COST Action 20109 | **WG3**

MODULAR ENERGY ISLANDS FOR SUSTAINABILITY & RESILIENCE

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Kaunas – March 2024

cost EUROPEAN COOPERATION IN SCIENCE & TECHNOLOGY

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WG Meeting Kaunas 2024 – **WG3 SUMMARY**

- WG3 had 7 papers under development. From the WG meeting:
  - 2 papers were put on hold to either became a section on other paper or be further develop as a conference paper.
  - For the rest it was created an action plan for each of them defining deadlines and assigning the contributors to sections.

WG Meeting Kaunas 2024 – **WG3 SUMMARY**

Energy Production, Storage, Network- Design and Utilization of Modular Floating Offshore Energy Islands with High Renewable Penetration – MID MAY

Main Headings	Subheading	Collabrators
INTRODUCTION	1.1. Motivation and Background: Problem Statement (Scope)	Alper Nabi Akpolat/....
	1.2. Objective and Limitations: Potential of Renewables	Alper Nabi Akpolat/....
	1.3. Facilities for Electrical Energy Production	Olene Okhay/...
	1.4. State of The Art	Olene Okhay/...
	1.5. Contribution and Paper Organization	Alper Nabi Akpolat/Erkan Dursun
SYSTEM DESCRIPTION OF MODULAR FLOATING OFFSHORE ENERGY ISLANDS	2.1. Selection and Justification of Energy Islands' Location	
	2.2. Harvesting of Renewable Energy: PVs, Wind, and Hydrogen	Tomasz Bakon
	2.3. Energy Storage Systems	Alper Nabi Akpolat/Tomasz Bakon
	2.4. Grid integration: Challenges and Remedies	Vezir Rexhepi/Alper Nabi Akpolat/...
	2.5. Design Criteria of Modular Floating Offshore Energy Islands	
ASSESSMENT, ANALYSIS, AND DISCUSSION OF PROPOSED ENERGY ISLAND DESIGN	3.1. Assessment and Analysis Tools	
	3.2. Simulation Results (if we can create)	
	3.3.	
	3.4.	
CONCLUSION AND SUGGESTION FUTURE WORKS		
REFERENCES		Alper Nabi Akpolat/...

WG Meeting Kaunas 2024 – **WG3 SUMMARY**

Unit sizing and feasibility analysis of green hydrogen storage using excess energy for energy islands - MID MAY

Section	Subheading	Collaborators
INTRODUCTION	1.1. Motivation and Background	Erkan Dursun, ……
	1.2. Comparision of Energy Storage Technologies: Especially chemical and thermal storage (https://ease-storage.eu/energy-storage/technologies/)	Tomasz Bakon, ……
	1.3. Energy Islands: Energy Storage Perspective	Alper Nabi Akpolat
	1.4. Literature Review	……
HYBRID POWER SYSTEM COMPONENTS (WIND+PV+BESS+ELECTROLYSIS)	2.1. Modeling of Wind Turbine: Simple Equiavalent Circuit and Efficiency Calculations in terms of hydrogen production capacity via electrolysis	Erkan Dursun, Vezir Rexhepi…….
	2.2. Modeling of PV Modüle: Simple Equiavalent Circuit and Efficiency Calculations in terms of hydrogen production capacity via electrolysis	Erkan Dursun, Vezir Rexhepi,……
	2.3. Modeling of PEM Electrolysis: Simple Equiavalent Circuit and Efficiency Calculations	Erkan Dursun,……..
	2.4. BESS Modeling: Simple Equiavalent Circuit and Efficiency Calculations in terms of hydrogen production capacity via electrolysis	Alper Nabi Akpolat
	2.5. Other components if any	……
A CASE STUDY FOR ENERGY ISLANDS	3.1. Assessment and Analysis Tools: MATLAB, ETAP, HOMER etc.	Kemal Koca, Erkan Dursun,…….
	3.2. Simulation Results	Kemal Koca, Erkan Dursun,…….
	3.3.	
	3.4.	
REFERENCES		Erkan Dursun,……..

WG Meeting Kaunas 2024 – **WG3 SUMMARY**

Paper on Review of Environmental Life Cycle Assessment Studies Related to Energy Islands

Current situation:

- Review methodology is defined.
- Example data collection tables are prepared.
- Deadlines are assigned as *mid of April* for completing the data collection, *first of week of May* completing writing the initial text for each energy type. *This initial review will be presented at the workshop in September.*
- Later, more detailed review will be continued.

WG Meeting Kaunas 2024 – **WG3 SUMMARY**

- Webinairs:
  - May 2024: Helena Gervásio
  - June 2024: Jimena Valverde
  - To be confirmed: Thomasz Bakon
- Trainnig school
  - Ideally around easter time of 2025
  - It was defined possible lectures and themes
  - Shared document between the members to add the ideas and suggestions

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