Spanish company seeks innovative solutions to replace or reduce free oil in their instrument transformers

Summary

Profile type	Company's country	POD reference
Technology request	**Spain**	**TRES20250711004**
Profile status	**Type of partnership**	**Targeted countries**
PUBLISHED	**Commercial agreement with technical assistance** **Research and development cooperation agreement**	**• World**
Contact Person	**Term of validity**	**Last update**
Enrico FRANZIN	**11 Jul 2025** **11 Jul 2026**	**11 Jul 2025**

General Information

Short summary

A Spanish company is seeking efficient alternatives to replace, reduce, or eliminate the free oil used in the instrument transformers, without affecting the core paper-oil insulation system.
Solutions must maintain electrical insulation, thermal stability, chemical compatibility, and be easy to implement.
Partners with ideas or expertise in advanced insulating materials or transformer design are sought for technical cooperation.

Full description

A big Spanish company specializing in the manufacture of electrical equipment is looking for innovative solutions to replace, reduce, or eliminate the free oil currently present in their instrument transformers.
In these transformers, kraft paper impregnated with dielectric oil serves as the primary insulating layer. A chamber containing “free” or excess oil is used to ensure the oil impregnates all paper surface and to provide assembly tolerance.
The company seeks alternatives that minimize or eliminate the need for free oil, while preserving the essential paper-oil insulation.

Key requirements for proposed solutions are as follows:
• Do not affect the electrical insulation performance of dielectric oil.

• Demonstrate thermal stability with minimal volume change over a temperature range of -10°C to 40°C.
• Allow easy application during transformer assembly, considering variable internal volumes and tolerances across different models.
• Ensure chemical compatibility with existing dielectric oil and all transformer components (notably avoiding incompatibilities with rubbers, polymers, PVC, silicone, coatings, adhesives, etc.).
• Exhibit low moisture absorption to preserve insulation integrity and extend equipment lifespan.
• Preferably be biodegradable or have a lower environmental impact than current oils.
• Minimize or avoid changes to the existing transformer design and components.

Evaluation criteria (in order of importance):
• Highest reduction in free oil volume and environmental impact.
• Lowest impact on material and assembly costs.
• Least modification required to existing transformer design and components.

Excluded approaches:
Solutions based on gas insulation are not of interest, as they are already covered in the company's product catalogue.

Advantages and innovations

• Opportunity to introduce materials engineering solutions or innovative design concepts in a critical energy sector application.
• Potential to reduce environmental impact by minimizing or eliminating oil use.
• Simplification of transformer assembly and reduction of compensation system complexity.
• Enhanced safety and reliability by lowering the risk of oil leaks and associated failures.
• Access to funding and collaboration with a leading manufacturer in the energy sector.

Technical specification or expertise sought

• Engineering capacity and ability to demonstrate electrical, thermal, and chemical performance of proposed materials or systems.
• Ability to participate in pilot testing and provide technical documentation.

Stage of development

Under development

Sustainable Development goals

- **Goal 17: Partnerships to achieve the Goal**
- **Goal 9: Industry, Innovation and Infrastructure**
- **Goal 13: Climate Action**
- **Goal 8: Decent Work and Economic Growth**

IPR Status

No IPR applied

IPR Notes

IPR Notes

Partner Sought

Expected role of the partner

• Material suppliers, technology developers, R&D centers, or engineering firms with proven solutions or innovative concepts for transformer insulation.
• Partners able to co-develop, adapt, or pilot solutions in collaboration with the requesting company.

Expected role of the partner:
• Propose and adapt the solution to the specific requirements of instrument transformers.
• Participate in pilot testing, feasibility analysis, and business case development.
• Collaborate in scaling up and potential commercialization.

Type of partnership

Commercial agreement with technical assistance

Research and development cooperation agreement

Type and size of the partner

- **SME 50 - 249**
- **SME 11-49**
- **R&D Institution**
- **Big company**
- **SME <=10**
- **Other**
- **University**

Dissemination

Technology keywords

- **04001004 - Transmission of electricity**
- **03004004 - Electrical Engineering/ Electrical Equipment**
- **04002005 - Generators, electric engines and power converters**

Market keywords

- **09008001 - Electric companies**

Targeted countries

- **World**

Sector groups involved