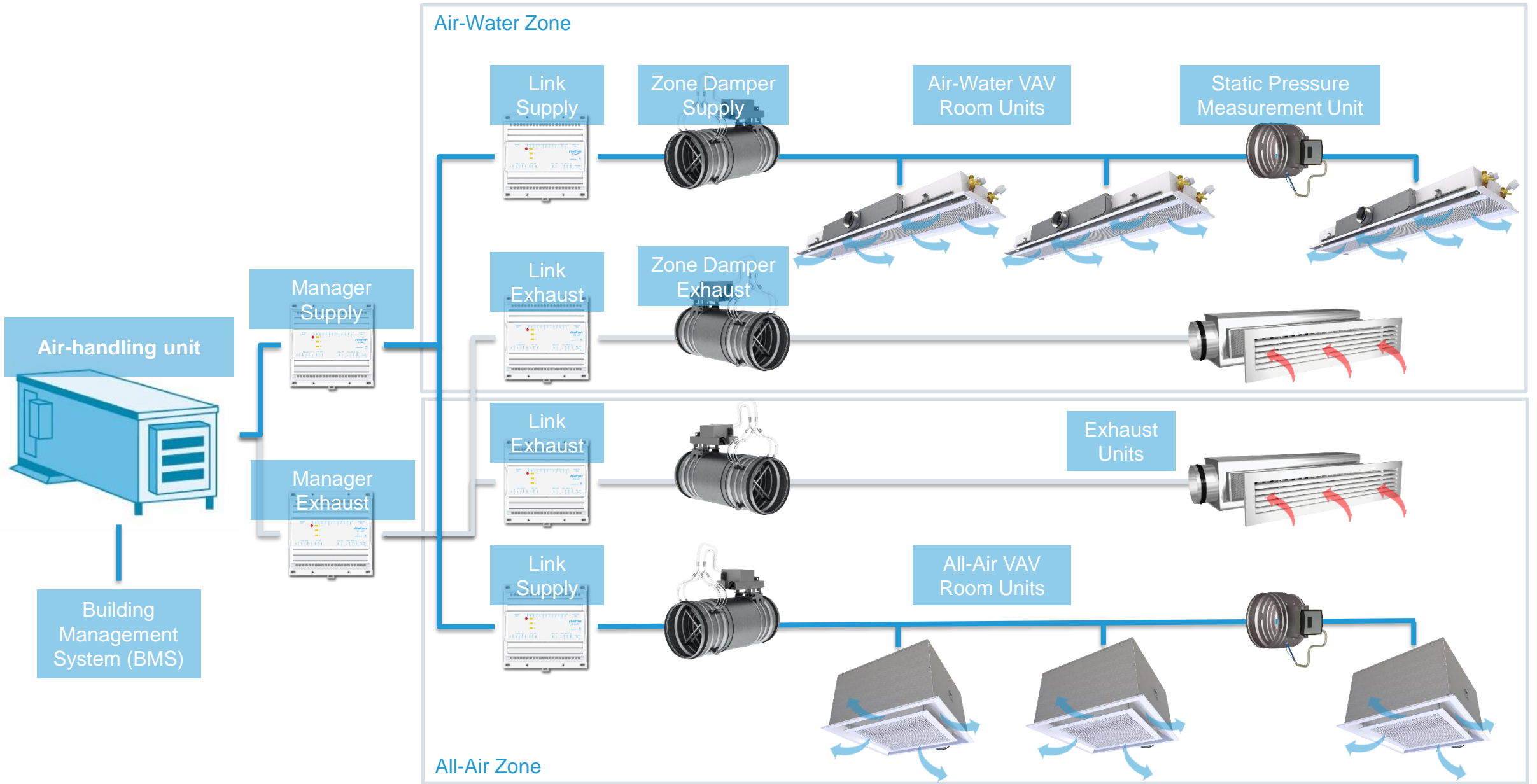
**Airflow  
Management**

**Air-Water  
Products**

**All-Air  
Products**

**User  
Interface**

**Services**



Enabling Wellbeing



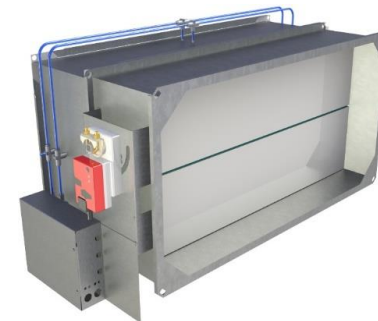
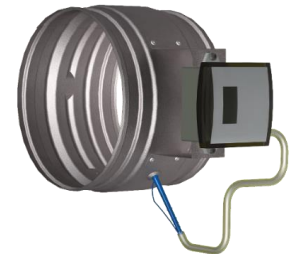
## Enabling Wellbeing

**Halton**



# Benefits of Constant-Pressure Ductwork

1. **More cost-efficient** than traditional ducting over the building lifecycle
  - Pressure-control dampers enable demand-controlled ventilation in zones according to local operating hours contributing to energy savings
2. **Full space flexibility** as airflow rates can vary based on demand
  - Automatic individual airflow rate adjustments in the room units
  - Balancing of the ductwork is not needed
3. **Silent** solution resulting in an excellent acoustic environment
4. **Reduced commissioning costs** due to easy balancing of the ductwork
5. **Simple design** principle and easy installation



# Halton Vario Room Unit Alternatives

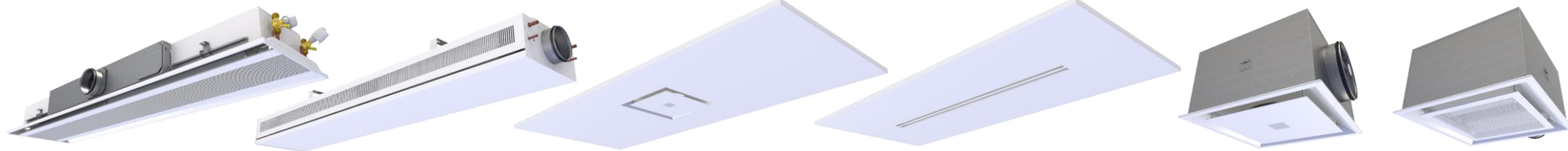


Air-Water System



Hybrid

All-air system



Enabling Wellbeing

**Halton**



# Rooms with Air-Water Products



**Nantex office building**  
in France equipped with  
Halton Vario and  
Air-Water products.

# Rooms with All-Air Products



**Nantex office building**  
in France equipped with  
Halton Vario and  
All-Air products.

# Individual/democratic Control with Halton WellMe

**Application that enables optimization of indoor environmental conditions through voting.**

- Identification of user
- Identification of voting location
- Selection of individual preferences
- Optimization of conditions based on votes within comfort zones
- Generation of comfort maps for admin users



# Halton Vario Services

- Wellbeing management
- Occupant Survey
- Comfort validation



Life  
Cycle



Design

- Design assistance
  - Co-creation
- Tailored solutions
  - CFD
  - Mock-up

- Start-up
- Performance validation
- Indoor climate validation



Tune



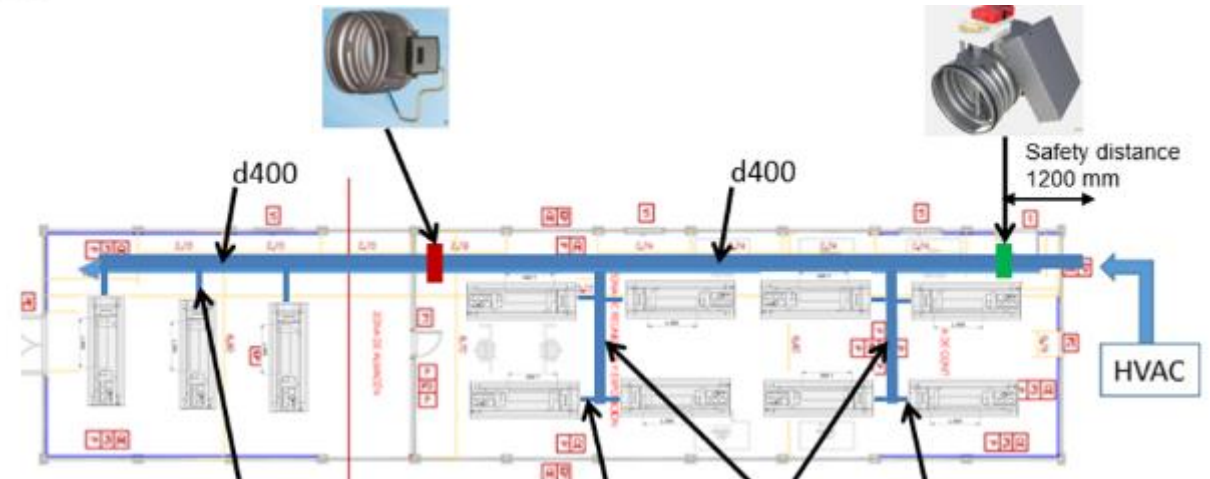
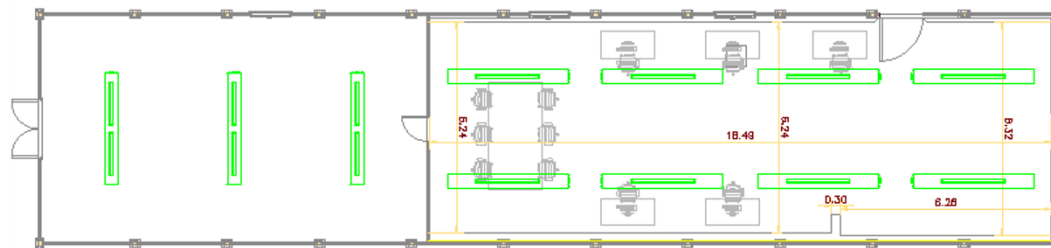
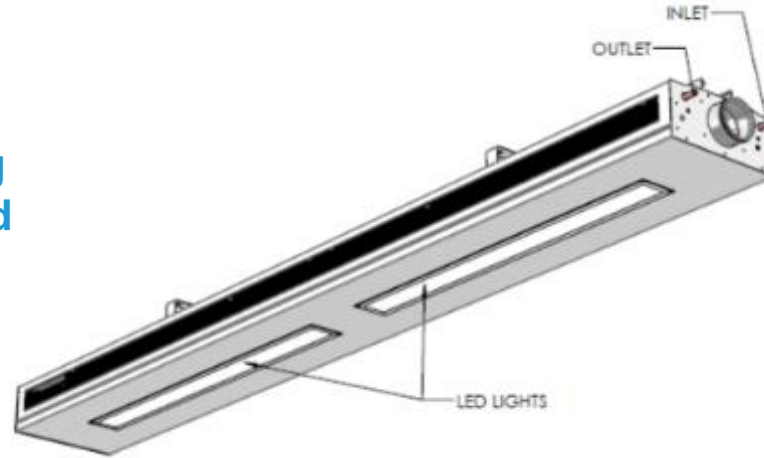
Deliver

- Delivery according to project-specific requirements

# Current research related to Smart buildings

In EU research project LowUP 2016-2020 cooling and heating systems for office buildings utilizing low valued energy sources will be developed and demonstrated in Spain with Acciona and several other partners.

- Halton Vario with exposed chilled beams used for ventilation and cooling
- Cooling system is equipped with advanced automation and monitoring integrating for instance thermal energy storage with chilled beam system.





# End of the presentation

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