PARTNER SEARCH FORM

DATE: 05.01.2011

PROJECT INFORMATION

TITLE: Autonomous Power Plant to Hydrogen Production from H2S rich Black Sea Water

ACRONYM: APH2-BS

SUMMARY:
The main objective of the proposal is to identify, design and realise a system for Hydrogen production from hydrogen sulfide (H2S) rich Black Sea Water.
The Black Sea is unique because 90% of sea water is anaerobic. This anaerobic sea water contains hydrogen sulfide, produced by sulphur reducing bacteria.
The interface between anaerobic and aerobic water layers is situated at a depth of about 200 m. Below 150–200m, H_2S concentration increases gradually until 1 km sea depth, and, finally, it reaches nearly constant value of 9.5 mg/l at around 1.5 km depth [1].
The effects of reaction temperature, reaction time and the initial pH value of reaction solution on the production of hydrogen from sea water will be investigated. The recent research showed that hydrogen was produced from water when the reaction temperature was beyond 200^0C [2]. Moreover, the hydrogen production strongly depended on the initial pH of the solution and high alkaline condition will be better.
The principle of photo-electrochemical (PEC) cells is considered advantageous especially for those solar applications where energy storage is needed. In contrast to conventional photovoltaic (PV) plants, hydrogen is directly generated, and in this case we need an autonomous supply system with no coupling to the electrical grid.
An autonomous power system based on available Black Sea renewable energy in (PV, wind, wave power). needs to be designed.

KEYWORDS*: Hydrogen generation, hydrogen sulphide, photo-electrochemical cells, photovoltaic electrolysis, autonomous electricity supply, renewable energy

CALL: BS-ERA.NET 2010

NAME(S) of the PARTNER(S) INVOLVED:
Stefan cel Mare University of Suceava

SCIENTIFIC AND TECHNOLOGICAL EXPERTISE OFFERED*:

Stefan cel Mare University, which is a higher education state accredited institution, perfectly integrated in the higher education national system, assumes its educational and research mission.
Partner with expertise in power electronics, renewable energy (PV, wind), power quality, modeling and simulation process, digital signal processing.
International experience is demonstrated by international grant castigate:
- Program LIFE'07, **LIFE'07 – ENV / RO / 000690**, *Application of industrial ecosystems principles to regional development* - **ECOREG**, 2009 – 2011, 880700 Euro.
- RO 2010/145, **ECOBORD-APA** - *Scientific partnership between Romania and Republic of Moldova for developing innovative solutions for monitoring the space-time evolution of river type systems*, 2010-2012.
- RO 2004/016-942.01.01.22., Romania-Ukraine, *Common Management for Protection of the Air Quality*, 2004-2007, 688230 euro
- RO 2006/018-449.01.01.19. Romania-Ukraine, *Water Quality Complex Monitoring System of Siret Cross*

border Hydrographical Basin, 2006-2009, 651272 euro.
PARTNER SOUGHT
SCIENTIFIC AND TECHNOLOGICAL EXPERTISE REQUESTED: Partners with expertise in hydrogen generation, photovoltaic electrolysis (PVE), photo-electrochemical (PEC) cells, autonomous power plant.
EXPECTED CONTRIBUTION TO THE PROJECT: - Hydrogen production from H2S technology; - Influence of environmental parameters studies; - Autonomous power plant system;
ORGANISATION TYPE*: X☐ Higher Education X☐ Research Institute X☐ R&D Company X☐ SME ☐ Other
HOW MANY PARTNERS ARE REQUIRED?
CONTACT PERSON
NAME* : Constantin FILOTE, PhD., Eng.
TELEPHONE* : +40 745 991827
FAX: +40 230 524801
E-MAIL*: filote@eed.usv.ro
INSTITUTION*: Stefan cel Mare University of Suceava
ADDRESS*: Str. Universtatii, 1
COUNTRY* : ROMANIA

*** mandatory fields**