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The LifeWatch ERIC Biodiversity & Ecosystem eScience Conference

Seville
22-24/05/23

Threats and challenges to biodiversity and ecosystem conservation from an eScience perspective

LifeWatch ERIC

GOBIERNO DE ESPAÑA · MINISTERIO DE CIENCIA E INNOVACIÓN

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The role of renewable energy-based power systems in the monitoring of biodiversity and ecosystems

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- Development renewable based power systems in INDALO project
- INTA' Energy Laboratory description
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Introduction to renewable energy systems in environmental surveillance

- Environmental surveillance asses the environmental conditions of a place, ecosystem, etc.
- It guarantees that the project's environmental objectives are reached.
- Depending on the project, targets pursued, etc., tests can be carried monthly, weekly, daily or continuously.
- Advantages of renewable energy use:
  - Low environmental impact, It does not produce any polluting discharges.
  - No power limit. Almost unlimited free and “flat” surface

Development renewable based power systems in INDALO project

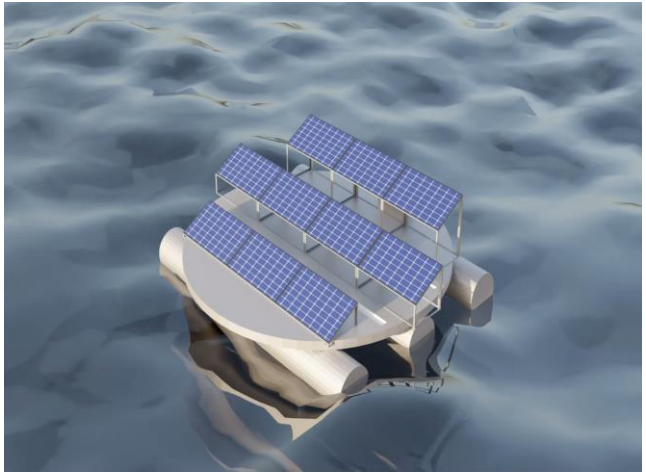
Activities of the El Arenosillo Energy Laboratory in the Network of Reservoir Water Quality Observatories (Red de Observatorios de Calidad del Agua Embalsada. ROCAE)

- University of Seville Collaboration in the field of renewable energy generation and storage for the scientific and data acquisition infrastructure of the network.
- Standard configuration alternatives of buoy energy systems and monitoring platforms with other generation and storage technologies for better features and future needs

Development renewable based power systems in INDALO project

Floating photovoltaic platform:

- located at Zufre reservoir. It supplies energy to the EVA's environmental assessment station of the University of Seville.
- Aluminum frame.
- Accessible surface > 45 m2.
- 10 PV two-faces panels supplying 5 kWp.
- DC/AC three-phase inverter and wire.
- Installation and environmental parameter monitorization. Signals are sent to EVA (PV panels temperature, ambient temperature and humidity, solar radiation and albedo, etc.)
- Monitoring of measures to mitigate the effects of climate change (potential reduction of evaporation in reservoirs).



Development renewable based power systems in INDALO project

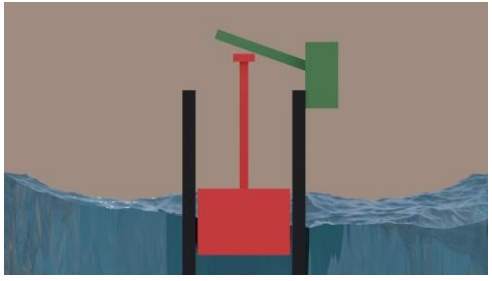
Power generation and management systems for floating surveillance platforms

Design and assembly of power system for floating facilities based on energy harvesting devices.

- Mechanical energy capture available in the environment for the generation of low power electricity.
- Low power sensors and IoT devices power supply.
- Technology assessment for environmental surveillance.
- Technology assessment for better environmental monitoring equipment.

Fuente: Midé

Fuente: Xidas



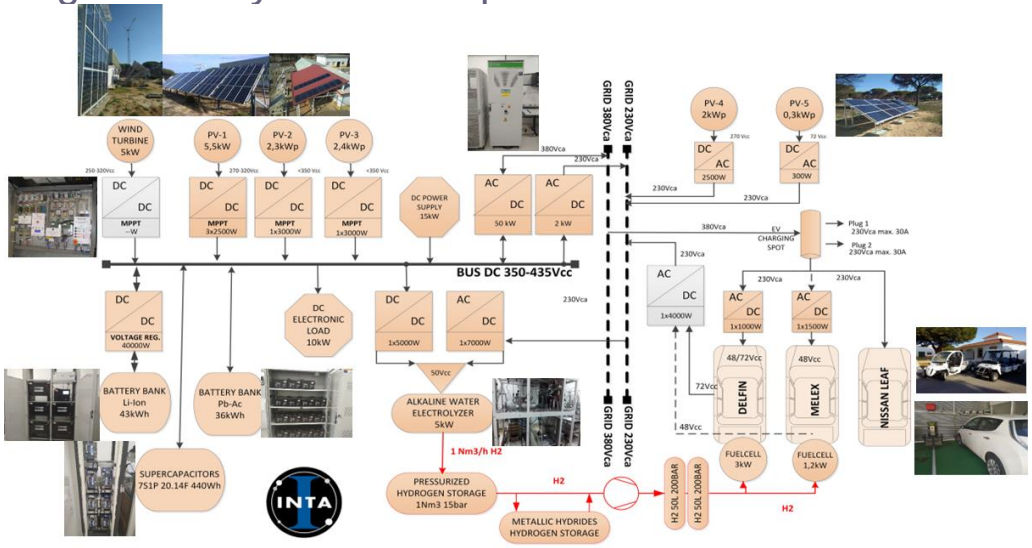
INTA' Energy Laboratory description

The INTA's Energy Laboratory in Huelva is focused on renewable energy generation, storage, management and use, in mobile and stationary applications.

Batteries and fuel cell test benches

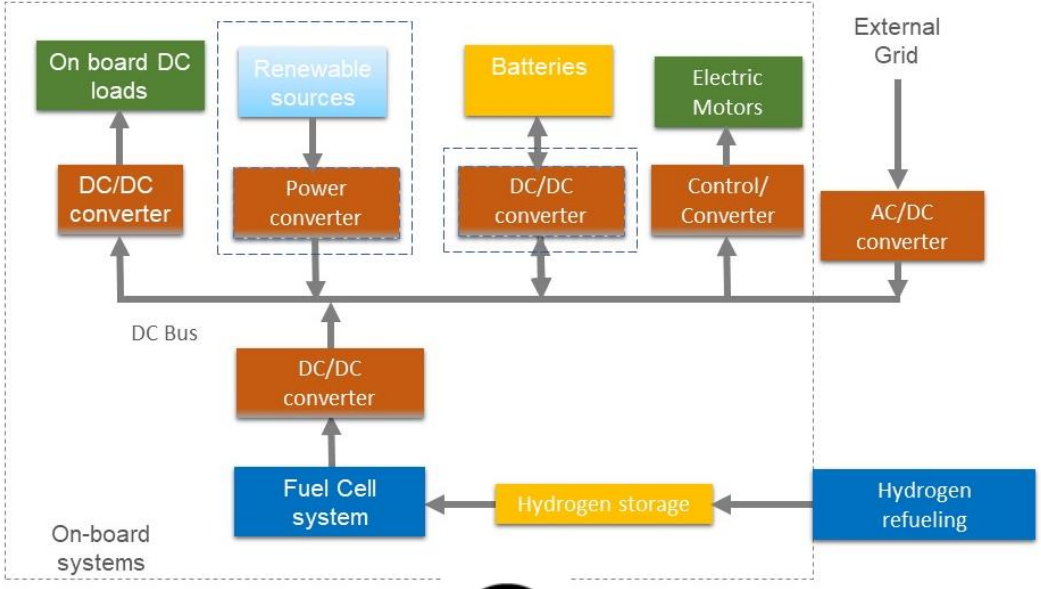
INTA' Energy Laboratory description

Experimental microgrid to evaluate and demonstrate energy storage technologies and systems in representative environment



Other developments and projects

Hybrid power systems based on batteries and fuel cells to increase the range of unmanned vehicles.



Other developments and projects

DOVELAR project

Platform	
Dimensions (L x W x H) (cm)	102 x 63 x 22
Draft (cm)	12 cm
Weight (kg)[1]	12 kg
Hull material	ABS (3D printed) + Carbon fiber reinforced
Propulsion	500 W brushless motor
Endurance [2]	12 h at 2 knots

National Institute of Aerospace Technology (INTA)
Area of Energy

Cardenal Herrera CEU University

Laboratory of Research in Fluid Dynamics and Combustion Technologies (Spanish Scientific Research Council and University of Zaragoza)

DOVELAR (Ref.: RTI2018-096001-B-C33)

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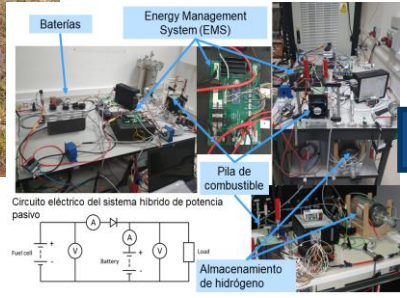
Other developments and projects

Project "Improving efficiency and operational range in low-power unmanned vehicles through the use of hybrid fuel-cell power systems" (IUFCV)

National Institute for Aerospace Technology (INTA) Area of Energy

Commonwealth Scientific and Industrial Research Organization (CSIRO), Data61, Robotics and Autonomous Systems

Universidad de Sevilla Systems Engineering and Automation Department



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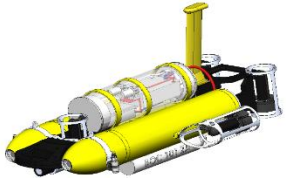

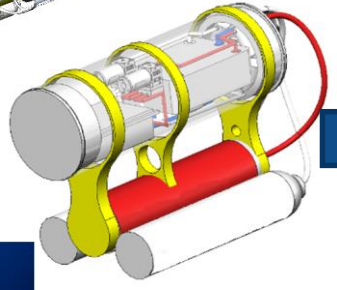

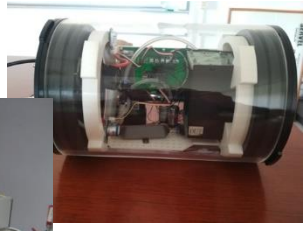

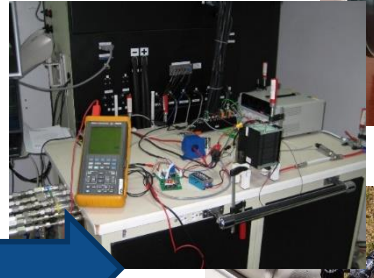

NATO OTAN — This project is supported by: The NATO Science for Peace and Security Programme

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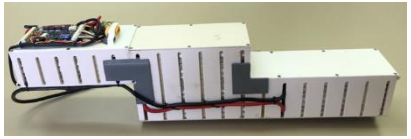
Other developments and projects

Hybrid Electric Surveillance RPA



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Thank you! | www.lifewatch.eu/bees-2023