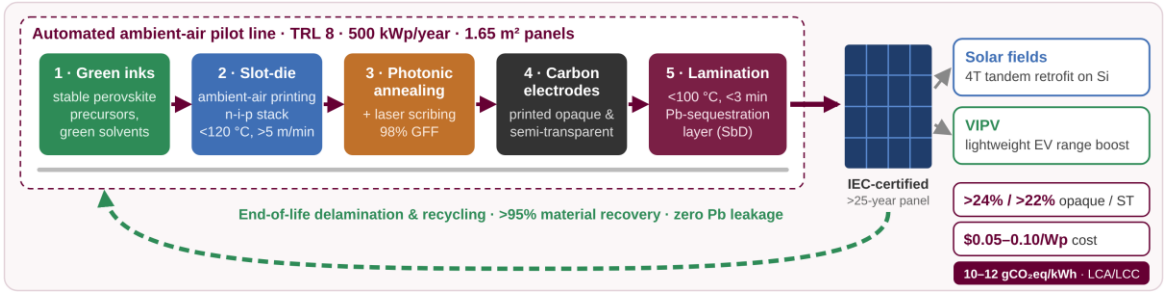
2026	PEROLINE – AUTOMATED AMBIENT-PROCESS PILOT LINE FOR SUSTAINABLE PEROVSKITE PV						
Country	**Contract value (€)**	**% by Epsilon**	**Staff # provided**	**Client**	**Origin of funding**	**Date (start/end)**	**Consortium Members**
IT, MT, CH, FR, UK, GR, DE, ES, NL, TR	**10,035,636**	≈4.9% (by effort)	42 PM	European Commission (CINEA)	Horizon Europe (Cluster 5)	48 months (start TBC)	ITC (Coord.), EPS, EPFL, CNRS, UCL, LUX, GET, ECOP, 9TECH, CRF, PCN, AUTH, IST, LMU, CTA, SOLX, EkoRE, ELife, TSE

The Project (2026)

PEROLINE is a 48-month Horizon Europe project under the EUPI-PV Partnership (HORIZON-CL5-2026-02-D3-10) bringing 19 partners from ten countries towards the commercialisation of perovskite photovoltaics. Following a "low-CAPEX, high-throughput" philosophy, it will qualify a fully automated, sheet-to-sheet TRL 8 pilot line with 500 kWp/year capacity that produces fully printed modules in ambient air, without vacuum systems or cleanrooms, using a stable low-temperature n-i-p architecture, green-solvent inks, slot-die printing, rapid photonic annealing and low-cost printed carbon electrodes.

The project targets 900 cm² sub-modules with >24% (opaque) and >22% (semi-transparent) efficiency integrated into 1.65 m² commercial panels, production costs of $0.05–0.10/Wp, >95% yield and a certified lifetime above 25 years (IEC 61215/61730). A Safe-and-Sustainable-by-Design approach combines lead-sequestration layers, fast low-temperature lamination and design-for-recycling, delivering >95% material recovery, zero lead leakage and a carbon footprint of 10–12 gCO2eq/kWh.

PEROLINE validates two markets: 4-terminal tandem retrofitting of existing utility solar fields, raising power density without additional land use, and lightweight, low-cost vehicle-integrated PV that extends electric-vehicle range. A commercialisation roadmap, supported by LCA/LCC, Cost-of-Ownership and LCoE evidence, paves the way to a >1 GW European Gigafactory.



Services to be provided by EPSILON

EPSILON International (42 person-months) leads WP7 (Dissemination, Exploitation and Roadmap) and is deputy leader of WP6 and WP8, acting as the consortium's sustainability and compliance integrator and providing the bankability evidence that supports scale-up from TRL 8 to TRL 9. Services include:

- **Life Cycle Assessment (T6.1):** cradle-to-grave LCA of the pilot line and its applications per ISO 14040/44 and EU PEF guidance, using openLCA and ecoinvent with primary pilot-line data; indicators include global warming potential, cumulative energy demand, resource depletion, water use and toxicity, with focus on lead sequestration and recycling.
- **Costing and competitiveness:** LCC of the 500 kWp/year line extrapolated to Giga-scale, Cost-of-Ownership against silicon benchmarks and LCoE for 4T solar-field retrofits and VIPV, with sensitivity and scenario analyses feeding the Commercialisation Roadmap.
- **Communication and dissemination (T7.1):** dissemination management within the Communication and Dissemination Plan, high-impact publications, conferences, industrial events, workshops and policy briefs highlighting the contribution to the EU Green Deal and REPowerEU.
- **Data management and ethics (T8.3):** FAIR Data Management Plan with periodic updates, secure repositories, GDPR compliance and ethics management for lead handling, recycling, REACH and WEEE compliance.
- **Safety assessments:** Safe-by-Design concept and continuous periodic safety assessment reports throughout the project (M12, M24, M36, M48).

Key outputs: LCA, LCC and LCoE analysis (D6.1), Data Management Plan (D8.2), Safety Assessments (D8.3) and a reusable openLCA-based LCA/LCC/CoO/LCoE modelling package.