



TILOS

Newsletter 4



Technology Innovation for the Local Scale
Optimum Integration of Battery Energy Storage



Prototype battery system almost ready!

In December 2016, integration of the TILOS **Prototype Battery Storage System** recorded major progress at the test-center of **Yunicos** in Berlin. The prototype storage system, bringing together the **NaNiCl₂ batteries** of **FZSonick** and the **battery inverter** of **IDT**, carries **advanced features** that will enable support of **multiple functions** in the Tilos smart microgrid.

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TILOS



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Optimum Integration of Battery Energy Storage



Tilos, the "S" shaped Greek island, located at the south-eastern part of the Aegean Sea.

TILOS is a European research project engaging **13 participating enterprises and institutes** from **7 European countries** (DE, FR, EL, UK, SE, IT, ES). The project's main goal is to demonstrate the potential of **local / small-scale battery storage** to serve a multi-purpose role within an **island microgrid** that also interacts with a main electricity network. Among others, the project aims to achieve **large-scale RES penetration** and asset value maximization through the **optimum integration** of a hybrid RES (wind and PV) power station together with **advanced battery storage, distributed, domestic heat storage, smart metering and DSM**.

Project objectives will be accomplished through the development and operation of an **integrated, smart microgrid** on the island of **Tilos**. Tilos belongs to the island complex of **Dodecanese**, on the south-eastern part of the **Aegean Sea**, and is interconnected to the host grid of **Kos and Kalymnos islands** via an **undersea cable**.

TILOS project started on the **1st of February 2015**, under the call for **Competitive Low-Carbon Energy, H2020-LCE-2014-3**, and its duration is **48 months**. The project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement **No 646529**, with its total budget reaching **15M€**.



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The views expressed in this publication do not necessarily reflect the views of the European Commission

1. TILOS in General

TILOS Review Meeting in Athens

The first **Review Meeting** of TILOS was held between the 19th and 20th of October 2016 in Athens-Greece, hosted by the **Coordinator TEIP**. During the first meeting day, an introductory session took place in order for participating partners to meet and discuss with the project officer. During the second meeting day, three more sessions followed, with presentations of WPs that had been ongoing during the first reporting period.



Apart from **TEIP**, **major partners** also participated in the meeting, **successfully conveying** to the project officer the progress achieved during the first 18 months of project implementation.

TILOS Latest Publications

In autumn 2016, TILOS participated in **Med Power 2016** and **COMECAP 2016** international conferences with a total of **four paper presentations**. All four papers, led by **TEIP** and **ITC**, were presented in the context of TILOS project WP6 concerning the development of **forecasting models**. In addition, **two more papers** under WP6, led by **UCPP**, were accepted for publication in the **Energy** and **Renewable Energy** peer-reviewed journals of **Elsevier**.



2. TILOS 6M Meeting, France, June 29-July 1, 2016

The **4th TILOS Meeting** was held between June 29 and July 1st, 2016, in the premises of the beneficiary **CEA**, in Chambéry, France.

The meeting also included a tour in **CEA-Ines** facilities, during which the members of TILOS team had the opportunity to familiarize with the execution of WP5 tasks, dealing with the development of the prototype NaNiCl_2 battery storage system and the mapping of its performance.



3. Project Progress

- **SCADA Development**

In September 2016, **Eunice** installed the microgrid **SCADA Control Room** on the island of Tilos. At the same time, **communication** between the **SCADA** and existing measuring equipment, including the **three weather stations** and **two new grid load meters**, was effectively established by **Yunicos** and **Eunice**.



- **Demand Side Management**

Almost 150 **Smart Metering & DSM Panels** were shipped to Tilos in December 2016. **ESL** and **Eunice** started their **rollout** in the **residential sector** of the island, in **public buildings** and in **central municipality loads**, such as pumping stations. Each panel has the ability to **remotely monitor and control** up to **three electrical loads** per residence, while installations are expected to progress rapidly in the next couple of months.



Prior to that, **inspection, assessment and certification** of existing electrical boards and infrastructures is carried out by **HEDNO**, ensuring that all safety measures are implemented properly.

- **Battery Storage System Development**

In November 2016, the **first battery container** of **FZSonick** was shipped to **Yunicos** test-center in Berlin. There, the **containerized battery** was **integrated** with the **inverter of IDT**, undergoing a first round of **basic functional tests**. Further tests will take place early in 2017 so as to map the **integrated system performance** before it arrives to Tilos for commissioning.



- **Training Seminars**

In November 2016, **WWF** conducted the **first seminar** of the **second round training seminars**, informing the local habitants on the installation and use of the **Smart Metering & DSM Panels**.



- **Installation of RES**

In December 2016 – January 2017, **Eunice** received **Approval of Environmental Terms** for the installation of the hybrid power station while also signing the **Enercon E-53 wind turbine** contract and starting earth works on site.



4. Project Partners - Consortium

The Consortium of TILOS involves **13 partners** from **7 countries** in Europe: Greece, Italy, France, UK, Spain, Germany and Sweden. Because of this **geographical spread**, the project reflects to **different markets, strategies and policies** across Europe.



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Project Partners

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Former Technological Educational Institute of Piraeus (TEIP)
<http://teipir.gr/>; <http://sealab.gr/>

RWTH Aachen University (RWTH)
<https://www2.isea.rwth-aachen.de/de>

Commissariat à l'énergie atomique et aux énergies alternatives (CEA)
<http://www.cea.fr/>

Eunice Energy Group (EUNICE)
<http://www.eunice-group.com/>

Eurosol P&M GmbH (ESL)
<http://www.eurosol.eu/>

FZSonick S.p.A. (FZSonick)
<http://www.fzsonick.com/>

Hellenic Electricity Distribution Network Operator S.A. (HEDNO)
<http://www.deddie.gr/>

Instituto Tecnológico de Canarias SA (ITC)
<http://www.itccanarias.org/>

Kungliga Tekniska Högskolan (KTH)
<https://www.kth.se/>

University of Corsica Pascal Paoli (UCPP)
<http://spe.univ-corse.fr/>

University of East Anglia (UEA)
<https://www.uea.ac.uk/>

World Wide Fund for Nature (WWF)
<http://www.wwf.gr/>

Younicos (YOUNICOS)
<http://www.younicos.com/>

Related news and conferences

World Engineers' Summit 2017

In July 2017, Singapore will host the World Engineers Summit 2017 – Applied Energy Symposium and Forum: Low Carbon Cities and Urban Energy (WES-CUE 2017) Joint Conference. The third biennial conference will continue to champion engineering-led discussions on sustainable urban development. WES-CUE 2017 will convene engineers and scientists from multiple disciplines as well as researchers and business leaders from diverse industries around the world.

<http://www.wes-ies.org/>

Advanced Battery Conference 2017

Business and technical issues are presented by far more than 200 participants for the call for papers, which will be put together to a highly attractive programme by the scientific board. The Advanced Battery Conference 2017 in Aachen/Germany will be once more a meeting of point of international battery experts and companies. The conference will take place between 28 and 30 of March 2017.

<http://battery-power.eu/en/>

IREs & Energy Storage Europe 2017

From 14 till 16 March 2017, the 11th International Renewable Energy Storage Conference (IREs 2017) will take place together with the Energy Storage Europe (conference + expo) in Düsseldorf, Germany. The three-day program is packed with presentations, discussions, talks, exhibitions and poster talks. By connecting "science" and "business" and by bringing together those two target groups more input, more knowledge and more contacts are guaranteed.

<http://www.eurosolar.de/en/>



19 - 21 JULY 2017, SUNTEC SINGAPORE
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