

TRANSNATIONAL ACCESS USER PROJECT FACT SHEET

USER PROJECT	
Acronym	LMSWT-Nepal
Title	Locally Manufactured Small Wind Turbines for Rural Electrification in Nepal
ERIGrid Reference	02.012-2017
TA Call No.	2

HOST RESEARCH INFRASTRUCTURE			
Name	ICCS-NTUA		
Country	Greece		
Start date	27/10/2018	Nº of Access days	10
End date	10/11/2018	Nº of Stay days	14

USER GROUP	
Name (Leader)	Kimon Silwal
Organization (Leader)	Kathmandu Alternative Power and Energy Group (KAPEG)
Country (Leader)	Nepal
Name	Rojesh Dahal
Organization	Kathmandu Alternative Power and Energy Group (KAPEG)
Country	Nepal
Name	Sean Poole
Organization	Nelson Mandela University (Port Elisabeth)
Country	South Africa

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

The main objectives of the project were to conduct lab tests of KAPEG's axial flux permanent magnet generator (AFPMG) in a test bench, followed by testing the performance of the small wind turbine at a test site.

The test bench at ICCS-NTUA with torque meter, DC motor and DC bidirectional drive was used to conduct different tests at the AFPMG brought by KAPEG users. The testing campaign continued with the installation of KAPEG's 1.2m diameter small wind turbine in the test site (according to the IEC 61400-12-1 standard) at Meltemi test site.

The users collaborated closely with the ICCS-NTUA staff at the planning and implementation of each of the testing activities in order to investigate the performance of the AFPMG.

The 1.2m small wind turbine blade was mounted in the field test site to measure its performance. The test site included several sensors and batteries as load, while Labview software was used to collect all the measurements.

The collected measurements and analysis will be very useful for KAPEG in the near future to upscale its activities on off-grid electrification projects with the small wind turbine, for construction workshops and for further research activities.



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

The users were able to implement the intended tests and collect a wealth of measurements from the AFPMG with bench testing, in order to analyze its characteristics and performance. Various operating conditions were measured and the equivalent model of the AFPMG was developed, which can assist further in future simulations and modeling. Additionally, the users were able to install the complete small wind turbine at the NTUA test site and configure the data logging measurement set-up. The aim of these tests was to produce the power curve and the efficiency curve of the battery connected system, while also verifying the small wind turbine's endurance in extreme weather conditions.



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

The public version of the TA report will be shared with the Wind Empowerment network and also to the relevant institutions involved in small wind turbine projects in Nepal.

The user team intends to develop a paper and present it in the associated conference proceedings in the near future.