

**EoI – Expression of Interest
PARTNER SEARCH**

**AREA OF INTEREST:
Answers expected before:**

GENERAL INFORMATION		
NAME OF ORGANISATION*: NATIONAL TECHNICAL UNIVERSITY OF UKRAINE "KYIV POLYTECHNIC INSTITUTE", FACULTY OF ELECTRONICS		
TYPE OF ORGANISATION*: University		
<input checked="" type="checkbox"/> Public body (Research organization/university/lab)		
CONTACT PERSON		
NAME*	Kateryna Osypenko	
COUNTRY	Ukraine	
ADDRESS	16, Polytechnichna str., room 313, 03056, Kyiv	
TEL*	+38 093 923 4097	
FAX	+38 044 236 2117	
E-MAIL*	ekateryna.osypenko@gmail.com	
TYPE OF PARTNER SEARCH*:		
<input checked="" type="checkbox"/> FP7 /HORIZON 2020 SPECIFIC CALL		
CONSORTIUM*		POSITION WITHIN CONSORTIUM*
<input checked="" type="checkbox"/> Create a new consortium		<input checked="" type="checkbox"/> As a Partner
<input checked="" type="checkbox"/> Join an existing consortium		
IF FP7 RELEVANT CALL: AREA OF INTEREST		
COOPERATION	CAPACITIES	
<input checked="" type="checkbox"/> 3 – ICT	<input checked="" type="checkbox"/> Research infrastructures	
<input checked="" type="checkbox"/> 5 – Energy	<input checked="" type="checkbox"/> Research potential	
	<input checked="" type="checkbox"/> International cooperation	
PEOPLE	IDEAS	
<input checked="" type="checkbox"/> Initial Training networks Networks (ITN)	<input checked="" type="checkbox"/> Starting Independent research grant	
<input checked="" type="checkbox"/> EURATOM	<input checked="" type="checkbox"/> JRC	
CALL DETAILS		
CALL IDENTIFICATION (according to WP): N/A	DATE OF PUBLICATION: N/A	CLOSURE DATE: N/A
PROJECT INFORMATION		

ACRONYME & TITLE: Converters operating modes control in autonomous power supply systems (COPCAPSS)**SUMMARY*:**

The project seeks to solve the problem of power consumption increase in autonomous power supply system with renewable sources provided constant joint operation of solar panel, wind generator, diesel generator and storage battery is urgent in terms of power efficiency. The solution to this problem can be made through power utilization factor more accurate calculation. To ensure the best power use in Smart Grid and more accurate calculation of the power utilization factor it is necessary to consider the equivalent sources external characteristics nonlinearity. In order to improve the energy efficiency of power supply system the diesel generator must have the external characteristic of the current source controlled according to the ratios of solar panel and battery current and the required level of load voltage. The consortium aims to develop a tool that will modify converters control algorithms in order to provide better energy efficiency of autonomous power supply systems.

When autonomous power supply system is operating with dissimilar sources the fullest power use will be provided taking into account equivalent power sources external characteristics nonlinearities at certain ratios of internal resistances, which allows to specify the power utilization factor calculation, closer to real, it will also have a positive impact on correction converters control signals, which leads to the level of power taken from sources real increase. The converters control system in autonomous power supply system produces control signals considering the changes of wind flow parameters, the value of solar radiation and, therefore, the sources equivalent resistance in relevant equivalent schemes that determines the position of the operating point on the external characteristic and source operation mode.

During the wind generators operation the level of energy transferred to the load and the storage battery will be maximum with condition that compensator forms the active character of the load.

In wind generators dynamical operation mode when changing the blades pitch angle and gondolas yaw angle and considering linear dependence of wind generators internal resistance on time, formation of the compensators current according to the equation $A \cdot e^{-t^2/\tau}$ allows to increase the energy level that can be taken from the wind flow no less than 2,2 %.

The project will focus on developing control algorithm for converters in Smart Grid that would provide its energy efficient operation taking into account the equivalent sources external characteristics nonlinearity with the condition of forming the active character of the load and forming compensators current according to the equation $A \cdot e^{-t^2/\tau}$.

KEYWORDS:

Power supply system, Smart Grid, PV cells, wind generators, diesel generators, storage batteries, maximum power point tracking, nonlinear external characteristics, method of structural numbers

TYPE OF PROJECT Funding scheme :

H2020 funding program for the international research cooperation

PARTNERS ALREADY INVOLVED (Contact Name, Name of organization, e-mail address):

No partners involved

PARTNER SOUGHT**COUNTRY (IES) (if relevant):**

EU Countries

EXPERTISE REQUESTED*: electronics, electrical engineering, system design, microprocessor and microcontroller technique, programming

Consortium partners are sought based in a range of European countries with an interest in contributing to or leading on specific work packages, specifically but not necessarily limited to:

- A lead partner to take on overall project management with good relationships with the Commission and experience of successfully managing other European projects, especially on energy efficiency
- An IT company that has experience of successful software development
- Academic partners with expertise in quantitative engagement with data relating to building energy performance

ROLE: Technology development Research Training

Dissemination Demonstration

ORGANISATION TYPE:

Public body (Research organization/university/lab)

HOW MANY PARTNERS ARE REQUIRED? Three partners