

TRANSNATIONAL ACCESS USER PROJECT FACT SHEET

USER PROJECT

Acronym	Eval-loggers
Title	Evaluation of different data logger technology and data processing techniques for field testing of small locally manufactured wind turbines
ERIGrid Reference	01.014-2016
TA Call No.	1

HOST RESEARCH INFRASTRUCTURE

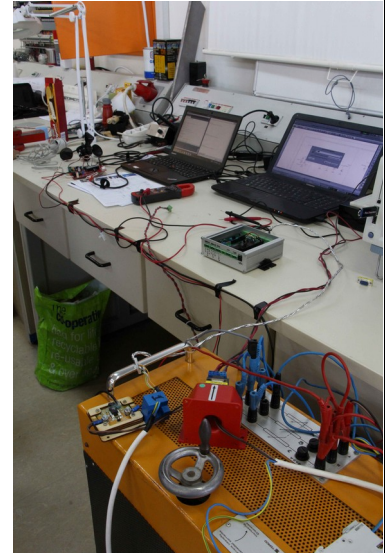
Name	ICCS - NTUA		
Country	Greece		
Start date	01/07/2017	N° of Access days	10
End date	15/07/2017	N° of Stay days	14

USER GROUP

Name (Leader)	Luiz Fernando Lavado Villa
Organization (Leader)	University Paul Sabatier and LAAS-CNRS
Country (Leader)	France
Name	Gilles Longuet
Organization	Tripalium Network
Country	France
Name	Matthew Little
Organization	Re-Innovation UK
Country	UK
Name	
Organization	
Country	

1. USER PROJECT SUMMARY (objectives, set-up, methodology, approach, motivation)

The Wind Empowerment Measurement WG is composed of several members interested in creating affordable ways of gathering and treating data for several purposes, from power curve studies to remote monitoring. After 2 years of work, several low-cost data logger designs have been developed for studying small wind turbine based installations. The proposed Transnational Access project sought to build upon the previous work of the Wind Empowerment Measurement WG and bring its main specialists together to test, validate and analyze the data logger designs currently available. To achieve this, a series of experiments are proposed in the facilities for Renewable Energy Systems and data logging at ICCS-NTUA. A total set of 5 tests were made during the project. Test 1 was focused on calibrating the dataloggers under DC controlled conditions. Test 2 was conducted under AC controlled conditions. Test 3 used a rectified AC for both AC and DC measurements. Test 4 was conducted on a real-size wind turbine simulator for evaluating the influence of frequency in the measurements. Finally, test 5 was conducted on a real site. The tests evolved in complexity, allowing to safely compare the precision and accuracy of both dataloggers under evaluation. All measurements were compared to a highly accurate YOKOGAWA measurement equipment. This cross-comparison with a highly reliable reference allowed a significant progress in the current conception of the dataloggers.



Datalogger DC/AC test setup

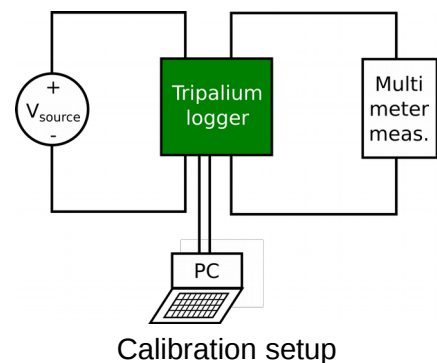
2. MAIN ACHIEVEMENTS (results, conclusions, lessons learned)

The achievements can be resumed in 3 parts: Hardware, Software and Calibration.

In terms of Hardware, the project allowed a thorough revision of best practices and debugging of the equipment. Certain glitches, which were treated via software, will now be solved through hardware improvements shared during the project.

In terms of Software, the participants have exchanged during several sessions regarding software structure, state-machine development, object-oriented language and development environment. Data-treatment was also discussed during the week, leading to a roadmap for the next year within the Wind Empowerment Measurement Working Group.

Finally, in terms of calibration, data comparison has shown that calibrating the dataloggers with a commercial voltmeter through a specific calibration procedure grants precisions of 2%, similar to those achieved with the reference YOKOGAWA equipment used during the tests (1%).



Calibration setup

3. PLANNED DISSEMINATION OF RESULTS (journals, conferences, others)

The first dissemination of the results will be through online articles in the Wind Empowerment network, the Tripalium Network and other relevant practitioners related structures. The results regarding the calibration procedure and the precision of the measurements will be included in the final report and will serve as a basis for a future joint publication in a relevant publication yet to be defined.