SPURUP

Sustainable Peri-Urban framework
for Climate Neutral development



LIVING LABS

Thessaloniki, Greece

Solar thermal plant for industrial application of steam production

Funded by the European Union

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General Information

LIVING LAB
Thessaloniki, Greece

The Mission

Demonstrate climate-neutral industrial process heat in the peri-urban area of Thessaloniki by replacing natural-gas malthouse air-heating demand at Athenian Brewery GR02 with grant-funded solar thermal heat and by using the Living Lab to support Local Green Deals, stakeholder engagement and replicable industrial decarbonisation.

Target stakeholders

- Athenian Brewery operations, engineering, energy, sustainability, finance and procurement teams.
- Municipality of Thessaloniki and Regional Development Fund of Central Macedonia officers involved in climate-neutrality planning, permitting and Local Green Deals.
- Technology and digital-tool providers, including Absolicon and SpurUP partners responsible for monitoring, analytics, policy and stakeholder tools.
- Industrial energy users, breweries and food-and-beverage companies interested in replicating solar process heat.
- Local communities, citizens, farmers and civil society groups engaged through the SpurUP Participatory Innovation Space.
- External stakeholder group, including local/regional authorities and industry associations reached through the SpurUP replication strategy.

Key Partners

ΑΘΗΝΑΪΚΗ ΖΥΘΟΠΟΙΙΑ
CITY OF THESSALONIKI
Regional Development Fund of Central Macedonia
National Technical University of Athens
cesie
ppc inspectra
SIMAVI Software Imagination & Vision
Telesto Technologies
Suite5 We Deliver Intelligence
prometech
DITENCO CLEAN EFFICIENT ENGINEERING
IANUS TECHNOLOGIES
UNIQCUBE
pwc
ABSOLICON SOLAR COLLECTORS

Local challenge

Current Situation

Thessaloniki's peri-urban area combines industrial activity, fragmented governance responsibilities and environmental pressure. High industrial GHG emissions and air-pollution pressure, limited green areas, inefficient waste management and low municipal recycling rates are core challenges. From AB's side, GR02 currently relies on natural gas for malthouse air-heating cycles. This creates Scope 1 emissions and exposes the site to fossil-fuel cost and transition-risk pressure. The 2025 thermal-consumption baseline referenced in the Absolicon brief is 63,819,610 MJ/year.

Peri-Urban Context

Living Lab 1 is centred on Thessaloniki, with the Municipality of Thessaloniki as the EU Mission city core, Regional Development Fund of Central Macedonia as the regional governance partner and Athenian Brewery GR02 as the industrial demonstration site. The AB demonstration focuses on the Thessaloniki malthouse, where available roof area of approximately 1,700 m2 and existing hot-water/process infrastructure enable integration of solar process heat.

The wider peri-urban context is the industrial and urban fringe around Thessaloniki, where SpurUP links industrial decarbonisation with public-sector climate planning, participatory governance and future replication to other breweries and food-industry sites.



SpurUP Innovation applied

Technical Solutions

- Solar thermal process heat at Athenian Brewery GR02 using Absolicon T160 parabolic trough collectors. The AB brief identifies a 370 kW / 528 m2 aperture-area system with 96 collectors, delivering an estimated 474 MWh/year (1,706,400 MJ/year) of solar heat for malthouse air heating at approximately 65-90 C.
- Integration with the site's hot-water loop through the Solar Central / heat-exchanger interface, displacing natural gas in malthouse air heating.
- Living Lab 1 technologies and methodologies also include CCU - synthetic methanol production, resource recovery / water circularity, S-LCA, participatory governance and urban planning, and capacity-building activities.
- CCU - synthetic methanol production plant at Athenian Brewery will utilize captured crude CO2 emitted by the fermentation and other brewery processes and green hydrogen technology to produce e-methanol. The plant will include integrated units for carbon capture and utilization, water electrolysis, and methanol synthesis. The design aims to achieve CO2 capture efficiency of more than 85% and e-methanol production efficiency exceeding 45%, turning emissions into valuable fuel and chemical feedstock.

Digital Tools

- Knowledge Hub for sustainability metrics, planning information, resource optimisation and decision support.
- Stakeholder Empowerment / Engagement tool to share updates, collect citizen and stakeholder feedback and support inclusive Local Green Deal processes.
- Nexus for Funding and Incentives (NFI) to identify and apply for green funding opportunities.
- AI-powered sustainability analytics / AI Analytics Designer for monitoring energy use, emissions and decision support.
- Verification and Prioritization Tool (VPT) for emissions and air-quality modelling.
- SERVE and REACT tools for vulnerability, environmental-risk and sustainability monitoring.
- Absolicon remote monitoring for live solar-field KPI data, including energy produced and uptime.

Local Green Deal (LGD)

The Local Green Deal framework is to be developed and implemented, bringing together the city / regional authorities, AB, other private-sector actors, citizens and associations around industrial decarbonisation and territorial sustainability.

For AB, the practical LGD contribution is the solar thermal demonstrator at GR02: a zero-CAPEX, EU-funded intervention that reduces fossil process-heat demand and supplies measured performance data for the Thessaloniki Living Lab.



SpurUP Target Impacts (KPIs)

100%

GHG TARGET

Avoidance of CO2 emissions for the energy produced by the solar thermal application compared with conventional fossil heat, and at least 5% GHG reduction from the implementation of net-zero and synthetic fuel production technologies at the Living Lab level.

AB / Absolicon brief estimate: 474 MWh/year of solar heat displaces approximately 47,400 m3/year of natural gas, corresponding to approximately 85-90 tCO2eq/year Scope 1 reduction at GR02.

AB / NTUA brief estimate: The capture of CO2 for e-methanol production will upcycle approximately 80 tCO2eq/year."

>5%

ENERGY EFFICIENCY

Improvement in energy efficiency, with project-level objectives linked to improved energy efficiency in industrial processes.

AB / Absolicon brief quantified site impact: 1,706,400 MJ/year renewable heat reduction versus the 2025 GR02 thermal baseline of 63,819,610 MJ/year, equal to a 2.67% reduction in site thermal-energy demand before any additional digital-tool or operational-efficiency effects.

>500

COMMUNITY IMPACT

More than **500 stakeholders** engaged, more than **30 experiences** uploaded in the Knowledge Hub, more than **30 VPT simulations**, more than **15 relevant funding initiatives** identified, more than **15 AI-powered decisions**, more than **5 MaaS resources**, more than **5 vulnerability assessments** and more than **10 OSS platform outputs**.

Train at least 20 municipal officers and industrial managers on energy efficiency; support industries in achieving a 30% increase in adoption of net-zero technologies; assist in forming at least 2 Local Green Deals for industrial decarbonisation.

Policy Context

Policy and Regulatory documents

Municipality of Thessaloniki Climate City Contract / 2030 Climate Neutrality Action Plan: referenced in the grant agreement as Thessaloniki's climate-neutrality commitment and Mission Label pathway; directly relevant to LL1 as Thessaloniki serves as the core city for Living Lab 1.

Thessaloniki Resilience Strategy: referenced in the grant agreement in relation to limited green areas and local resilience context for the peri-urban Living Lab.
EU Green Deal, European Climate Law and Fit for 55: referenced in the grant agreement's policy contribution section as the EU policy frame for climate neutrality, energy efficiency and GHG reduction.

CSRD / ESRS E1, Heineken Brewing a Better World / SBTi pathway and ISO 50001: AB-side compliance and reporting context identified in the Absolicon brief for Scope 1 decarbonisation, energy-performance improvement and sustainability disclosure.



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