

# A university from Türkiye is looking for a project partner for the HORIZON-CL4-INDUSTRY-2025-01-TWIN-TRANSITION-05 call: Net-Zero Oriented Circular Hybrid Manufacturing for High-Performance production of Fuel Cells and Electrolyzers

## Summary

Profile type	Company's country	POD reference
<b>Research &amp; Development Request</b>	<b>Türkiye</b>	<b>RDRTR20250619007</b>
Profile status	Type of partnership	Targeted countries
<b>PUBLISHED</b>	<b>Research and development cooperation agreement</b>	<b>• World</b>
Contact Person	Term of validity	Last update
<b><u>Enrico FRANZIN</u></b>	<b>19 Jun 2025</b> <b>19 Jun 2026</b>	<b>19 Jun 2025</b>

## General Information

### Short summary

This project aims to enhance Europe's capability to manufacture key clean energy technologies by developing a circular, hybrid manufacturing platform for the large-scale, high-precision production of metallic bipolar plates—critical components in proton exchange membrane (PEM) fuel cells. These plates directly affect fuel cell efficiency, size, and lifetime, and their scalable, cost-effective production is essential to enabling mass adoption of fuel cell systems across mobility and energy sector

### Full description

- 1) Reduction of production time for bipolar plate embossing tools by at least 30%.
- 2) Development of a hybrid laser and milling manufacturing process for high-hardness tool materials (HRC 68).
- 3) Improvement of surface quality to achieve Ra 0.2 µm for enhanced fuel cell performance.
- 4) Decrease of tool wear and production costs by at least 30%.
- 5) Enablement of fuel cell mass production through process scalability and automation.
- 6) Enabling a circular hybrid manufacturing workflow.

Additionally,

- 1) Develop hybrid laser welding tools for bipolar plates using additive and subtractive manufacturing.
- 2) Enable optimized inert gas flow via novel, simulation-driven internal gas channel geometries.
- 3) Reduce manufacturing time of welding tools (DIN-A0) from 300 to 150 hours.
- 4) Ensure oxidation-free laser welds with dimensional tolerances 100 µm.
- 5) Increase process flexibility and scalability through modular, digitally controlled production
- 6) Demonstrate a closed-loop material reuse process, supporting circularity and Net-Zero goals.

#### Advantages and innovations

By delivering these innovations at TRL 6–7, the project will directly contribute to the Net-Zero Industry Act by enhancing the productivity, flexibility, and sustainability of clean technology manufacturing—specifically in the production of key hydrogen-related components.

#### Technical specification or expertise sought

A fuel cell and electrolyzer manufacturer is being sought as a project partner.

#### Stage of development

**Under development**

#### Sustainable Development goals

• **Goal 7: Affordable and Clean Energy**

#### IPR Status

**No IPR applied**

#### IPR Notes

## Partner Sought

#### Expected role of the partner

A fuel cell and electrolyzer manufacturer is being sought as a project partner.

#### Type of partnership

#### Type and size of the partner

## Research and development cooperation agreement

- Big company
- SME 11-49
- SME  $\leq 10$
- SME 50 - 249

## Call Details

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Framework program

**Horizon Europe**

Call title and identifier

**HORIZON-CL4-INDUSTRY-2025-01-TWIN-TRANSITION-05 call**

Submission and evaluation scheme

Anticipated project budget

Coordinator required

**No**

Deadline for EoI

**23 Sep 2025**

Deadline of the call

**23 Sep 2025**

Project duration in weeks

Web link to the call

Project title and acronym

## Dissemination

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Technology keywords

- **04002012 - Other energy related machinery**

Market keywords

- **06008 - Energy Storage**

Targeted countries

- **World**

Sector groups involved