



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

Grant Agreement Number 646529

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

TILOS

Innovation Project

LCE-08-2014: Local / Small Scale Storage



Project Coordinator: Piraeus University of Applied Sciences (TEI of Piraeus)

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D8.2 Training Seminars for Smart Metering & DSM - 2nd Series

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Scope of Deliverable

To organize and conduct a second training seminar so as to inform the local community population on the basics of smart metering, energy monitoring, energy saving and DSM in a consistent way, in the context of the series of training seminars already started from M3 of the project. The series of seminars aims at the development of a mindset that will facilitate DSM and smart grid operation and at the same time enable local consumers to gain an understanding of effective energy monitoring and potential energy savings through the proper use of smart meters.

Document History

Version	Organization	Date	Changes
0.1	WWF Greece	16/09/2015	Initial Version
0.5	WWF Greece	17/09/2015	Final Version for Internal Review
1.0	WWF Greece	28/09/2015	Final Version for Submission

Executive Summary

The second training seminar took place on the 4th of September, 2015, preceding the 6M meeting of TILOS project, organized between the 5th and the 6th of September 2015. The seminar comprised of two parts; in the first part WWF gave a presentation on smart metering and energy saving; in the second part an open discussion was made between seminar participants and the seminar organizers of WWF, identifying concerns and practical issues with regards to the use of smart meters, the application of DSM, the potential for energy saving and the protection of appliances from the local electricity grid shortcomings. Such issues were then further elaborated in the first TILOS workshop concerning the communication of technical aspects to the local authorities and islanders, held on the 6th of September 2015 and following the end of the two-day TILOS 6M meeting.

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1. Training Seminar Agenda

The second training seminar was held on the 4th of September on Tilos island, Greece, organized by WWF Greece and the local Municipality of Tilos, with the participation of representatives of the local Municipality Board and islanders (Table 1). The seminar took place in the central square of Livadia village, where the majority of locals gather in the evening, offering thus an excellent open-space venue for the organization of the two-hour seminar, broken down into two parts; the first one considering a presentation on smart metering and energy saving by WWF and the second one regarding an open discussion between the participants and WWF representatives (see also Table 2).

Table 1: Training Seminar Summary

Date:	Sept. 4 th , 2015 (19:30-21:30)
Location:	Tilos island, Greece - Livadia central square
Organized by:	WWF Greece
Participants:	Members of the local Municipality Board, local habitants and island visitors

Table 2: Traing Seminar Schedule

Training Seminar on Smart Metering & Energy Saving

19.30: Presentation on smart metering and energy saving (in Greek) *Michalis Prodromou (WWF Greece)*

20.00: Q&A on the presentation

20.30: Open discussion on smart metering, energy saving and DSM

21.30: End of seminar

1.1. Attendance to the Seminar

An approximate number of 45 participants attended the meeting (see also Table 3), including 6 members of the local municipality board, the local vice-Mayor, the senior Mayor Counselor and the President of Livadia community, the rest being mainly local residents as well as island visitors interested in the subject of the seminar.

Table 3: Training Seminar Participants

Organization	Participant Name	Position / Status
Tilos Authorities	Andreas Filippou	Tilos Vice-Mayor
	Stathis Kontos	Senior Mayor Counselor
	Anna Kamma	Secretary of Tilos Municipality
	Nikitas Morfopos	President of the Municipality Board
	Ilias Christofis	Member of the Municipality Board
	Manolis Chatzifountas	Member of the Municipality Board
	Spyros Aliferis	Member of the Municipality Board
	Kyriakos Sakellaris	Member of the Municipality Board
	Ioannis Ioannidis	Member of the Municipality Board
	Nikitas Papadopoulos	President of the Livadia Community
Other participants	Around 25 local residents and 10 island visitors (tourists)	

2. Synopsis of the Seminar

2.1 Presentation on Smart Metering and Energy Saving

The seminar aimed at linking the deployment of smart metering to the potential of energy savings. With regards to the first part of the seminar (see also Appendix for a copy of the WWF presentation), after presenting the fundamentals of smart meters (what they are, legislative context, smart meters in the TILOS project), some data on the actual energy consumption of an average Greek household were presented (shares of the various energy uses) followed by a set of simple, low cost energy saving measures (proper use of fridges and cooking devices, dealing with heating and cooling equipment, hot water preservation, insulation etc). After the end of the presentation, questions of the seminar participants were answered, mainly referring to the exact costs of different energy saving measures and their payback time.

2.2 Open Discussion

In the second part of the seminar, an open discussion took place, analyzing in more detail the implications of the installation of smart meters and their proper and effective use, and elaborating concerns of the locals with regards to issues such as the improvement of the local electricity supply quality, the potential for energy saving, net metering opportunities and DSM. More precisely the following points were identified and were further discussed.

- There was a concern on the workload and interventions required for the installation of the smart meter and DSM solution at the household level, with the need for a demonstration of the proposed solution being quite pronounced, in order for the local consumers to familiarize with its operation prior to installation. To this end, it was understood among the participants that the more data is collected in advance with regards to the characteristics of each household (e.g. through questionnaires) the more effective the installation and adaptation of the proposed solution will be, aiming also to the development of a common, flexible and adaptable solution and not to a plethora of tailored ones. With regards to the familiarization of the locals with a demo, it was agreed that once Eurosol can provide a first prototype, this will be effectively used for further training of the locals.
- At the same time, the idea of having a central display presenting the entire island and the Livadia community real-time electricity consumption (already measured from HEDNO in the project context) was much favoured by all seminar participants.
- The problem of frequent power cuts and electricity supply shortcomings that in many cases damage electrical appliances of the locals was also stressed, in the sense of how could the DSM and smart meter solution provide protection against this phenomenon. It was commonly agreed that this should be communicated to Eurosol during the TILOS workshop.
- In a parallel discussion, all participants were encouraged to analyze their electricity bills and identify the main sources of consumption along with the potential for energy saving under minimum interventions. At the same time, the net metering PV solution was mainly brought up by hotel owners, seeking for advise on how to reduce their electricity bills in a cost-effective manner.

- Finally, the concept of DSM under the operation of a smart grid locally was discussed, with the seminar participants being positive with regards to their active involvement, although under the prerequisite of voluntary DSM application and minimum imposition of load shedding by the system operator, together with the production of sufficiently informing DSM signals with which they can cope.

3. Obstacles and Next Steps

3.1 Obstacles

Regarding obstacles, the relatively low attendance during the seminar does not yet allow for a considerable impact at the island level. This should be attributed to the chosen period (September is still a busy touristic time for Tilos) which did not permit the islanders' presence, as most of them are occupied in the touristic sector (hotels, restaurants etc). On the other hand, the effort of population engagement through the series of training seminars is expected to improve considerably in the forthcoming period, mainly owing to the actual involvement of Eurosol and the smooth implementation of WP4, which so far encountered delays due to the withdrawal of Open Energi.

3.2 Next Steps

Next steps include:

- Coordination of next seminars on the island, in accordance with the progress made in WP4.
- Exploration of various different pathways for an effective, further engagement of the population. Specifically:
 - The possibility of engaging the students of Tilos will be explored. An initial contact with the headmaster of the Tilos high school has already been made.
 - Further population engagement will be sought through the collaboration with the local cultural Association and the Tilos' women co-operative.
 - Collecting additional questionnaires during the next visit on the island mainly from households since the questionnaires already collected from small businesses constitute a high percentage of the total.
 - Collecting more information through questionnaires, that will also facilitate the installation of smart meters and DSM devices.

4. Appendix - Copy of Seminar Presentation (in Greek)



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Τεχνολογική καινοτομία σε επίπεδο τοπικής κλίμακας, για την βέλτιστη ενσωμάτωση μπαταριών αποθήκευσης ενέργειας

Έξυπνοι μετρητές & Εξοικονόμηση ενέργειας

Μιχάλης Προδρόμου



Τήλος / Σεπτέμβριος 2015



- ▶ Οι έξυπνοι μετρητές είναι η επόμενη γενιά των συμβατικών μετρητών ηλεκτρικής ενέργειας
- ▶ Καταγράφουν
 - ▶ την συνολική κατανάλωση ενέργειας
 - ▶ την κατανάλωση σε πραγματικό χρόνο
 - ▶ τα ιστορικά δεδομένα της κατανάλωσης και
 - ▶ το κόστος της κατανάλωσης
- ▶ Δυνατότητα απεικόνισης της πληροφορίας αυτής για τον καταναλωτή αλλά και τον πάροχο ενέργειας
- ▶ Αμφίδρομη επικοινωνία: π.χ. ενημέρωση για αλλαγές στα τιμολόγια
- ▶ Άλλες ονομασίες: ευφυείς μετρητές , ηλεκτρονικοί μετρητές, smart meters.



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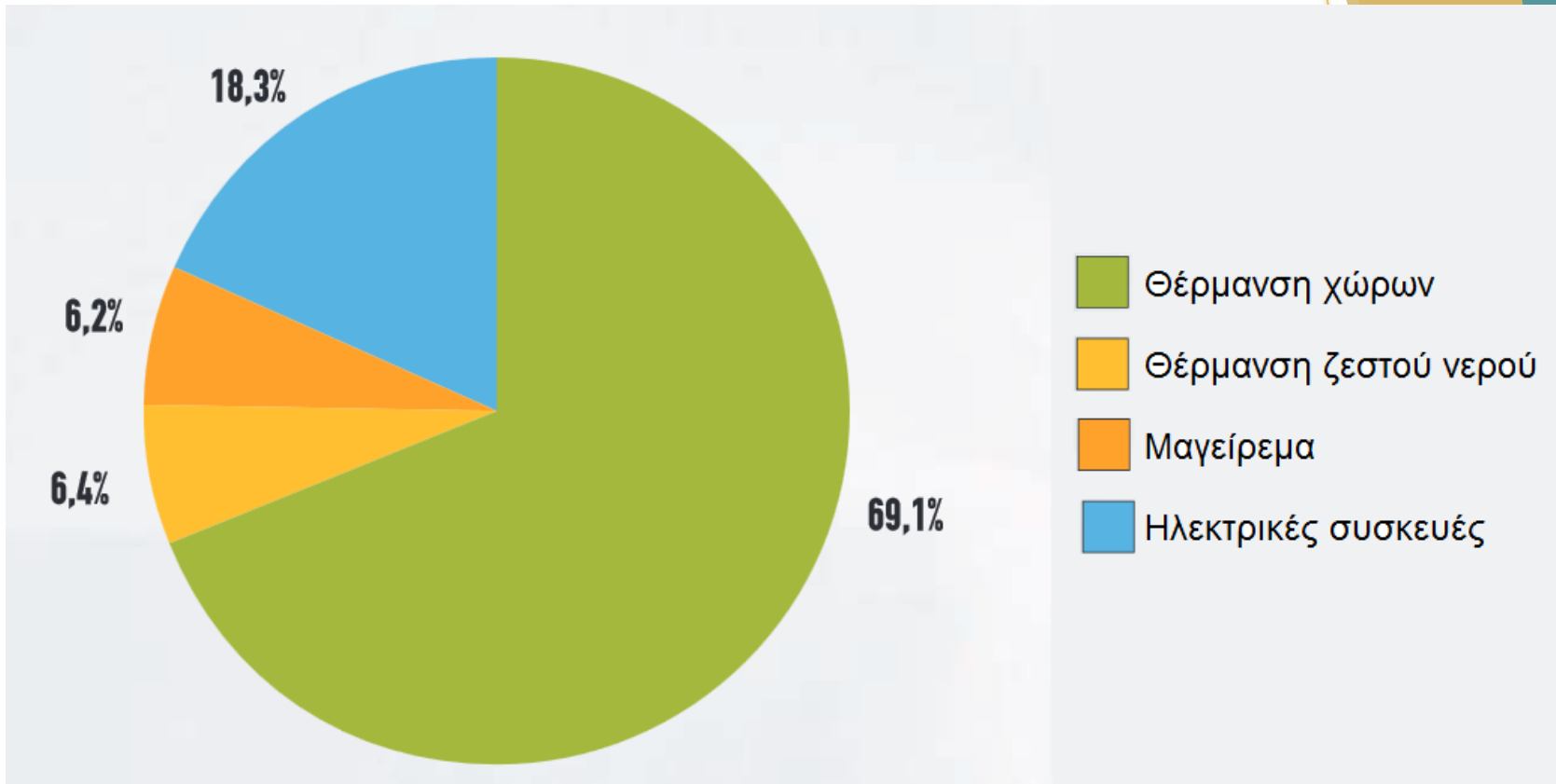


- ▶ 2020: 200 εκατομ. έξυπνοι μετρητές ηλεκτρισμού και 45 εκ. μετρητές αερίου (Οδηγία 2009/72/ΕΕ)

- ▶ Ελλάδα
 - ▶ 2015: 160.000 μετρητές (Ξάνθη, Λέσβος, Λευκάδα, Αθήνα, Θεσσαλονίκη)
 - ▶ 4 παρατάσεις για τον διαγωνισμό...
 - ▶ 2020: Αντικατάσταση τουλάχιστον του 80% των υφιστάμενων μετρητών

- ▶ Τήλος
 - ▶ Καμία επιβάρυνση για τους κατοίκους
 - ▶ Εγκατάσταση μετρητών από το 2016





Κατανομή της κατανάλωσης ενέργειας στα ελληνικά νοικοκυριά

Βάση ενεργειακών δεδομένων Odyssee, <http://www.odyssee-indicators.org>





- ▶ Ρυθμίστε τον θερμοστάτη στους
 - ▶ 19-20° C τον χειμώνα
 - ▶ 16° C, όχι παρακάτω, όταν βγαίνετε έξω
- ▶ Κατάλληλος αερισμός
 - ▶ Αερίστε τους χώρους τις μεσημεριανές ώρες τον χειμώνα & τις πρώτες πρωινές ώρες το καλοκαίρι
 - ▶ Κατά τις ώρες αερισμού: εκτός λειτουργίας καλοριφέρ/κλιματιστικά
- ▶ Εκμεταλλευτείτε τον νότιο προσανατολισμό



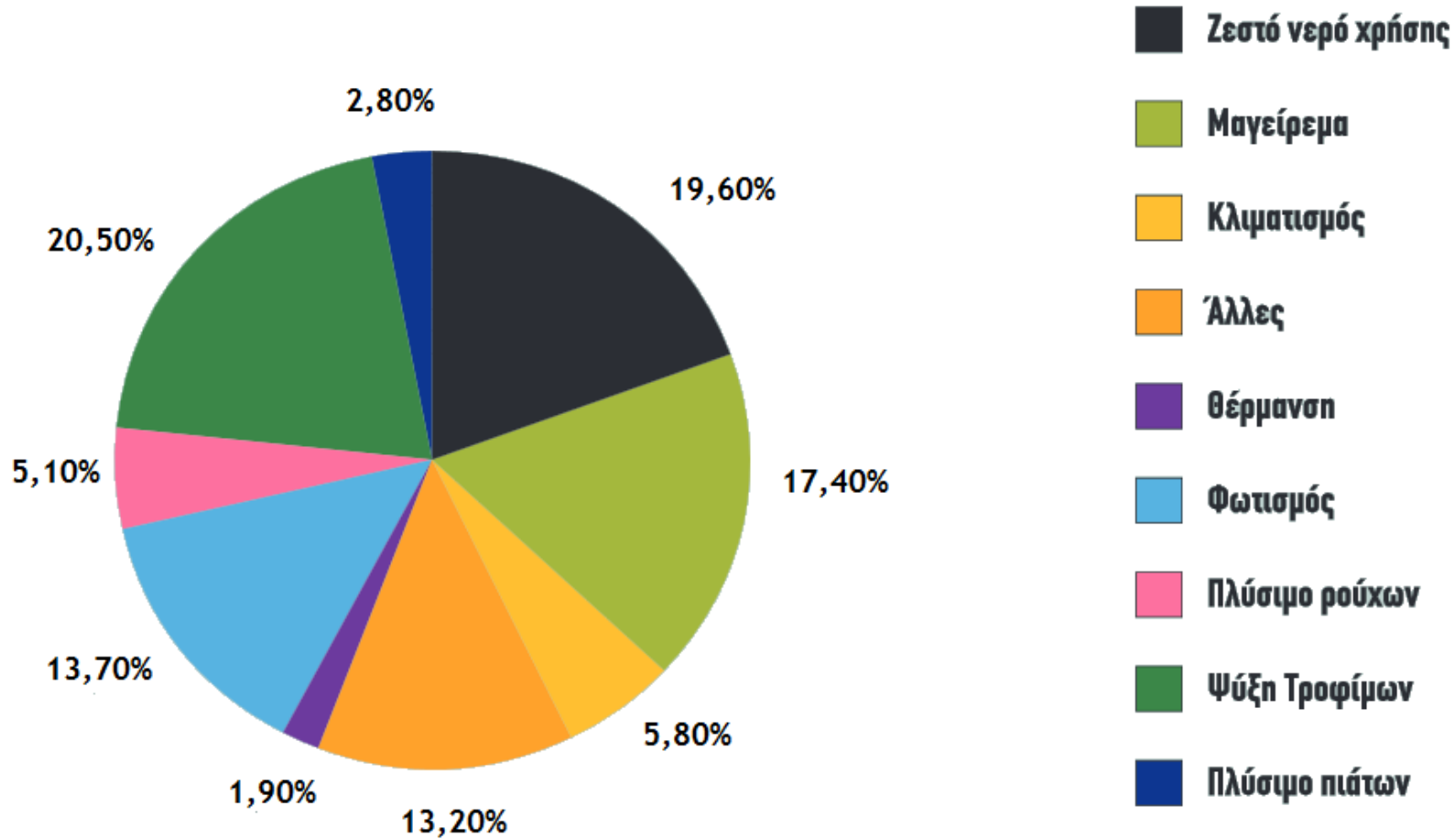
Η μείωση της θερμοκρασίας θέρμανσης χώρου κατά 1° C, επιφέρει εξοικονόμηση 7-10%





- ▶ Σημεία συγκέντρωσης μούχλας/υγρασίας: πιθανά προβλήματα μόνωσης
- ▶ Η στεγανοποίηση και σωστή μόνωση της ταράτσας επιφέρουν εξοικονόμηση ενέργειας 15%-20%
- ▶ Περιορισμός απωλειών στα ανοίγματα: αεροστεγανωτική ταινία, ειδικές ταινίες-βούρτσες





Κατανομή καταναλώσεων ηλεκτρικής ενέργειας οικιακού τομέα

ΥΠΑΝ, 2008





▶ Ψύξη τροφίμων

- ▶ Σωστή τοποθέτηση: μακριά από πηγές θερμότητας που μπορούν να αυξήσουν την κατανάλωση ρεύματος μέχρι και 30%
- ▶ Τακτική απόψυξη: στρώμα πάγου πάχους 5 χιλιοστών αυξάνει κατά 30% την κατανάλωση ρεύματος



▶ Ζεστό νερό

- ▶ Ηλιακός θερμοσίφωνας: η απόσβεση γίνεται σε 3-4 έτη
- ▶ Ντους αντί για μπάνιο σε γεμάτη μπανιέρα: ξοδεύετε τρεις φορές λιγότερο ρεύμα και νερό
- ▶ Η μόνωση των σωλήνων ζεστού νερού κοστίζει 12 €/m², και βοηθά στην εξοικονόμηση ενέργειας έως και 30%





- ▶ Μαγείρεμα
 - ▶ Χύτρα ταχύτητας: εξοικονόμηση 30-60% ενέργειας
 - ▶ Το άνοιγμα της πόρτας του φούρνου οδηγεί σε απώλεια 20% της εσωτερικής θερμότητας



- ▶ Φωτισμός
 - ▶ Λαμπτήρες οικονομίας VS λαμπτήρες πυρακτώσεως: 10-15 φορές μεγαλύτερη διάρκεια ζωής και 80% μειωμένη κατανάλωση
 - ▶ Λαμπτήρας LED: 7W αποδίδουν όσο 60W κοινού λαμπτήρα





- ▶ Κλιματιστικά
 - ▶ Κλιματιστικό A+++ : 15% λιγότερη κατανάλωση
 - ▶ >26- 28 °C
 - ▶ Κρατήστε πηγές θερμότητας μακριά

Οι ανεμιστήρες οροφής καταναλώνουν το 1/10 της ηλεκτρικής ενέργειας





Ευχαριστούμε!

