

DRIVING GROWTH 

RESEARCH IN ENTERPRISES -ENERGY PROGRAMME

Calls for Proposals
ENTERPRISES/ENERGY/1123

7/12/2023

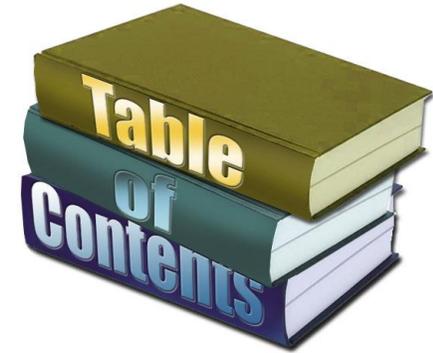
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ΙΔΡΥΜΑ
ΕΡΕΥΝΑΣ ΚΑΙ
ΚΑΙΝΟΤΟΜΙΑΣ

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► **Targets**

Research in Enterprises – Energy Programme ...

- enhance the competitiveness of Cypriot enterprises through the development of technological solutions of high added value in the field of energy production, storage, transmission and distribution solutions*
- strengthen and encourage collaboration in the ecosystem and especially among Cypriot businesses in order to address relevant current challenges*
- enhance the knowledge transfer within the ecosystem with the aim of exploiting existing knowledge for the development of new technologies and solutions related to the selected challenges in the energy sector, by and for the Cypriot industry*
- making a contribution in the country's economic growth*



► General Call Information (1)

DEADLINE

- Calls Announcement: **24 November 2023**
- Proposal Submission Deadline: **26 January 2024, 13:00 local time**
- Evaluation Timeline: **February – April 2024**
- Contracts Signing: **May- June 2024**
- Budget: **€ 4.000.000**
- Maximum Funding per Project: **€ 200.000**
- Project Duration: **6-18 Months**
- Funding Intensity for Enterprises: **70% Max Funding Percentage on Eligible Expenses**



► Specific Objectives:

Projects must be applicable in one of the following:

- 1. *Analysis of Lightning Activity on Transmission Lines*
- 2. *Monitoring of substations through thermal imaging*
- 3. *Fault detection on the transmission lines*
- 4. *Holistic Management of Small PV/Dispersed Generation in the Electricity Grid*
- 5. *Energy storage systems*
- 6. *Use of state-of-the-art digital technologies in the field of electricity generation, storage, transmission, and distribution (including High Performance Computing, Quantum Technologies, Internet of Things, Machine Learning, Big Data, Artificial Intelligence, blockchain, etc.)*



► Specific Objectives:

1. *Analysis of Lightning Activity on Transmission Lines*

Challenge Description: *Transmission lines (TL) are often struck by lightning due to their height and length. Lightning strikes on TL can lead to power outages due to the activation of switching elements but also to equipment failure/damage (e.g. insulators).*

Indicative Solution: *Development and installation of a sensor system to record lightning activity along the lines (e.g. every 5 km) and development of software to analyse the recorded data. The software will accelerate: a) the detection of the fault location in reduced time compared to traditional patrol, b) the evaluation of the system reliability indicators and c) the evaluation of the asset management indicators.*

Specific Objectives:

2. Monitoring of substations through thermal imaging

- ▶ **Challenge Description:** Transmission substations include a set of devices to manage and control (e.g., transformers, power switches, protection relays) the power flow. Their maintenance is periodically performed to ensure the safety and reliability of the substations. EAC performs maintenance of its equipment at regular intervals in accordance with the manufacturers' instructions and the internal directive, without any prior assessment of the health of the equipment. There are software on the market that based on the database and measurements provide the operational capability of the equipment using health indicators (asset health index AHI). However, their use requires a large workload of data introduction for each element of the equipment, and they sometimes require data that does not exist historically, as well as a limitation in the accessibility of the introduced data.

Indicative Solution: Development of Methodology-Algorithm to evaluate the operational status of transmission substations and optimize the maintenance program. The methodology based on international standards and practices could be implemented in the form of a computational algorithm that is fully applicable to the topology of the elements that comprise the transmission substations of EAC. The calculation of health indicators could take as input data a set of quantities that are monitored: a) by equipment monitoring systems (e.g. SF6 gas level in GIS) and b) in the context of preventive maintenance inspections (e.g. thermal imaging), results of DGA oil analyses. It is essential to provide full transparency and accessibility to all input, output data as well as intermediately calculated values, so that reports and other statistics can be derived at will based on the data in the database. Finally, based on the extracted health indicators, the equipment will be calibrated in terms of its functional capacity, and a maintenance and replacement schedule will be prepared in which the chronological order of maintenance of each element will also depend on its health status.





Specific Objectives:

3. Fault detection on the transmission lines

Challenge Description: *The design and installation of a reliable high-complexity fault protection and remote fault protection system in high-voltage transmission lines is a critical challenge in modern power grids. Currently, remote fault protection is the first and main part for electrical protection of transmission lines. Using real-time calculations with the help of voltage and current transformers, the actual impedance of the conductor is estimated and response is according to certain predefined ranges. However, in real conditions, the actual impedance is affected by the prevailing weather conditions (air temperature, soil moisture, etc.) deviating from its nominal values. It is therefore vital to incorporate intelligent tools that will be able to retrieve weather variations, re-estimate impedance ranges and automatically integrate changes in the configuration of the protection relay. In this way, more accurate fault detection and location could be achieved, increasing the overall safety and reliability of the system.*

Indicative Solution: *Development of a system that will provide the possibility to change-adjust the settings of the Main Protection on the Transmission Lines for the valid detection of faults.*



► Specific Objectives:

4. Holistic Management of Small PV/Dispersed Generation in the Electricity Grid

Challenge Description: *The rapid increase of RES penetration in the Grid and their expected further increase in the coming years, combined with the absence or delayed availability of management tools, creates particularly difficult challenges for the Grid.*

Indicative Solution: *The development of a specialized platform for the management of all small PV Parks using all available telecommunication tools in order to:*

- a) *Monitor the production*
- b) *Control/cutback the production*
- c) *Send and modification of operational setting of the respective voltage converters.*



► Specific Objectives:

5. Energy storage systems

Challenge description: Cyprus has one of the lowest rates of renewable energy production from RES which specifically amounted to 13.8% in 2018 and about 14% in 2019, compared to the EU average of 20%. Renewable energy production currently amounts to 157.5 MW from wind, 125 MW from solar and 12.8 MW from biomass. To meet the EU targets, Cyprus needs to change its energy mix in favour of renewables to 23% by 2030. The increase in renewable energy consumption will require an increase in production of 360 MW. While there are currently more than 17,000 very small systems installed that exceed 65MW in production, there is no storage capacity. Therefore, optimal utilisation of renewable energy requires the simultaneous development of efficient electricity storage technologies.

Indicative Solution: Develop efficient and economic energy storage systems that can be used together with smart energy demand management to achieve proper management and optimisation of energy allocation between grid and storage.



► Specific Objectives:

6. Use of state-of-the-art digital technologies in the field of electricity generation, storage, transmission, and distribution (including High Performance Computing, Quantum Technologies, Internet of Things, Machine Learning, Big Data, Artificial Intelligence, blockchain, etc.)



► Conditions for Participation (1)

- Host Organisation (HO): Small, Medium, or Large Enterprise**
 - *The HO should have a **direct and significant commercial interest** in achieving the project's results*
 - *the core activities of the HO should be **relevant to the project activities***

- Startups** can participate as Host Organisations only if they sold at least one product or service in the last two (2) years and can document sales and turnover through audited financial statements. Otherwise, they can participate as Partners.

- Research Organisations, Enterprises or Other Organisations may participate as **Partner Organisations (PAs)** (*PAs support the HO in accomplishing the project's objectives and may have their own commercial and/or scientific interests in achieving the Project results*)

- Participation of **Foreign Research Organisations** is allowed



► Conditions for Participation (3)

- All beneficiaries that have not previously participated in the RESTART 2026-2020 Programmes, should make use of the **simplified cost Method «Standard Scales of Unit Costs»** for the calculation of personnel costs
- Funding of same activities** that have already been supported by the RIF in the frame of previous funded projects, is **not allowed**
- Funded Projects should comply with the **«Do No Significant Harm» principle**, according to which they must not include or support activities that could cause significant harm to the environment
- The Host Organisation should **interact with the Central Knowledge Transfer Office (KTO)** for the preparation of a **customised Action Plan** for the Provision of Services by the KTO



► Eligible Activities

- ❑ The projects must necessarily include **Experimental Development** activities. They may also include **Industrial Research** activities

- ❑ Project activities should fall within **Technology Readiness Levels (TRL) 4-7** in compliance with the relevant definitions adopted by the EU
 - ✓ *TRL 4- technology validated in lab*
 - ✓ *TRL 5- technology validated in relevant environment*
 - ✓ *TRL 6- technology demonstrated in relevant environment*
 - ✓ *TRL 7- system prototype demonstration in operational environment*

Upon completion should be at least at **TRL 6** (this will be, inter alia, an evaluation point during the scientific evaluation of the Projects).

- ❑ By the Project completion, the HO must prepare a «**Commercialization Plan**», including an assessment and analysis of the project results' market potential and the planning of exploitation of results

▶ Pilot Testing after the Project Duration

For funded projects that will be successfully completed EAC or any other interested organization, if deemed appropriate, can provide access to the infrastructures of these organisations for experimental purposes. For the selected projects that meet the above, the relevant cost (their participation in the experimental implementation phase) will be fully covered by the interested organisation (e.g. EAC).

The whole process described above (selection and participation in the experimental phase and beyond) is not the subject of this Call.





▶ Eligible Costs

- Personnel Cost, Costs for Instruments and Equipment, Costs for Travelling Abroad, Costs for External Services, Costs for Foreign Research Organisations, Consumables, Other specific costs, Overheads

- At least 40% of the Project Budget should be allocated to the HO

► Proposal Submission



- ❑ Proposals are submitted through the Research and Innovation Foundation's IRIS Portal (<https://iris.research.org.cy>)

- ❑ The Project Proposal consists of the following parts:
 - **Part A** – General Information & Budget (*electronic form (fields) to be completed online through the IRIS Portal*)
 - **Part B** – Technical Annex (*document to be uploaded as an Annex on the IRIS Portal in PDF format*) - **Maximum number of pages 25**
 - **Annex I** – Curricula Vitae (*CVs of the Coordinator and the key personnel – Optional*) - *Recommended that CVs are created according to the EUROPASS format and do not exceed 5 pages per person*
 - **Annex II** – Smart Specialisation Sectors – **Obligatory Submission.**

► Evaluation

- Proposal **Preliminary Check**
- Remote Evaluation** by an Evaluation Team (Consensus Group) consisting of **three (3) independent evaluators** and a **rapporteur**
- The Evaluation Team reaches a common position (common scores and comments on each Evaluation Criterion) and submits a **Consensus Report** which will be sent to the Project Coordinators
- Proposals are deemed eligible for funding if they secure an Evaluation Score of at least 12.00/15.00
- Evaluation Criteria: (1) Excellence 20%, (2) Added Value and Benefit 40%, (3) Implementation 40%**



▶ Selection

Selection for Funding:

- the top two ranked eligible proposals, out of the proposals submitted in the same Specific Objective, with different Host Organisation and
- the selection of the rest of the proposals for funding will be made according to their ranking until the exhaustion of the Total Call Budget.





► Useful Documents

- ❑ RESTART 2016-2020 Work Programme Document
 - EL*
 - EN*

- ❑ Call Documents
 - Call Document (EL)*
 - Call Document(EN)*
 - Part B – Technical Annex*
 - Guide for Evaluators and Rapporteurs*

- ❑ IRIS Guidelines (Registration, Proposal Preparation/Submission)
 - <https://iris.research.org.cy/#!/documentlibrary>

► Contact / Support



For More Information:

RIF Website: www.research.org.cy

IRIS Portal: <https://iris.research.org.cy/>



Supporting RIF's Clients

RIF Support Service:

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Thank You...