Innovative Drying Solution: Superheated Steam Drying (SSD)

SteamDry is at the forefront of pioneering energy-efficient and environmentally friendly drying solutions, surpassing current industry standards. Superheated Steam Drying technology heats saturated steam above its boiling point, creating a powerful drying medium that removes excess water from materials quickly and effectively.

Why Choose SSD?

Energy Efficiency
SSD significantly reduces energy consumption compared to traditional drying methods.

Environmentally Friendly
Our approach aims to eliminate CO2 emissions by avoiding combustion processes.

Versatile Applications
SSD technology is set to revolutionise drying processes across various sectors, including paper, textiles, and food production.

SteamDry focuses on advancing SSD technology to create a sustainable and efficient drying solution for industrial applications.

Current Dryer vs. SteamDry Concept

Unlock the potential for positive change with SteamDry!

	CURRENT	SteamDry
ENERGY	~1100 kWh/ton	~450 kWh/ton
CO2 (FOSSIL)	0,45 tCO2/t paper	No emissions
HEAT	30-40% lost to air	Latent heat recovered
SOURCE	Combustion	Electricity

In a nutshell

This project falls under the topic of HORIZON-CL4-2023-TWIN-TRANSITION-01-31, focusing on energy efficiency breakthroughs in the process industries, in collaboration with the Processes4Planet partnership.

Project Title: Superheated steam drying for sustainable and recyclable web-like materials

Acronym: SteamDry

Grant Agreement ID: 101137906

Start Date: 1 January 2024

End Date: 30 June 2027

Duration: 42 months

EU Contribution: 9 843 168,48 €

Project Coordinator: VTT Technical Research Centre of Finland Ltd

Check our website!

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SteamDry

Superheated steam drying for sustainable and recyclable web-like materials

www.steamdry.eu

Funded by the European Union

P4PLANET PROJECT

60%
Energy savings in thermal drying

40%
Energy savings on production line

100%
Elimination of CO2 emissions

The project

The SteamDry project aims to significantly decrease energy consumption and CO2 emissions in the paper and board manufacturing industry. These will be the key benefits:

Enhanced Heat Transfer
Superior thermal conductivity and heat capacity of superheated steam facilitate efficient drying and inactivation of micro-organisms, ensuring product hygiene.

Energy Efficiency
SteamDry significantly reduces energy consumption, utilizing recovered heat for various processes, thereby creating a more sustainable production environment.

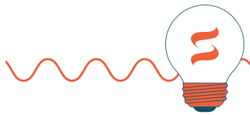
CO2 Emission-Free
By eliminating reliance on combustion processes, SteamDry contributes to a greener and eco-friendly manufacturing approach.

Consortium

VTT
AIT Austrian Institute of Technology
Valmet
BFI Excellence in Applied Research
feuga fundación empresa universidad gallega
SOFIDEL
Smurfit Kappa
PILLER Blowers & Compressors
University of Twente.
USC Universidade de Santiago de Compostela
AHLSTROM
Metsä
Wageningen University & Research
sappi

Project Objectives

The Steamdry project is dedicated to pioneering advancements in drying technology with a strong emphasis on energy efficiency, CO2 emission reduction, and technological innovation. By leveraging the latest scientific and technological breakthroughs, the project aims to achieve several objectives that collectively seek to transform drying processes in various industries.

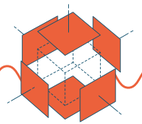


Energy-Efficient Drying Technology

Develop innovative SSD concepts to significantly reduce energy consumption. Focus on high and low-temperature dryers, cost estimation for scaling up, simulation-based energy savings, improved closed-loop systems, and steam purification for various materials.

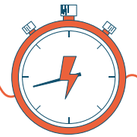
CO2-Free Drying Process

Create a CO2-emission-free drying process using renewable electricity for compressors and suitable equipment. Develop steady-state simulation models for convective and contact dryers, focusing on energy use in applications such as paper, board, tissue, and nonwoven dryers.



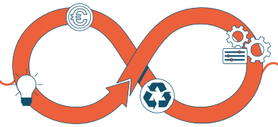
Advanced Control System for SSD Dryer

Develop an advanced control system for SSD dryers, incorporating digital technologies and AI optimisation. Create digital twins for key components, design IT architecture for distributed control, and implement AI-based anomaly detection for early issue identification.



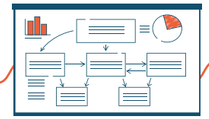
Pilot SSD Process for Web-like Products

Demonstrate energy savings and CO2-free drying at 200 m/min in a pilot SSD process. Conduct experiments and material testing to validate the feasibility and techno-economic benefits, advancing from Technology Readiness Levels(TRL) 4 to TRL 6.



Environmental and Techno-Economic Assessment

Perform comprehensive assessments of SSD technology, including Life Cycle Analysis (LCA), Techno-Economic Assessment (TEA), and Social Impact Analysis. Validate CO2 reduction and sustainability benefits to support commercial adoption.



Business Potential Evaluation

Assess business potential in various manufacturing sectors through case studies and economic evaluations. Evaluate commercial viability and explore opportunities for adopting SteamDry technology in paper, board, tissue, and nonwoven industries.

Communication and Dissemination

Develop a robust communication and dissemination plan targeting stakeholders and an exploitation plan for economic growth. Utilise key messages, channels, tools, and events to maximise the impact and economic benefits of the developed technologies.