Consortium with Swiss coordinator seeks an energy intensive industrial sites and drying system providers to test drying process for HORIZON-CL4-INDUSTRY project

Summary

Profile type	Company's country	POD reference
Research & Development Request	**Switzerland**	**RDRCH20250825001**
Profile status	**Type of partnership**	**Targeted countries**
PUBLISHED	**Research and development cooperation agreement**	**• World**
Contact Person	**Term of validity**	**Last update**
Enrico FRANZIN	**25 Aug 2025** **25 Aug 2026**	**26 Aug 2025**

General Information

Short summary

Swiss coordinator seeks partners to develop a new desiccant-based drying & humidity control technology operating at low temperatures, using waste heat as energy driver. It enables loss-free long-term thermal storage, high flexibility & efficiency gains. Energy-intensive industries/associations (e.g., paper, pulp, ceramics) for small-scale prototype testing, as well as providers/manufacturers of drying solutions sought for submitted a project under Horizon Europe – HORIZON-CL4-INDUSTRY-2025-01

Full description

The project focuses on reducing industrial fossil fuel use, specifically within energy-intensive drying processes. Industrial drying accounts for approximately 9% of Europe's total industrial energy demand. While the sector is not the largest consumer overall, it is the primary consumer of fossil fuels, which can largely be replaced by low-temperature residual heat and solar thermal energy.

This project develops desiccant-based drying technology, leveraging renewable energy and smart power grid management to increase both operational flexibility and grid stability. Applications target diverse sectors as food, paper/pulp, wood, ceramics and lacquer drying in different sectors.

The core innovation is the use of widely available liquid desiccants (e.g.salt solutions as MgCl2, CaCl2) as thermal energy carriers, storing low-temperature solar or residual heat in a “latent” state. That means that the energy or the drying effect is released only when required. This enables seasonal storage and transport without thermal losses, allowing energy to be managed both temporally and spatially.

The different industry in the site can be connected through desiccant networks, supported by AI-enabled power grid management and circular economy strategies that revalorize waste energy and by-products. Demonstration sites at the Swiss Institute of Energy Systems and Fluid Engineering (IEFE) will pilot these systems, further expanding test of the dryer (not of the network) to industrial partners.

The proposal funding is HORIZON-CL4-INDUSTRY-2025-01-TWIN-TRANSITION-33, due date for submission 23 September 2025.

Duration of the project: 3 years.

Consortium:
- The coordinator, Zurich University of Applied Sciences (Switzerland), leads technical development and AI;
- Watergy and Leibniz University Hannover (Germany) bring years of experience in air/gas humidity control, greenhouse farming, and simulation;
- University of Hasselt (Belgium) handles power grid management and integrated simulations;
- Strane Innovation (France) leads exploitation and market analysis; IZNAB Sp. z o.o. (Poland) undertakes LCA/LCC and dissemination.

The consortium seeks:
1. Additional demonstration partners from energy-intensive industries and organizations interested in testing prototypes and conducting feasibility studies at their sites. (e.g., paper, pulp, ceramics)
2. Drying system provider interested in bringing the products to market.

The technology was tested for drying process for tea production in lab scale at the ZHAW.

Advantages and innovations

The breakthrough of this technology lies in using liquid desiccants, the most efficient and environmentally friendly alternatives as thermal energy carriers. Unlike conventional drying that heats air or gases, this sorptive approach removes humidity through absorption, drastically reducing energy demands and allowing drying at much lower temperatures. Using liquid desiccants as thermal energy carriers enables lossless storage and transport of low-grade heat (waste heat, solar thermal, or surplus electricity) for industrial drying.

Key benefits:
• Product quality: Gentle drying preserves aroma, color, and texture while improving hygiene and reducing microbial loads.
• Flexibility: Decouples heat supply from drying demand in both time and space, enabling container or pipeline transport without costly insulation.
• Renewable integration: regeneration of desiccants with green surplus electricity, what buffers renewable fluctuations and allows seasonal storage for 100% renewable operation, allowing industries to reduce fossil fuel useeven during periods of energy scarcity.
• Sustainability & cost savings: Cuts fossil fuel use, lowers CO_2 emissions, and reduces operating costs thanks the use of low-grade heat and absorption instead of compression-based dehumidification.

In summary, the combination of desiccant-based absorptive drying, thermal energy storage, smart grid integration, and spatial-temporal flexibility represents a step change from traditional methods.

Technical specification or expertise sought

Stage of development

Available for demonstration

Sustainable Development goals

- **Goal 11: Sustainable Cities and Communities**
- **Goal 9: Industry, Innovation and Infrastructure**
- **Goal 13: Climate Action**
- **Goal 7: Affordable and Clean Energy**

IPR Status

IPR Notes

Partner Sought

Expected role of the partner

1. Industrial sites (e.g. food, paper/pulp, wood, ceramics and lacquer drying in different sectors):
- Provide data for simulations, prototype definiation and support in feasibility studies and cost assessments.
- Supply data for prototype testing at the Swiss UAS facilities and, if possible, allow prototype testing on-site.

2. Drying system provider:
- Contribute expertise in drying technologies and assist in evaluating the proposed solution.
- Support business planning and market analysis.

Type of partnership

Research and development cooperation agreement

Type and size of the partner

- **SME 50 - 249**
- **SME 11-49**
- **Big company**

Call Details

Framework program

Horizon Europe

Call title and identifier

CL4 HORIZON-CL4-INDUSTRY-2025-01-TWIN-TRANSITION-33

Submission and evaluation scheme

Anticipated project budget

Coordinator required

No

Deadline for EoI

14 Sep 2025

Deadline of the call

23 Sep 2025

Project duration in weeks

36

Web link to the call

Project title and acronym

Dissemination

Technology keywords

- **02002003 - Drying**
- **04007003 - Process optimisation, waste heat utilisation**
- **04001001 - Heat storage**
- **04002012 - Other energy related machinery**

Market keywords

- **06010003 - Energy for Industry**
- **06003008 - Other alternative energy**
- **08001013 - Ceramics**
- **08003005 - Other industrial machinery for textile, paper & other industries**

Targeted countries

- **World**

Sector groups involved

- **Energy-Intensive Industries**

Media

Images

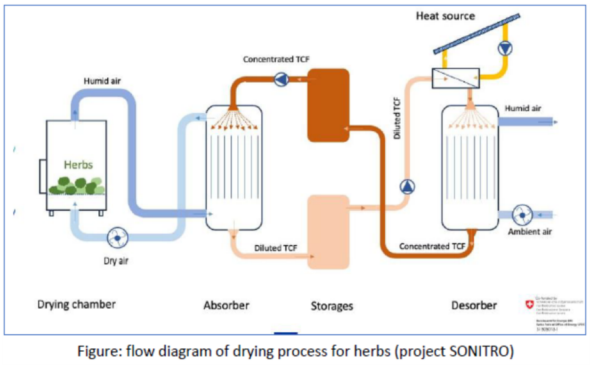

Figure: flow diagram of drying process for herbs (project SONITRO)

Desiccant technology.png