

Irish energy SME seeks partners and a coordinator to develop & validate multifunctional printed energy membranes integrated with modular energy storage systems for industrial, marine, & off-grid energy applications for HE call HORIZON-CL5-2027-03-D5-1

Summary

Profile type

Research & Development Request Ireland

Company's country

POD reference

RDRIE20261006025

Profile status

PUBLISHED

Type of partnership

**Research and development
cooperation agreement**

Targeted countries

- Belgium
- Lithuania
- Estonia
- Poland
- Romania
- Canada
- Slovenia
- Croatia
- Hungary
- Netherlands
- France
- Spain
- Czechia
- Finland
- Germany
- Slovakia
- Italy
- Norway
- Denmark
- Iceland
- Sweden

Contact Person

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Term of validity

7 Oct 2026

7 Oct 2027

Last update

12 Oct 2026

General Information

Short summary

An Irish energy technology SME seeks HE partners and experienced coordinator to develop and validate multifunctional printed energy membranes for energy generation and functional surface applications. Cooperation is sought in advanced materials, printable functional compounds, substrate compatibility, process development, durability testing and integration with modular battery storage and intelligent energy-management systems for Horizon Europe call under Cluster 5

Full description

The SME is developing a multifunctional printed membrane and tape platform intended to combine energy-related and other functional surface technologies within thin, flexible and application-specific structures.

The HE programme focuses on the development of printable functional materials, compatible substrates, layer architectures and scalable production processes that can support different functions depending on the target application. These may include energy generation, heating, cooling, lighting and other active surface functions, with the possibility of combining several functions within one membrane or layered system.

Unlike conventional rigid panels or stand-alone electrical components, the SME concept is intended to integrate functional layers directly into flexible membranes, tapes or surface coverings that can follow the geometry of the underlying structure. The development therefore requires research into material compatibility, adhesion, conductivity, encapsulation, environmental resistance, flexibility, durability and manufacturability.

The SME is particularly interested in HE cooperation concerning printable functional compounds, polymer and composite substrates, coating and printing processes, lamination, encapsulation, electrical interconnection, environmental protection and long-term performance validation.

Planned application directions

Marine deck and hull coverings, where flexible functional membranes could be integrated into vessel surfaces without relying exclusively on conventional rigid panels.

Container and modular infrastructure coverings, allowing energy-generating or functional surfaces to be applied to transportable or temporary structures.

Tarpaulins, tents and flexible shelter systems, where lightweight membranes could combine protection with energy generation, lighting, heating or other functions.

Flexible building and infrastructure surfaces, including facades, roofs, walkways and other large-area coverings where conventional rigid systems may be difficult to integrate.

Road and pavement surface overlays, including functional tapes or membrane layers intended for illuminated markings, pedestrian crossings, local heating or de-icing and potentially integrated energy generation and storage.

Industrial and off-grid installations, where large flexible surfaces may be combined with local energy storage and intelligent energy-management systems.

The membrane platform is intended to connect with SME's modular BatteryBlock and energy-management architecture. This creates a development pathway in which energy can potentially be generated or managed at the surface, stored locally and controlled through a common energy-management environment.

The HE objective is to establish technically validated material systems and scalable manufacturing methods that can be adapted to multiple applications rather than developing each surface technology as an isolated product.

The SME is seeking research institutions, materials specialists, printing and coating technology providers, industrial manufacturers and application partners capable of contributing to material development, process optimisation, testing, scale-up and demonstration.

Advantages and innovations

The proposed innovation is a multifunctional printed membrane and tape platform that combines flexible surface integration with energy-related and other active functions.

Key advantages and innovation aspects

Multifunctional platform architecture: different functional layers can be combined according to the target application, including energy generation, heating, cooling, lighting and other active surface functions.

Flexible integration on curved, irregular or large-area surfaces such as vessel hulls, decks, containers, tents, infrastructure surfaces and pavement overlays.

Reduced installation intrusion by adding functionality directly to an existing structural surface rather than relying on separate rigid systems.

Lightweight construction potential through thin printed and coated structures.

Material-efficient manufacturing using printing, coating, lamination and roll-based processing methods that can support scalable large-area production.

Environmentally focused material strategy prioritising non-toxic or reduced-toxicity materials, recyclability and non-rare-earth material solutions wherever technically feasible.

Application-specific customisation through layer selection, geometry and functional configuration rather than an entirely separate product architecture for every use case.

Integration with SME's modular BatteryBlock and energy-management architecture, linking surface-based energy generation or consumption with local storage and intelligent control.

Distributed functional surfaces that can activate more of the available structure for energy generation, heating, lighting or other functions.

Industrial scalability addressed from the outset through printable materials, substrate compatibility and transferable manufacturing processes.

Technical specification or expertise sought

The SME is seeking research and industrial partners with expertise in advanced functional materials, printable compounds, polymer and composite substrates, coating and printing technologies, multilayer structures and scalable manufacturing processes.

Specific expertise sought

Development and optimisation of printable functional materials for energy generation, heating, cooling, lighting and related active-surface functions.

Selection and modification of flexible polymer, film, textile or composite substrates suitable for multilayer printing, coating and lamination.

Conductive, dielectric, protective and functional layer development, including compatibility between materials and manufacturing processes.

Adhesion, encapsulation and barrier technologies providing resistance to moisture, saltwater, UV exposure, temperature cycles, abrasion and mechanical deformation.

Printing and coating process development including deposition control, curing/drying, layer uniformity, repeatability

and transfer toward scalable roll-to-roll or comparable industrial processing.

Electrical interconnection and connector concepts suitable for flexible and repeatedly stressed surfaces.

Material and product testing covering electrical performance, mechanical flexibility, fatigue, adhesion, ageing, environmental exposure, fire behaviour and long-term durability.

Recyclability, material separation and end-of-life design, with particular interest in non-toxic, reduced-toxicity and non-rare-earth material systems.

Prototype manufacturing and application testing for marine surfaces, containers, flexible shelters, infrastructure surfaces, pavement overlays and industrial/off-grid applications.

Stage of development

Available for demonstration

Sustainable Development goals

- **Goal 7: Affordable and Clean Energy**
- **Goal 13: Climate Action**
- **Goal 9: Industry, Innovation and Infrastructure**
- **Goal 12: Responsible Consumption and Production**

IPR Status

IPR applied but not yet granted

IPR Notes

Patent protection in preparation. Existing SME architecture, concepts and background IP remain SME property; foreground IP generated through cooperative R&D will be governed by the relevant collaboration or consortium agreement.

Partner Sought

Expected role of the partner

The SME is seeking complementary research, technology and industrial partners capable of contributing to the development, validation and scale-up of multifunctional printed membrane and tape technologies. Suitable partners may include universities, applied research institutes, materials companies, printing and coating technology providers, polymer and composite specialists, industrial manufacturers, system integrators and application partners.

An Experienced Coordinator is also required.

Expected partner contribution

Materials development: formulation, optimisation or characterisation of printable functional materials, conductive and dielectric systems, protective layers, adhesives, encapsulants and compatible substrate materials.

Process development: development and optimisation of printing, coating, curing, drying, lamination and related manufacturing processes suitable for multilayer flexible structures.

Substrate and interface engineering: support with polymer, textile, film or composite substrates, surface preparation, adhesion, barrier layers and compatibility between functional layers.

Testing and validation: laboratory and application testing covering electrical performance, mechanical flexibility, adhesion, fatigue, ageing, environmental exposure, UV resistance, moisture and saltwater resistance, abrasion, temperature cycling and fire behaviour.

Prototype manufacturing: preparation of laboratory and pilot-scale membrane structures and support for transition toward repeatable prototype production.

Industrial scale-up: assessment and development of scalable manufacturing approaches, including roll-to-roll or comparable continuous production methods, quality assurance and industrial process control.

Application integration: participation in defined demonstration cases such as marine deck or hull surfaces, container coverings, flexible shelters, infrastructure surfaces, pavement overlays and industrial or off-grid installations.

Sustainability and end-of-life development: support for material selection, recyclability, separation concepts and reduced-toxicity or non-rare-earth material pathways.

The SME will contribute the overall platform concept, system architecture, application requirements, integration with modular energy storage and energy-management systems, and existing background intellectual property. The preferred cooperation model is a structured R&D partnership in which responsibilities, background IP, newly generated foreground IP, exploitation rights and confidentiality are clearly defined before technical development begins.

The objective is to progress from defined material and application concepts through prototype manufacture and validation toward scalable industrial production and selected demonstration applications

Type of partnership

Research and development cooperation agreement

Type and size of the partner

- **Big company**
- **SME 11-49**
- **SME 50 - 249**
- **R&D Institution**
- **University**

Call Details

Framework program

Horizon Europe

Call title and identifier

Horizon Europe - Cluster 5: Climate, Energy and Mobility / Zero Emission Waterborne Transport (ZEWT)

Partnership

Submission and evaluation scheme

Single-stage submission; Horizon Innovation Action (IA).

Anticipated project budget

6500000

Coordinator required

Yes

Deadline for EoI

27 Jan 2027

Deadline of the call

14 Apr 2027

Project duration in weeks

156

Web link to the call

Project title and acronym

PRISM-Energy - Multifunctional Printed Energy Membranes for Renewable Marine Surfaces and Integrated Energy Storage

Dissemination

Technology keywords

- **02002002 - Coatings**
- **04002013 - Smart grids**
- **01003022 - Smart Appliances**
- **04002012 - Other energy related machinery**

Market keywords

- **06003004 - Marine energy**
- **06008 - Energy Storage**
- **06009 - Energy Distribution**
- **09004008 - Other manufacturing (not elsewhere classified)**

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- Slovakia
- Italy
- Norway
- Denmark
- Iceland
- Sweden

Sector groups involved

Media

Images



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