



## Facts about the Bioclimatic office building of CRES

Office building (total net area 428m<sup>2</sup>).

Completed in 2001.

### Energy saving

Natural lighting and passive cooling systems

Passive and hybrid solar system

Building Energy Management System (BEMS)

### Geothermal heat pump system

Combined closed loop system (4 Borehole Heat Exchangers) and open-loop system (2 Water wells and titanium heat exchanger)

Geothermal heat pump capacity P<sub>th</sub>= 20kW

Terminal units: Fan coil units (40/45°C(H), 7/12°C (C))



SETechTra 2<sup>nd</sup> partners meeting in Greece

### Introduction

The Second Transnational Project meeting was organised on the 3<sup>rd</sup> of November 2022 at CRES premises in Pikermi, Greece. The 2<sup>nd</sup> Multiplier Event took place a day earlier, on the 2<sup>nd</sup> of November 2022 at the National Technical University of Athens (NTUA), Central Library in Zografou Campus, Greece.

### Transnational project meeting

Most of the project partners participated in-person to the 2<sup>nd</sup> transnational meeting in Athens. During the meeting, the intellectual outputs were discussed. Special attention was given to the project deliverables with a fruitful debate and conversation about the best and efficient way to achieve them. After the meeting there was a visit to the geothermal heat pump system inside CRES premises.



## INSIDE THIS ISSUE

- Transnational project meeting **P.1.**
- Facts about the bioclimatic office building of CRES **P.1**
- Interview with Dr. Constantine Karytsas, Member of Advisory Steering Board **P.2.**
- Multiplier event **P.2.**
- Coming soon **P.3**

### Bioclimatic office building of CRES

At the end of the project meeting, all partners visited the geothermal heat pump system in the bioclimatic office building of CRES.



The bioclimatic office building of CRES (total net area 428m<sup>2</sup>) was designed and constructed as a demonstration building which uses various RES technologies and energy saving techniques. This building was constructed during the years 1999-2001. Among RES technologies used in the building, the geothermal water-to-water heat pump operates in heating and cooling mode. The system utilizes groundwater from two wells ~80m deep each and 4 Borehole Heat Exchangers (Types: Single-U, Double-U, Coaxial and Helix). The capacity of the geothermal heat pump is P<sub>th</sub>=20kW.



## Interview with Dr. Constantine Karytsas, member of the Advisory Steering Board

### Q1: Tell us a little about yourself and your links with the SETechTra project.

I am a geologist with a PhD from PennState University USA with 35 years' experience in energy issues, including RES, CCS and petroleum engineering. For 34 years I've been the Head of the Geothermal department of CRES and during the last 10 years I have been the Director of the RES Division at CRES. During the years I have participated in more than 125 research and demonstration projects funded by EU, International funds, the Greek government and private entities. I'm a member of the Advisory Steering Board of the SETechTra project and I'm looking forward to a successful completion of the project.

### Q2: Do you believe that the transition to Renewable Energy Sources is a one-way ride?

Yes, I believe that the transition to Renewable Energy Sources is definitely a one-way ride based on the long term targets set by the European Union, to deal with the climate change and to achieve independence from fossil fuels. I believe that the key to tackling climate change is the combination of RES development with adoption of energy saving measures. Furthermore, RES enhancement will contribute to the reduction of energy imports, resulting in direct economic benefits.

## 2<sup>nd</sup> SETechTra Multiplier event

### RES Technology Training Modules for STEM Undergraduates

The 2<sup>nd</sup> SETechTra Multiplier Event took place at NTUA, entitled "RES Technology Training Modules for STEM Undergraduates". The total participants of the event were 63 persons, 44 of them participated physically and 19 virtually.



### Project's Overview and Achievements (Dr Fideline Tchuenbou-Magaia, Lead of the Energy and Green Technology Research Group, UoW [Coordinator])

Dr. Tchuenbou-Magaia gave an overview of the SETechTra Project and shared with the audience key achievements and opportunities for collaboration.



These achievements included:

- Creation of a mapping of the EU Entrepreneurship Competence Framework and competences of the Solar Energy/Renewable Energy (SE/RE) sector and embedding those competences into a SE Module.
- Design of the first version of the final module structure and contents for a 12-week delivery.
- Production of more than 80% of the teaching materials and the first-week delivery materials piloted by SAMK with the engineering undergraduates.

- Outreach activities: TU successfully delivered 6 outreach sessions at 5 local schools and the UoW hosted and big outreach event with 625 people (staff and students) including 14 schools.

### Overview on Solar training materials (B.Eng Petri Lähde and B.Eng Marko Kukka, SAMK)

The presentation consisted of snips of all the Solar training materials made by SAMK in the project. All the activities were presented, and some example slides were shown from each activity. There were example slides about the fundamentals of solar energy. This is important topic in the course as students need to comprehend the basics of solar radiation and photovoltaic effect. There needs to be also some understanding about how solar cells are made and what factors affect the yield of the cells. There was also few topics about solar thermal systems but those were left out of the course to make it more concentrated to photovoltaics.

The main purpose of the presentation was to bring forth the different topics of the course and show how the materials look. There were some interested students in the audience that were eager to start studying the materials.



### Addressing the STEM Skills Gap to support the Energy Transition (Prof Michael Short of Teesside University)

Prof Michael Short from Teesside University gave a talk on STEM Skills Gap. The talk argued that in addition to

### Q3: A difficult winter is foreseen. What would you advise households in order to be able to meet their energy needs?

Amongst others the following measures may be applied:

1. Proper maintenance and adjustment of the heating system by a qualified and certified technical staff at the beginning of the winter season. Maintenance and adjustment should follow the system manufacturer's instructions.
2. Maintenance (de-aeration) and regular cleaning of the radiators to maximize their performance.
3. Setting the temperature of the residence thermostat at 19 to 20°C.
4. Maintaining a constant temperature in the main areas of the house.
5. Placing the thermostat of the residence in an appropriate place.
6. Use of solar water heater for domestic hot water (DHW).
7. Replacement of the heating system, if possible, with certified heat pump systems such as geothermal heat pumps or air-cooled heat pumps.
8. Examining the possibility of incorporating PV to meet electrical needs.



**Dr. Constantine Karytsas,**  
member of Steering Advisory  
Board

### Coming

Christmas holidays are closing. Merry Christmas and a Happy New Year!

Transnational Project Meeting (TPM) and Multiplier Event (ME), in August in the UK.

known skills gaps both in the EU and UK at the current time, including those identified by the SETechTra project partners, uncertainty inherent in the ongoing energy transition (e.g. regarding the multifarious nature of technology deployments in a specific regional context) would dictate that future skills requirements are difficult to predict going forward. He argued that as such, in addition to addressing current skills gaps, educators should also focus on core transferable STEM skills - alongside related skills such as resilience and adaptability - from a young age now in order to begin to train the future digital energy workforce. The talk outlined wider ongoing outreach, CPD and training provision around these themes at Teesside University, and also gave an outline of the SETechTra project and how it fits into this wider picture. The talk was followed by interesting discussions and useful critiques on the key outlined themes.



### Renewable Energy potential in Greece (Dr. Olympia Polyzou and Theoni Oikonomou M.Sc., CRES)

Dr. Olympia Polyzou presented the RES Greek market, the RES Project Applications in Greece and the Forecast of RES Installed Capacity in Greece. She also illustrated employment data for the RES for power generation.

Mrs Theoni Oikonomou continued with the presentation of the RE technologies in the education system of Greece, the engagement between HEIs and school pupils in Greece and the existing curricula on RE technologies in the education system of Greece.

It was concluded that Greece has high RES

potential, especially for SE technologies due to high solar radiation. Moreover, although there are several courses in Greek universities, there is a need to provide upgraded courses, which would be more oriented to the needs of the RE and SE market/industry and would provide to the graduate the needed skills to be ready to work in the RE sector or/and start their own enterprise on this sector.

### Solar and Renewable Energy Curriculum for Millennium (Dr. David Adebayo, MIMechE, CEng, SFHEA).

Dr. David Adebayo highlighted the importance of making the younger generation (millennium age) aware of the recent advancement in solar and renewable energy sources.

His presentation further discussed the various models on how to organise and develop an effective curriculum that will help with integration and inclusion among students. In addition, it was discussed and evidenced the integration of the graduate requirements to the Curriculum design and development process for the current SETechTra project. The presentation concluded by encouraging all the participants, especially the industrial partners to support and pass their wealth of knowledge and experience in renewable energy to the younger generation.

