



«TEIWM RES-Smart Grids Lab»

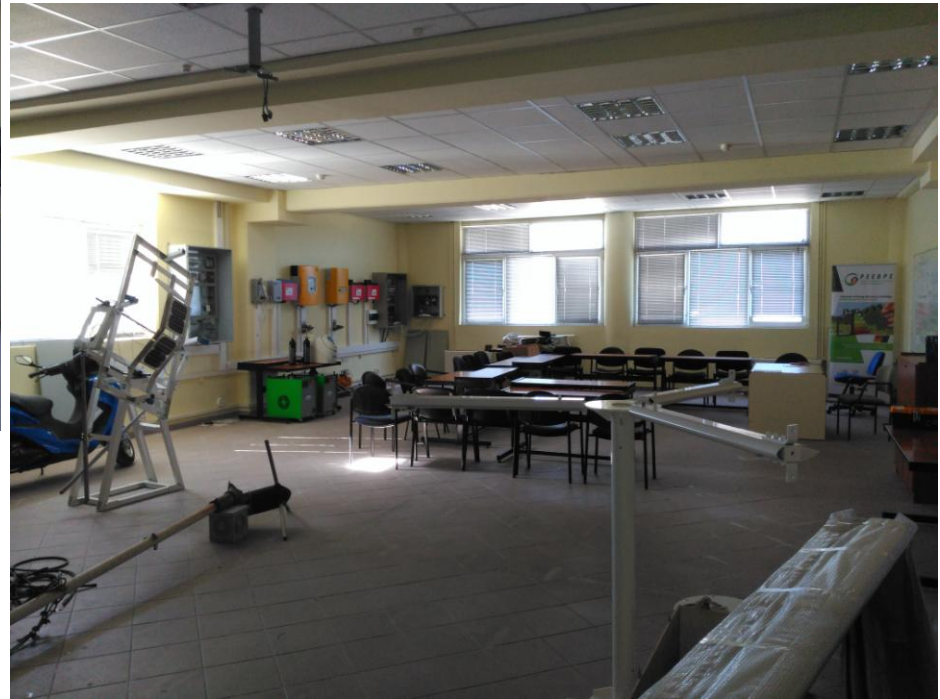
Fully functional experimental electric microgrid.

- Island inverter (SMA Sunny Island 3324)
 - Two PV inverters (SMA SB1100),
 - 12 PV panels of total capacity 2 kWp,
 -
 - a small wind-turbine of 1 kW capacity,
 - 24 FLA batteries,, Data Acquisition Cards, measurement apparatus and PCs for measurement collection
- (http://ape.ee.teiwm.gr/index.php?option=com_content&view=article&id=22&Itemid=161&lang=en).

A new microgrid mainly as electric vehicles charging station.

- Two hydrogen fuel-cell units of 1,2 kW capacity each with their inverters,
- Two electrolysis units and two hydrogen storage canisters,
- An island inverter (SMA Sunny Island 5048),
- 10 thin-film PV panels of total capacity 1 kW with their PV-inverter (SB1100),
- 24 FLA batteries of 323 Ah capacity each,
- A vertical-axis wind generator of 1,5 kWp,
- A plug-in Electric vehicle, a scooter and an electric bicycle

The TEIWM microgrids lab



«Equipment»

Regarding KNX and energy audits equipment:

The laboratory has acquired recently KNX smart meters, KNX ETS 5.0 licenses and numerous KNX devices that form a KNX smart home energy management system.

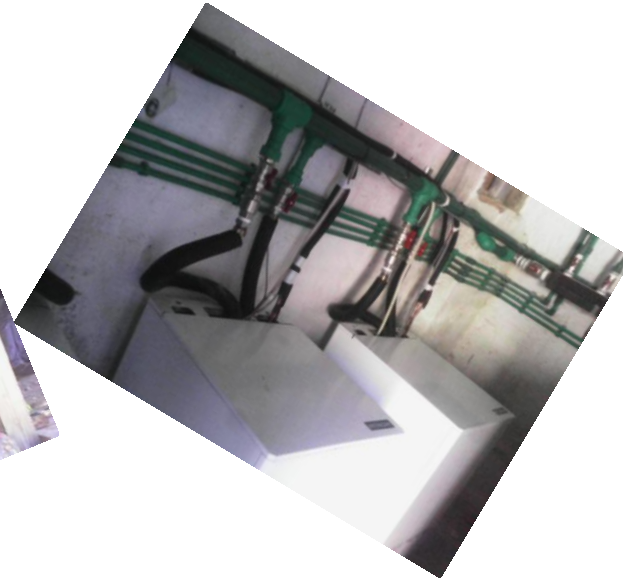
The Laboratory obtains and uses measurement equipment for Buildings Energy Audits. It includes among others: (A) Thermal conductance metering equipment Hukseflux TRSys 01, (B) Two IR cameras, (C) Laser mini temperature meter, (D) Humidity meter, (E) Energy Analyzer Fluke, (F) Light meter, (G) Digital gas analyzer.



The role of the TEIWM?



www.peebpe.eu



Energy upgrade of public buildings (here: installing thermal isolation and heat pumps at schools in Northern Greece)

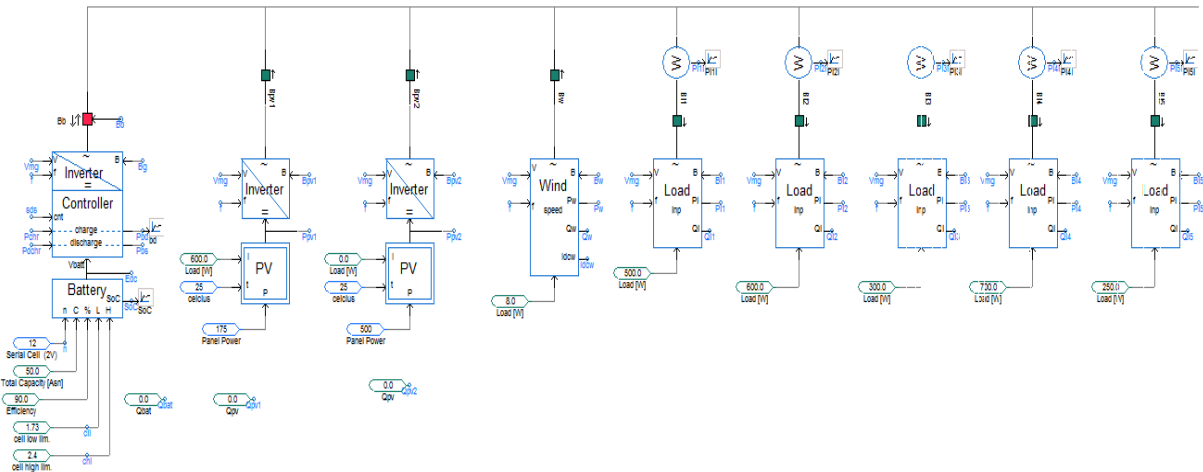
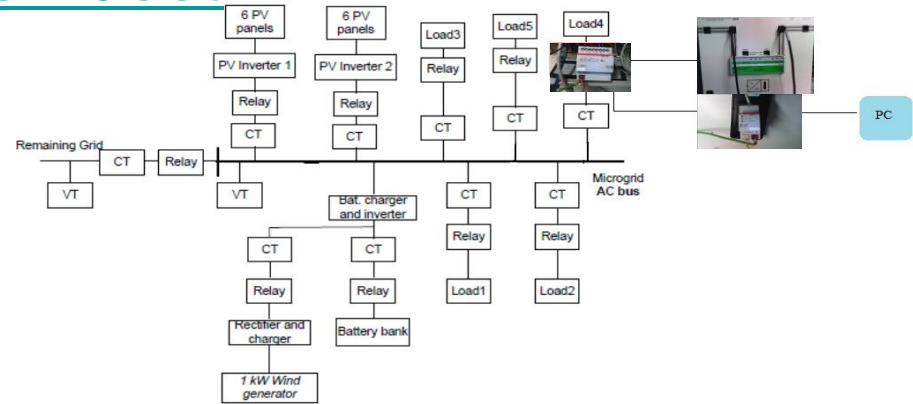


SEEMBEET

Smart Electric Energy Management and Buildings Energy Efficiency Technologies

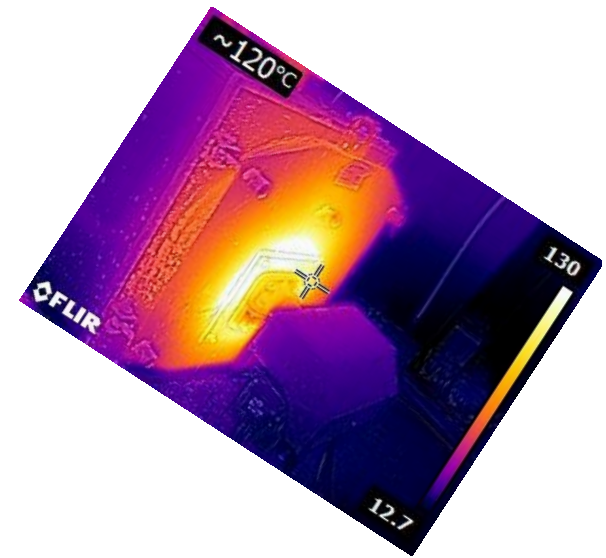
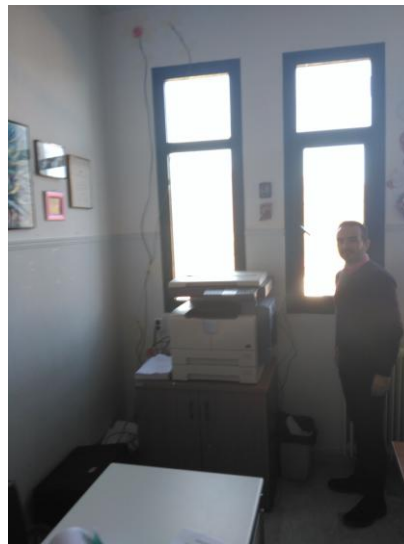
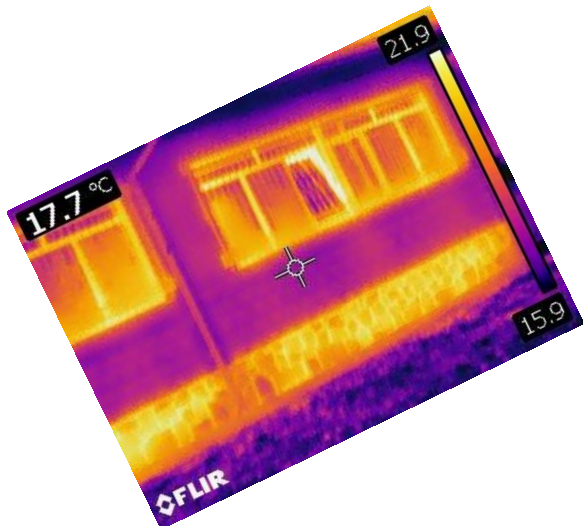
www.edalab.itu.edu.tr/seembeet

KNX-smart grid compatibility projects



Protection of the environment through the promotion of biomass for substitution of fossil fuels in heating and power generation (**BIOFOSS**):

✓ Energy audit of public buildings.



www.biofoss-project.eu

Protection of the environment through the promotion of biomass for substitution of fossil fuels in heating and power generation (**BIOFOSS**):

✓ *Small district heating systems.*



www.biofoss-project.eu

Protection of the environment through the promotion of biomass for substitution of fossil fuels in heating and power generation (BIOFOSS):

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BIOFOSS

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Protection of the Environment through the Promotion of Biomass for Substitution of Fossil Fuels in Heating and Power Generation

- Heating and power generation in the cross border area are heavily based on fossil fuels. Besides the power generation of electricity based on lignite in both sides of the borders, lignite is also heavily used for space heating purposes.
- An operational district heating network in Amyntaio municipality managed by DETEPA and one that is in the design stage in Bitola are based on lignite as they are utilizing a pipeline to utilize the red-oxide heat of the power stations in the area.

TEN-T PROJECT: Connecting Europe Facilities - CROCODILE 2

- ✓ *Application of ITS directive (Intelligent Transportation Systems) to 9 EU countries.*
- ✓ *Harmonization of dynamic traffic data.*
- ✓ **Development of pilot Safe and Secure ITS Truck-Parking Area (University of Patras, TEIWM).**

CROCODILE 2

TEN-T PROJECT: Connecting Europe Facilities - CROCODILE 2

CROCODILE 2



TEN-T PROJECT: Connecting Europe Facilities - CROCODILE 2

✓ 9 countries

CROCODILE 2



TEN-T PROJECT: Connecting Europe Facilities - CROCODILE 2

- Project partners
 - Austria, Cyprus, Czech Republic, Germany, Greece, Italy, Poland, Romania, Slovenia
- Associated Partner
 - Croatia, Bulgaria, Slovakia, Hungary, Albania

Greece: Ministry of Transport, CERTH, Egnatia highway, Patras Uni, **TEIWM**

CROCODILE 2

TEN-T PROJECT: Connecting Europe Facilities - CROCODILE 2

✓ Budget (41 million Euro)

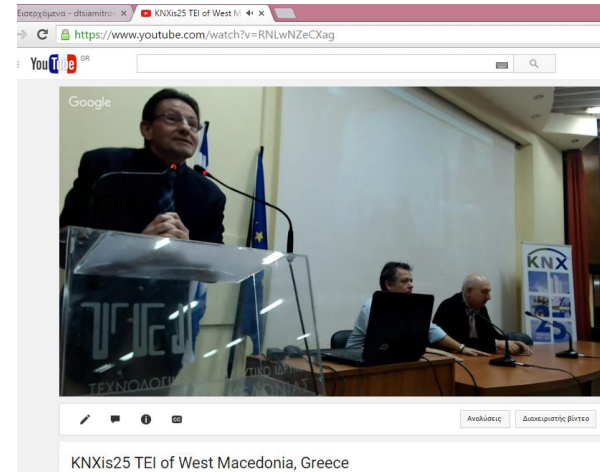
	Planned budget	Estimated CEF funding	Pro-rata share of the maximum CEF contribution (%)
AT	9,765,000	1,953,000	23.65%
DE	7,281,000	1,456,200	17.64%
IT	3,490,000	698,000	8.45%
RNCMNR	7,240,000	1,448,000	17.54%
SI	6,000,000	1,200,000	14.53%
CY	880,000	176,000	2.13%
CZ	1,930,000	386,000	4.67%
PL	3,238,000	647,600	7.84%
GR	1,461,000	292,200	3.54%
Total	41,285,000	8,257,000	100%

CROCODILE 2

Scientific partner KNX (KNXis25 - live-streaming):

✓ Still on-line at

<https://www.youtube.com/watch?v=RNLwNZeCXag>



First Greek ASHRAE student branch:

Student branch link

<http://student-ashrae.teiwm.gr>

Constant presence and contribution to all ASHRAE events

<http://ashrae.gr/>



TEI of West Macedonia
Student Branch



Postgraduate courses:

Postgraduate course - Renewable Energy Sources and Energy Management in Buildings at TEIWM,

- **Schneider SA** →

sponsor, supplying numerous KNX devices.

- **Hellenic Distribution Network Operator (HEDNO)** →

sponsor, supplying the HEDNO laboratories for free.



Thank you