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 **√** Public body (Research organization/university/lab)	
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TYPE OF PARTNER SEARCH*:	
√ FP7 /HORIZON 2020 SPECIFIC CALL	
CONSORTIUM*	**POSITION WITHIN CONSORTIUM***
√ Create a new consortium **√** Join an existing consortium	**√** As a Partner

IF FP7 RELEVANT CALL:
AREA OF INTEREST

COOPERATION	**CAPACITIES**
√ 3 – ICT **√**5 – Energy	**√** Research infrastructures **√** Research potential **√** International cooperation
PEOPLE	IDEAS
√ Initial Training networks Networks (ITN)	**√** Starting Independent research grant
□ EURATOM	**□ JRC**

CALL DETAILS		
CALL IDENTIFICATION (according to WP): N/A	**DATE OF PUBLICATION: N/A**	**CLOSURE DATE: N/A**
PROJECT INFORMATION		
ACRONYME & TITLE: Active Power Line Conditioner in Uninterruptible Power Supply System		

SUMMARY*:
Today quite a significant problem in energetics and power electronics is networks electricity quality deterioration that is displayed in power factor decreasing and increasing of higher harmonics in consumption current that results in mains voltage distortion, which is unacceptable if loads requiring high power quality are connected to the same network. The above listed negative effects lead to energy losses in network and equipment which in turn is one of the reasons for auxiliary heating and resource reducing of devices that require high quality power. Another problem is ensuring uninterruptible equipment power supply. The consequences of intermittent power supply can be: data loss, devices resource reducing or even their disabling.
The project seeks to develop the hybrid device that solves all the above listed issues – reactive power compensators that can operate as uninterruptible power supply (UPS). With THD of tens percent the most appropriate is to use active compensators as active power line conditioners (APLC). The project will focus on designing the reactive power compensator control system based on microprocessors and creation of an effective operation algorithm. The main problem in control task of such a device is the compensator operating modes constant change, which is described by complex and cumbersome expressions of energy processes. This leads to the fact that the microprocessor has to perform a large number of transactions, which limits the entire control system performance.
For battery efficient use it is necessary to ensure charge control, self-discharge current compensation and connection number minimization that prolongs its operation. One of the variants of such battery use as a part of UPS based on APLC is its charge with asymetric current. It will also have a positive impact on temperature operation mode of the battery.

Based on the method of the current and voltage mean values as well as taking into account the energy balance the calculation algorithm of basic parameters and control laws of active power line conditioner with direct current battery charge should be developed to determine the interrelation between the device operating intervals, storage elements parameters, sinusoidal current amplitude and laws of pulse duty factors variation at corresponding intervals.

KEYWORDS:
Active power line conditioner, uninterruptible power supply, VAR-compensator, PWM converters, reactive power.

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 yet**.**

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 quality;
• 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