

## ***Workshop „EUREKA and Eurostars Programme“***

***Ministry of Education, Youth and Sports  
7<sup>th</sup> December, 2017***

# ***Experience with the EEN and EUREKA at the UWB – synergy and cooperation***

Radek Soukup



**FACULTY OF ELECTRICAL  
ENGINEERING**  
UNIVERSITY  
OF WEST BOHEMIA

**RICE**

## University of West Bohemia

City	Pilsen (CZ)
Founded in year	1991 (1950)
Number of employees	2032
Number of students	14 500
Annual sales	79 million €
Core business	University, Research institute



### FACULTIES AT THE UNIVERSITY

Faculty of Applied Sciences

Faculty of Economics

**Faculty of Electrical Engineering (FEE)**

Faculty of Education

Faculty of Law

Faculty of Mechanical Engineering

Faculty of Health Care Studies

Faculty of Art and Design



# 1. Short introduction - RICE

<b>115</b> R&D workers	<b>1400 m<sup>2</sup></b> Laboratories	<b>2013</b> Established	<b>25 M€</b> Investment
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## MAIN RESEARCH TARGETS

### Transportation

Traction vehicles and systems  
Automotive (HEV/FEV)  
E-mobility and complex transport systems

### Power Engineering & Industry

Power distribution technology  
Nuclear technology  
Electricity and heat production  
SMART CITY and SMART GRIDs  
Industrial drives and automation

### Printed Electronics and Smart Textiles

Organic electronics  
Printed and flexible electronics  
E-textiles  
Sensors and smart sensor systems  
IoT components and systems



INDUSTRIAL PARTNERS

**RICE**

Mechanical Engineering

ICT

Natural Science

R & D Partners

## CORE COMPETENCIES

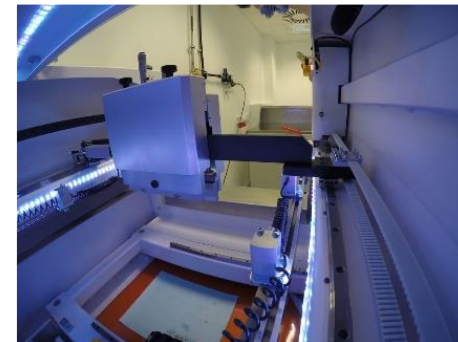
Power electronics & Drives

Material research

Electronics, Embedded systems, ICT

Control theory, Modeling and Computation

Diagnostics, Testing and Validation



## 2. Experiences with EEN

**network**  
enterprise europe

## 2. Experiences with an EEN offer

### Our EEN offer.

**Title: Eureka - Mobile Energy Supply Solution**  
(Ref: 12 CZ 0746 3QAR)

#### Abstract:

A Czech university in cooperation with a Czech SME are preparing a project proposal to Eureka programme. The project goal is a development of a solar mobile energy source based on concentrated photovoltaics. The university is looking for project partners (preferably companies or possibly universities) aimed at electronics, chassis design, telecommunication or possibly photovoltaics or production of batteries.

#### Description:

There is a need to use a mobile energy solution in case of emergency (fires, accidents, etc.) or absence of power lines (remote communications, electronic mobile devices, mobile field hospitals, laboratories, etc.). Government offices, law enforcement in developing countries or fire departments frequently use generators at remote sites. Generators are noisy and unreliable, often breaking down or not starting in ...





## Expression of Interest (Eoi) Template

By filling in this Expression of Interest (Eoi) Template I understand that:

- It will be forwarded to the originator of the profile
- I must respond promptly to any enquiries whether from my local Enterprise Europe Network Member (NM), the transnational NM or the originator of the profile, even if the response is negative
- I must have extra information available to support the original Eoi
- I will keep my local Enterprise Europe Network contact informed of all negotiations and discussions that may develop from this Eoi.

### Technology Profile Details:

<input type="checkbox"/> Technology Offer	<input checked="" type="checkbox"/> Technology Request
Title:	PS: Eureka – Mobile Energy Supply Solution
Ref:	12 CZ 0746 3QAR
Date:	05/09/2012

### Profile of your Organisation and Contact Details:

Name of the Organisation:	Tecnalia		
Type of the Organisation:	<input type="checkbox"/> Company <input type="checkbox"/> University / Academic Institution <input checked="" type="checkbox"/> Research Organisation <input type="checkbox"/> Other (please specify):		
Field of Activity:	Research & Development		
Contact Person:	Eduardo Román		
Position:	SOLAR Area– PV manager		
Address:	c/ Geldo, Edificio 700 – Parque Tecnológico de Bizkaia		
Tel #:		Fax #:	
E-mail:			
Website:	www.tecnalia.com		
# of Employees:	<input type="checkbox"/> 1 – 10	<input type="checkbox"/> 11 – 50	<input type="checkbox"/> 51 – 250
Year Established:	2011	Turnover in € (optional):	120 Million €



## Expression of Interest (Eoi) Template

### Presentation of your Organisation:

Provide a short description of your organisation, its activities, products & services.

TECNALIA RESEARCH AND INNOVATION ([www.tecnalia.com](http://www.tecnalia.com)) is a private, non-profit-making technological research centre, resulting from the merging of eight private research organisations located in the Basque Country. Tecnalia employs 1,500 people (164 PhDs) and is the leading private research and technology entity in Spain and the fifth largest in Europe. TECNALIA operates in all the fields of industry: Industry and Transport, ICT, Sustainable Development, Innovation and Society and Health. TECNALIA's mission is to "contribute actively to economic and social development, promoting and facilitating technological innovation and development processes as a competitive strategy". Tecnalia is a member of JIIP (Joint Institute for Innovation Policy), a member of the executive committee of EARTO and a member of EUROTECH.

TECNALIA RESEARCH & INNOVATION is the leading private and independent research and technology entity in Spain, fifth largest in Europe. Its turnover is 121Me, it filled 53 patents, had 3800 clients and created 8 spin-offs in 2009. It is very active in FP7 having already gained 150 projects, coordinating 31 of them.

The Solar Photovoltaics group within Energy Unit is mainly focused on: i) advanced PV plants (inverter-based distributed architectures, fault detection and prediction, monitoring and predictive maintenance, energy storage), ii) hybrid and organic cells, iii) novel encapsulation systems for PV cells and modules and iv) architectonic integration of PV elements.

### Reasons for your interest in the technology profile:

Why this profile is interesting for your organisation and what do you expect from the profile originator?

- If you are replying to a Technology Request, explain what your organisation is offering to solve the problem or match the need described.
- If you are replying to a Technology Offer, explain how your organisation would like to use or exploit the technology being offered.

According to the Technology request, TECNALIA could cover several of the roles you are looking for, both in the PV (concentration system) and electronic sector, as well as several of the tasks / stages you have envisaged.

Next, a compilation of our main activities in PV and electronics for PV is described. As you would see, our experience and technical skills cover the whole value-chain of the PV sector, although we focus our efforts in applied research more than basic research.

Regarding the SMEs, due to our wide experience in EU project, we could involve many companies from almost any sector you are searching. E.g. we could involve an end-user of this mobile energy supply solution, in charge of selling the product for different final applications

### 1. Systems for High Concentration PV

Electronic devices for CPV



## COOPERATION REPORT (hereafter PA)

<b>Subject-matter (in ENGLISH)</b>	EUREKA-EURIPIDES: High Efficiency Alternative Solar Energy Source (ASES)		
<b>Cooperation type<sup>1</sup> - select one</b>	<input type="checkbox"/> Technological	<input type="checkbox"/> Commercial	<input checked="" type="checkbox"/> Research

1. **Brief description of the object of the PA:** company/research organisations involved; object of the business agreement, technology/know-how transferred; EU project entered into, benefit for 'The Parties' involved...<sup>2</sup>

Department of Technologies and Measurement from the Faculty of Electrical Engineering, University of West Bohemia in Pilsen, is focused on R&D in electrical technology, measurement, industrial process control and electronics technology. The department is also very active in international R&D projects.

Tecnalia Research & Innovation is a private, non-profit making technological research centre, resulting from the merging of eight private research organisations located in the Basque Country. Tecnalia employs 1,500 people (164 PhDs) and is the leading private research and technology entity in Spain and the fifth largest in Europe. Its turnover is 121 Me, it filled 53 patents, had 3800 clients and created 8 spin-offs in 2009. The Solar Photovoltaics group within Energy Unit is mainly focused on: I. advanced PV plants (inverter-based distributed architectures, fault detection and prediction, monitoring and predictive maintenance, energy storage), II. hybrid and organic cells, III. novel encapsulation systems for PV cells and modules, IV. architectonic integration of PV elements.

The above mentioned PA relates to an EUREKA-EURIPIDES proposal submitted under call "EURIPIDES Spring'13 Call." The project is aimed at development and implementation of original CPV (concentrated photovoltaics) cells in an intelligent lightweight small micro system easy to move and to install. Developed system will be equipped with efficient battery storage pack that can supply energy when the sun does not shine.

The project proposal was successfully submitted on 26th February 2013. The consortium will include 1 SME (CZ), 2 large companies (FR, ES 2x) and 1 university (CZ).

2. **Brief description of the support given to the Parties by the Network partners involved which directly contributed to achieving this Partnership Agreement<sup>3</sup>**

### Network Partner 1

Department of Technologies and Measurement from the Faculty of electrical engineering (a long term client of BIC Plzen) in cooperation with the Czech company Elceram (client of BIC Plzen, producer of white ceramic substrates) has decided to participate in Eureka programme. In cooperation with Mr. Jaroslav Sobotka from BIC Plzen, the department has prepared Research Partner Request to BBS with reference 12 CZ 0746 3QAR.

### Network Partner 2 (if applicable)

Innobasque –Basque Enterprise Europe Network (ES150215-05) disseminate the Research Partner Request with reference 12 CZ 0746 3QAR. Eduardo Román, from Tecnalia expressed an interest in the profile. Innobasque brokered the exchange of contact details that led to the initial discussions and subsequent collaboration.

### Network Partner 3 – 'Third Party' Network Partner (if applicable)

<sup>1</sup> The PA type should be the same as the one indicated on the signed Cooperation statement to which this report corresponds.  
<sup>2</sup> Unless requested by the parties on the accompanying PA Statement Letter, the information of this Partnership Agreement will remain confidential.  
<sup>3</sup> Refer to the PA Statement Letter to see which Network Partner is Network Partner 1, Network Partner 2 and Network Partner 3.



## Confirmation of Enterprise Europe Network brokerage service received (TITLE CAN BE MODIFIED TO SUIT LOCAL CLIENTS – EACI VALIDATION NEEDED)

<b>Type of co-operation</b>	<input type="checkbox"/> Technological	<input type="checkbox"/> Commercial	<input checked="" type="checkbox"/> Research
<b>Subject-matter (in ENGLISH)</b>	EUREKA-EURIPIDES: High Efficiency Alternative Solar Energy Source (ASES)		

### Parties involved in the co-operation agreement:

Organisation 1	Organisation 2
Name: Department of Technologies and Measurement, Faculty of Electrical Engineering, University of West Bohemia in Pilsen	Name: Tecnalia Research and Innovation
Address: Univerzitní 26, 306 14, Plzeň, Czech Republic	Address: C/Geldo, Building 700 – Parque Científico y Tecnológico de Bizkaia, E-48160, Derio (Vizcaya), Spain

Date on which a co-operation agreement was signed between the two organisations above: 26/02/2013

As representative of Organisation 1  / Organisation 2  (select one), I confirm that my organisation received the assistance and support described in the attached cooperation report to start a medium- to long-term co-operation with the other organisation above from one of the Enterprise Europe Network partner organisations mentioned below.

Do I agree that non-confidential parts of the attached cooperation report may be used in a case study to inspire others to go to the Enterprise Europe Network to find partners abroad?  YES  NO<sup>1</sup>

Full Name: Dr. Radek Soukup

Date: 10.3.2013 ZÁPADOČESKÁ UNIVERZITA V PLZNI  
FAKULTA ELEKTROTECHNICKÁ  
Katedra technologií a měření

Job Title: Researcher

Signature: 

### Network Partner organisation that provided assistance to organisation 1:

ID Number of EEN Partner 1	CZ 150242-03
Contact person	Jaroslav Sobotka

### Network Partner organisation that provided assistance to organisation 2 (if applicable):

ID Number of EEN Partner 2	ES150215-05
Contact Person	Leire Arriola

### Network Partner organisation involved as 'Third Party' (if applicable):

ID Number of EEN Partner 3	
Contact Person	

<sup>1</sup> If "NO" is selected, the EACI confirms that all information on this form will be treated in the strictest confidence.

## ASES - Smart High Efficient Alternative Solar Energy

Project duration 2014 - 2017

Funding provider EURIPIDES – EUREKA



### Project description

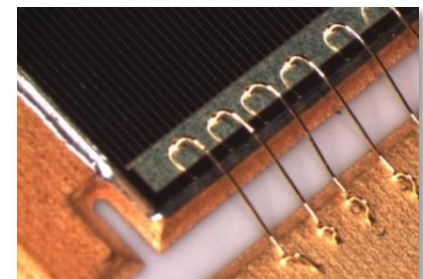
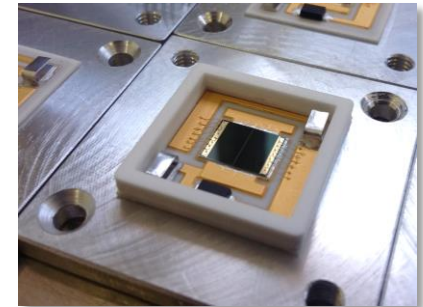
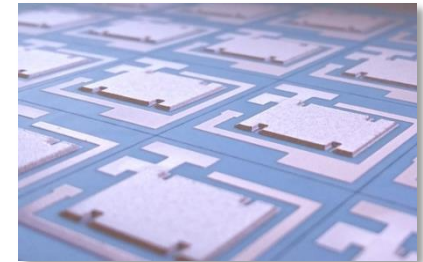
- The goal of this project is to develop a smart and reliable high efficient renewable energy source covers the energy needs between 10/20 Wh/day for very low power sensors and few kWh/day for power systems.
- Next goal is to develop new technologies for the construction of new generation of CPV receivers.

### Target applications

- CPV energy generators for safety and security of the people: environment surveillance, smart autonomous medium power generator, secure communication, isolated process networks, video surveillance, emergency situations.

### Consortium overview

ERYMA - France, TECNALIA – Spain, BSQ – Spain, ELCERAM – Czech Republic, University of West Bohemia – Czech Republic



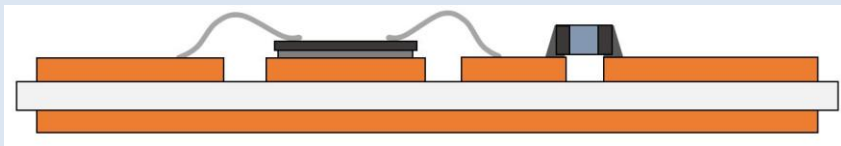


## Substrates for power electronics based on Thick Printed Copper Technology (TPC)

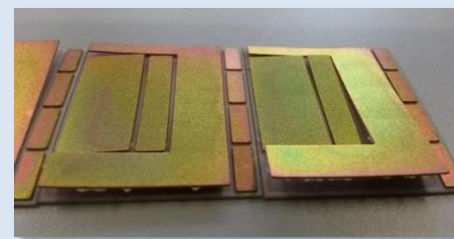
Substitution to conventional Direct Bonded Copper (DBC) with many advantages:

- ▶ Additive manufacturing process – material savings.
- ▶ Higher pattern resolution compared to DBC (down to 100  $\mu\text{m}$  line/gap).
- ▶ Step & Relief thickness profile (Cu thickness from 25  $\mu\text{m}$  to 300  $\mu\text{m}$  on one substrate).
- ▶ Cu plated vias and multilayer circuits capability.
- ▶ Direct integration of passive component and sensors.
- ▶ Assembly of fine pitch SMD components.

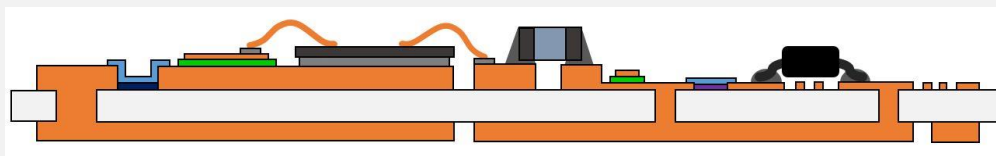
Temperature shock cycles test  
(-50  $^{\circ}\text{C}$  / 150  $^{\circ}\text{C}$ ).



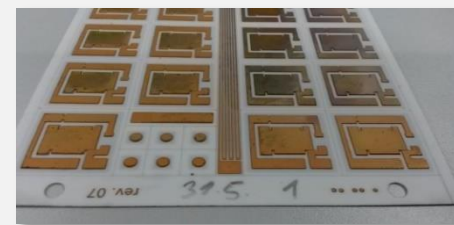
Conventional DBC Technology.



170  
cycles



Thick Printed Copper (TPC) Technology.



1000  
cycles



**CPV receiver developed and realized by ELCERAM with close collaboration with UWB.**



**The complete ASES CPV system (25% of efficiency at the CPV outputs).**

## ADVANced functional blocks and technologies for smart

Project duration	2014 - 2017	Consortium overview	CEA-Leti (F), UWB (CZ), APIX (F), Applycon (CZ), InvenSense (F), Holik (CZ), VOCHOC (CZ)
Funding provider	EUREKA EURIPIDES		



The Enterprise Europe Network (EEN) is an effective tool for finding project partner (especially for SMEs, universities and research institutes).

We receive very good support from the local EEN Network partner – BIC Pilsen.

Thank to the EEN we could:

- Built-up project consortium of the successful EUREKA EURIPIDES ASES project.
- Join the consortium of the H2020 project entitled ENOLAE.
- Search for industrial partners for our developed technology.

We have a good experience with EUREKA EURIPIDES cluster projects (INTEX – success story project, ADVANTEX and ASES).



***Thank you for your attention***

***Radek Soukup  
UWB, Czech Republic  
rsoukup@ket.zcu.cz  
+420377634542***



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