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EUROPEAN UNION
Danube Transnational Programme
CSSC LAB

General Presentation

Demo-Investment at CSSC Lab location in *Stegersbach, Austria*

Energie Kompass GmbH / solar.one Immo GmbH & CoKG

Project co-funded by the European Union (ERDF, IPA).

solar.one
competence center for renewable energies

solar.one
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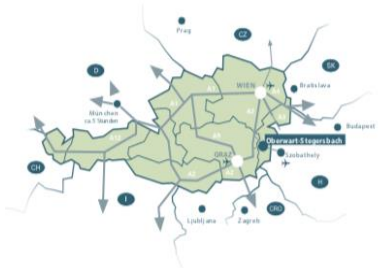

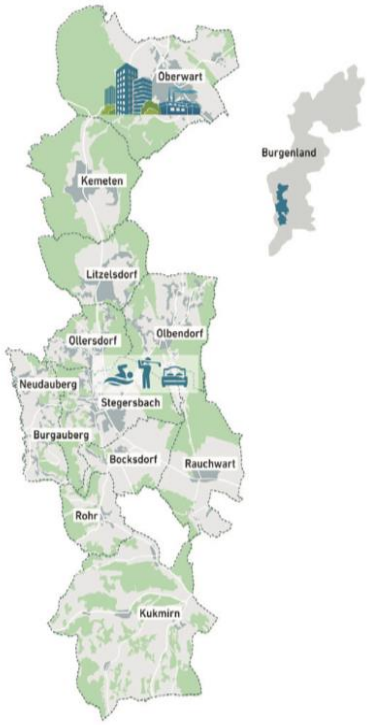

BOCKSDORF
GEMEINDE BOCKSDORF

GEMEINDE BURGAUBERG NEUDAUBERG

GEMEINDE KEMETEN

MARKTGEMEINDE KUKMIRN

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Short intro of demo center

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Short intro of demo center

Solar.one - Timeline:

start planning — 2018

2019 — design ready

equipment specs. — 2020 — ground breaking — 26.11.2019

equipment procurement — construction works

01.12.2020 — moving in — 2021 — equipment commissioning

08.10.2021 — opening ceremony — 2022

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Concept

Focus in the CSSC – Lab Project:

- Integration of different storage technologies
- Integration of mobile storage (electric vehicles)
- Demonstration of sector coupling (electricity, heat, cooling, mobility)
- Interfaces between storage solutions and the building (load management based on building utilization)

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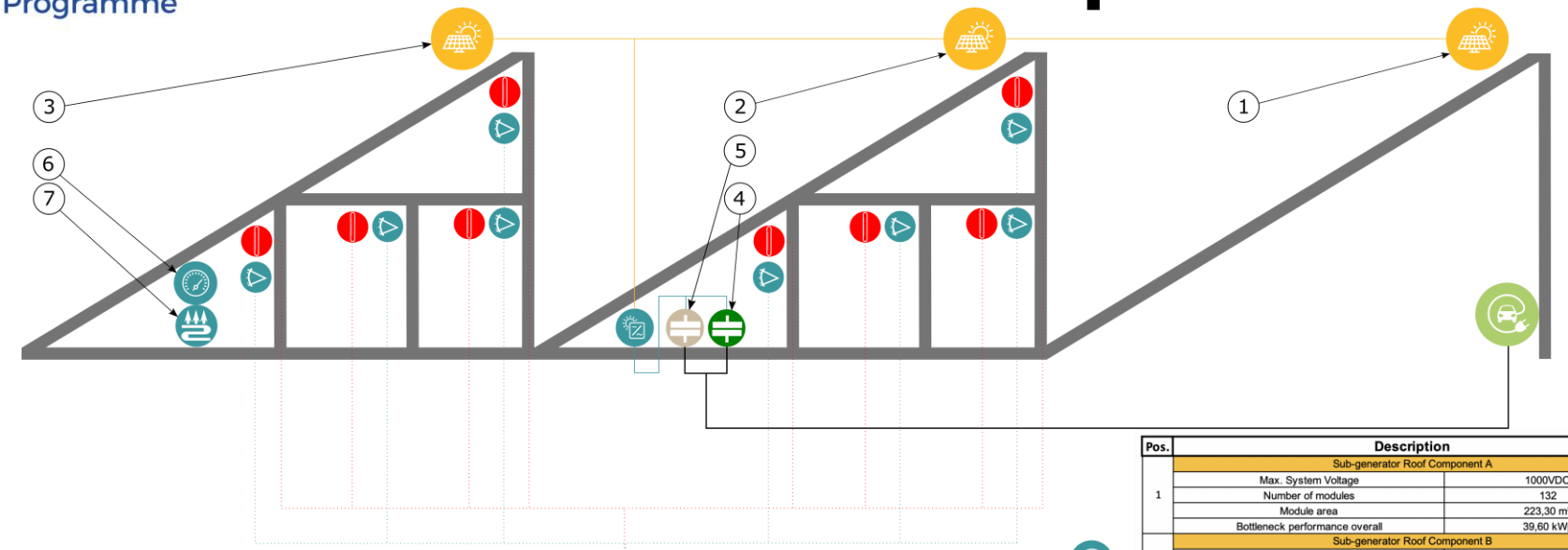
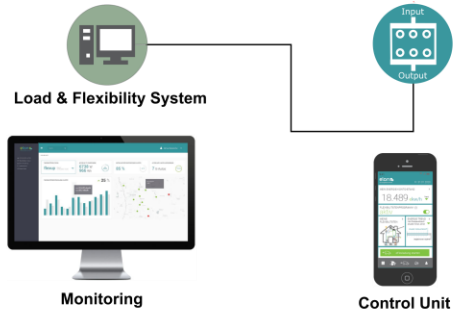
Concept





Heat Pump System & Heating Water Storage Tank

Temperature Sensor

Presence Detector

Building Automation System

Photovoltaic System

Inverter

Li-Ion Battery

Salt Water Battery

Charging Column & Electric Vehicle

Pos.	Description	
1	Sub-generator Roof Component A	
	Max. System Voltage	1000VDC
	Number of modules	132
	Module area	223,30 m²
	Bottleneck performance overall	39,60 kWp
2.1	Sub-generator Roof Component B	
	Max. System Voltage	1000VDC
	Number of modules	146
	Module area	252,20 m²
	Bottleneck performance overall	52,56 kWp
2.2	Part generator facade south-west component B	
	Max. System Voltage	1000VDC
	Number of modules	24
	Module area	95,04m²
	Bottleneck performance overall	7,84 kWp
2.3	Partial generator facade south-east component B	
	Max. System Voltage	1000VDC
	Number of modules	12
	Module area	35,39m²
	Bottleneck performance overall	2,92 kWp
3	Sub-generator Roof Component C	
	Max. System Voltage	1000VDC
	Number of modules	188
	Module area	311,70 m²
	Bottleneck performance overall	57,34 kWp
4	Salt Water Battery	
	Storage Capacity	30 [kWh]
	Output Current	100-300 [A]
	Nominal Voltage	40-60 [VDC]
	Ambient Temperature	0-30 [°C]
	Power Supply	400V/50Hz, 3~/N/PE
5	Li-Ion Battery	
	Storage Capacity	105 [kWh]
	Output Current	100-300 [A]
	Nominal Voltage	40-60 [VDC]
	Ambient Temperature	0-30 [°C]
	Power Supply	230V/50 Hz, 1~/N/PE
6.1	Heating Water Storage Tank	
	Storage Capacity	1500-3000 [l]
	Standby Energy Consumption	2-5 [kWh/24h]
	Output Power	1-3 [l/s]
6.2	Cold Water Storage Tank	
	Storage Capacity	1500-3000 [l]
7	Air / Water Heat Pump System	
	Heating Capacity	10-15 [kW]
	Power Supply	230V/50 Hz, 1~/N/PE

(*) PV - System not part of CSSC LAB project

Demo Site solar.one
Schematic Overview

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Planning and construction process

Planning Process:

- Basic concept has been planned by Energie Kompass GmbH
- Building planning has been done using BIM - technology
- Planning partners include architects, BIM specilialists and building service engineering specialists
- The building was planned as a pilot building to showcase renewable energy technologies from the get go

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Planning and construction process

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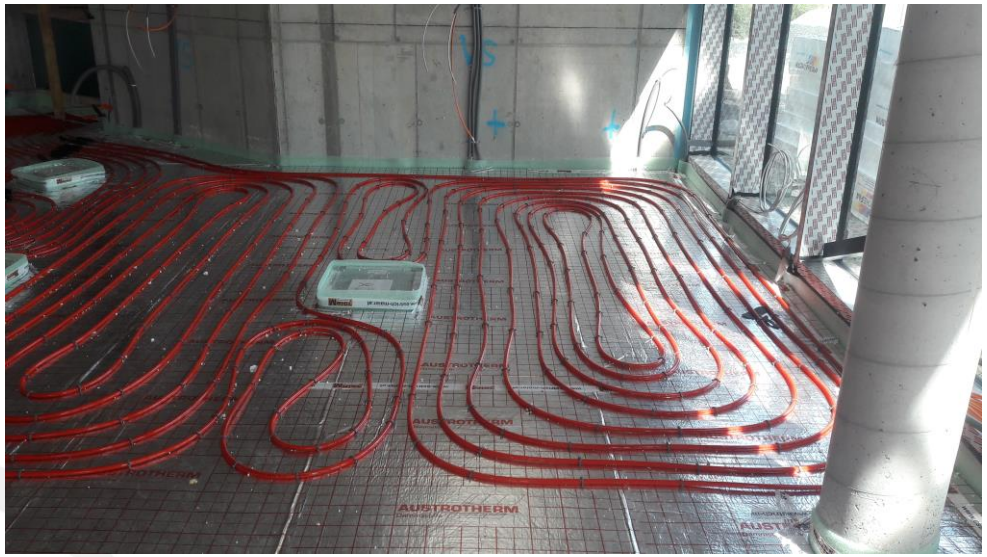
Planning and construction process



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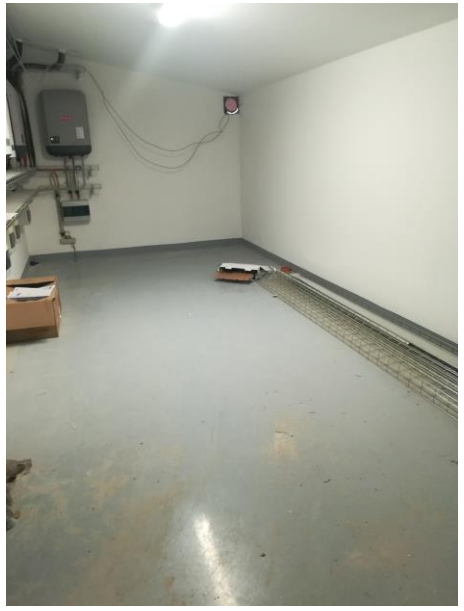
Planning and construction process



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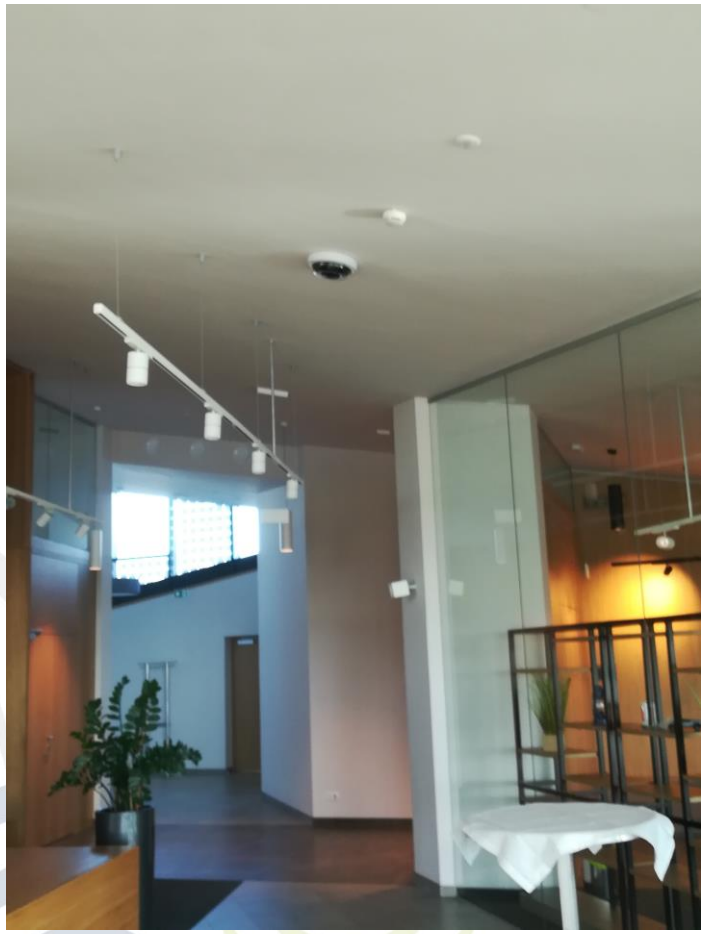
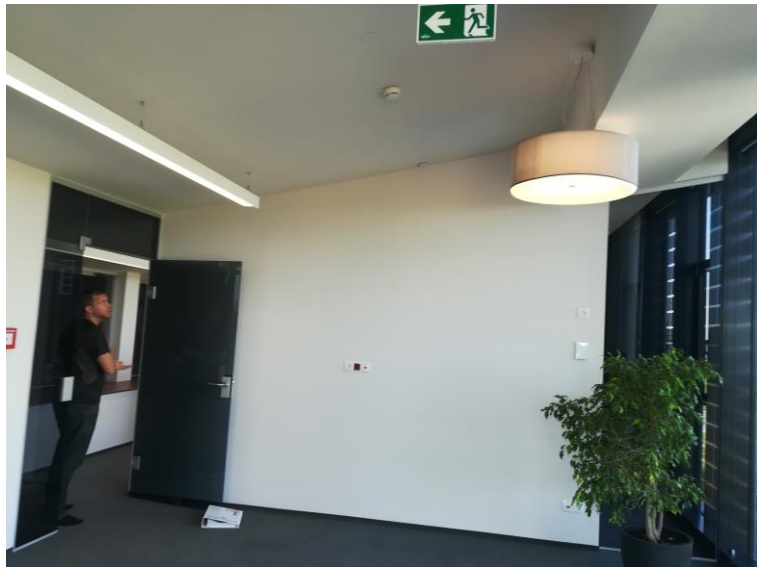
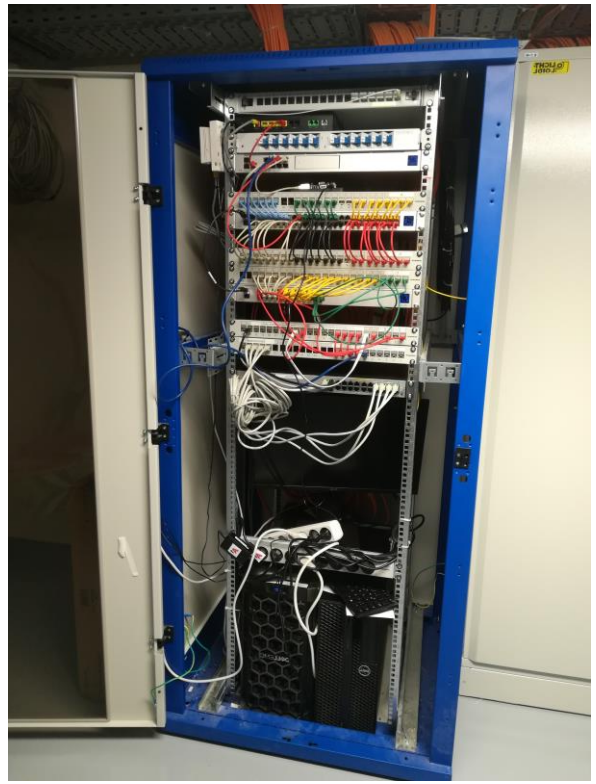
Planning and construction process







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Technical specifications

Investment within the CSSC – Lab Project:

- Li-Ion Battery
- Na-Ion Battery
- Thermal storage (heat/cold)
- Building core activation with heat exchanger system
- Equipment for mobile storage
- Monitoring system
- Load & flexibility management system

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Technical specifications

Thermal storage (heat and cold):

- Storages are installed and commissioned
- Operation did start in 03/2021

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Specification Sheet

3 **Thermal Heat Storage**

Heating Water Storage Tank		
Pos.	Description	Range
3.1	Storage Capacity	1500-3000 [l]
3.2	Standby Energy Consumption	2-5 [kWh/24h]
3.3	Output Power	1-3 [l/s]

Cold Storage Tank		
Pos.	Description	Range
3.4	Storage Capacity	1500-3000 [l]

Air / Water Heat Pump System		
Pos.	Description	Range
3.5	Heating Capacity	10-15 [kW]
3.6	Power Supply	230V/50 Hz, 1~/N/PE
3.7	Sound Pressure Level max.	<= 70 [dBA]
3.8	Sound Pressure Level in Silent Mode	<= 40 [dBA]
3.9	Height	<= 1700 [mm]
3.10	Width	<= 1700 [mm]
3.11	Depth	<= 1000 [mm]

Technical specifications

Li-Ion Battery:

- Battery is installed and commissioned
- Operation did start in 06/2021

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Specification Sheet

1 Li-Ion Battery

Li-Ion Battery		
Pos.	Description	Range
1.1	Storage Capacity	33,6 [kWh]
1.2	Output Current	100-300 [A]
1.3	Height	<= 2000 [mm]
1.4	Width	<= 1000 [mm]
1.5	Depth	<= 500 [mm]
1.6	Weight	<= 400 [kg]
1.7	Nominal Voltage	40-60 [VDC]
1.8	Ambient Temperature	0-30 [°C]
1.9	IP Protection Class	IP 55
1.10	Warranty Period	>= 3 [a]
1.11	Power Supply	230V/50 Hz, 1~/N/PE

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Technical specifications

Saltwater Battery:

- Battery is installed and commissioned
- Operation did start in 06/2021

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Specification Sheet

2 Salt Water Battey

Salt Water Battery		
Pos.	Description	Range
2.1	Storage Capacity	30 [kWh]
2.2	Output Current	100-300 [A]
2.3	Height	<= 2000 [mm]
2.4	Width	<= 2000 [mm]
2.5	Depth	<= 1500 [mm]
2.6	Weight	<= 2000 [kg]
2.7	Nominal Voltage	40-60 [VDC]
2.8	Ambient Temperature	0-30 [°C]
2.9	IP Protection Class	IP 21
2.10	Warranty Period	>= 3 [a]
2.11	Discharging Power	5-10 [kW]
2.12	Maximum Discharging Power	10-15 [kW]
2.13	Charging Power	5-10 [kW]
2.14	Power Supply	400V/50Hz, 3~/N/PE

Technical specifications

EV Charging Equipment:

- Charger is installed and commissioned
- Operation did start in 06/2021

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Specification Sheet

4 Charging Infrastructure

AC Charging		
Pos.	Description	Range
4.1	Charging Power	22 [kW]
4.2	Socket Type	Type 2
4.3	Charge Points	2

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Technical specifications

Building Core Activation:

- Charger is installed and commissioned
- Operation did start in 03/2021

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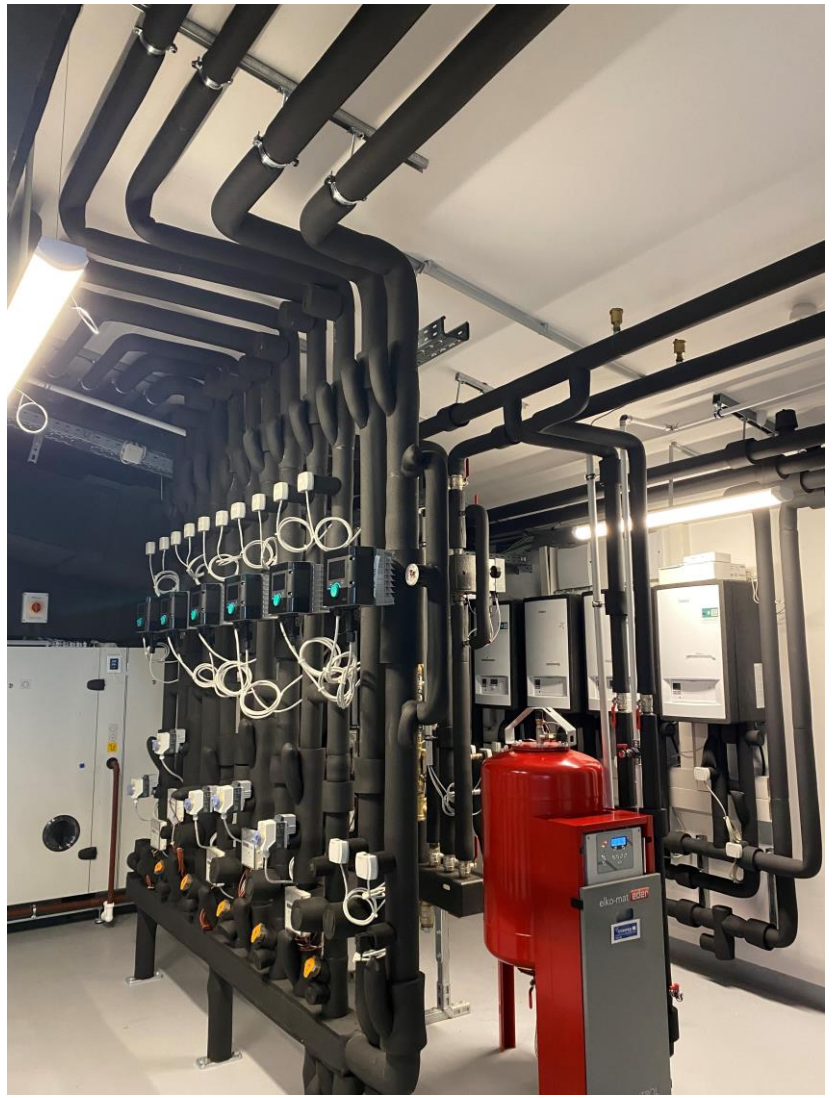
Specification Sheet

3 Building Core Activation

Air / Water Heat Pump System		
Pos.	Description	Range
3.5	Heating Capacity	10-15 [kW]
3.6	Power Supply	230V/50 Hz, 1~/N/PE
3.7	Sound Pressure Level max.	<= 70 [dBA]
3.8	Sound Pressure Level in Silent Mode	<= 40 [dBA]
3.9	Height	<= 1700 [mm]
3.10	Width	<= 1700 [mm]
3.11	Depth	<= 1000 [mm]



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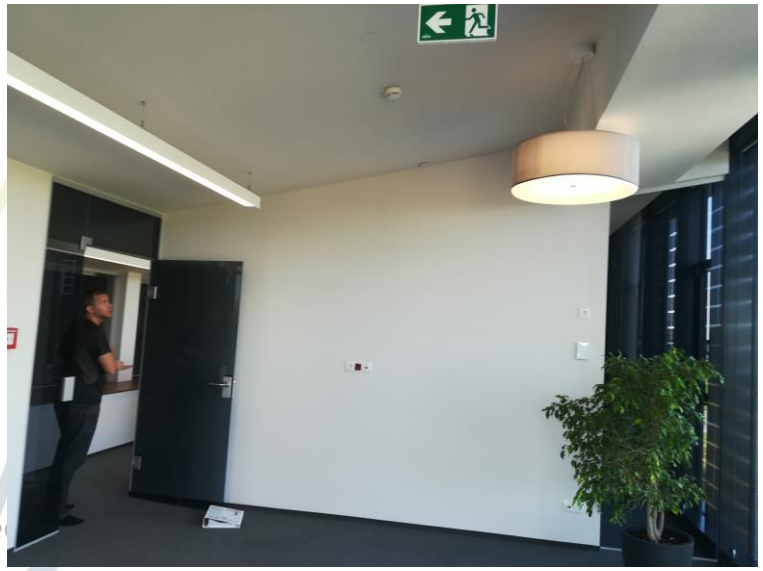
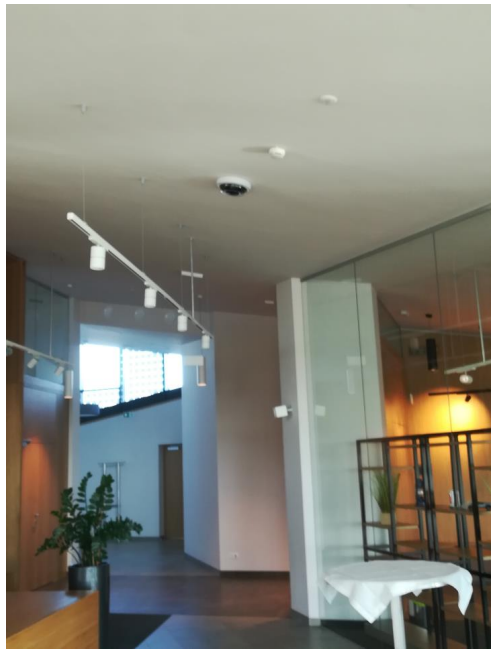
Technical specifications

Monitoring and load management system:

- All sensors are installed and commissioned
- Server is installed and commissioned
- Operation started in 03/2021





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Virtual Tour

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Future activities

Activities already done and/or planned:

- Demo Center is open to visitors during business hours. Guided tours can be booked in advance
- Open days were held on 16th and 17th of October 2021
- Demo session and workshop for stakeholders (municipal and communal services) was held on 05.11.2021
- Further demo sessions are planned in June 2022
- Regional Energy Congress planned to be hosted annualy starting from autumn 2022 or spring 2023

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Thank you for your attention!

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