WSE TURBO CASE STUDY 2026 material

EFFICIENT ELECTRICIFICATION OF DRYING INDUSTRY

WSE Heat Pump Technology Solution for Super heated Steam drying

Material Usage for 2025 – Sales Materials Only

About WSE Turbo

Since our formation in 2019, WSE Turbo has been built on a foundation of deep engineering expertise, advanced process understanding, and decades of hands-on experience in energy systems and turbo machinery in our headquarters in Denmark.

Our solutions are rooted in advanced thermal process optimization and waste heat recovery, enabling industries to reduce emissions while improving operational performance.

Decades of experience in process optimization for industrial and power plant systems, focusing on maximizing energy efficiency and integrating complex processes. The team has a strong background in microturbines and combined heat and power (CHP) systems, from R&D to commercialization.

The team has proven track record in production engineering, from prototype development to full-scale manufacturing across automotive, aerospace, and energy sectors. Bu also deep understanding of mechanical integrity, performance optimization, and reliability in demanding industrial environments. Entrepreneurial and strategic capability to translate complex engineering solutions into scalable, market-driven energy systems.

By combining this multidisciplinary expertise, WSE Turbo delivers integrated energy solutions that go beyond conventional approaches. We unite precision turbo machinery with intelligent system design, supported by advanced analytics and simulation tools.

At WSE Turbo, we are more than a heatpump provider.

We are a strategic engineering partner.

We don’t just decarbonize industrial heat; we apply decades of collective knowledge to redefine industrial energy systems for a cleaner, more efficient future.

Technical Overview of the Proposed Solution

The Challenge:

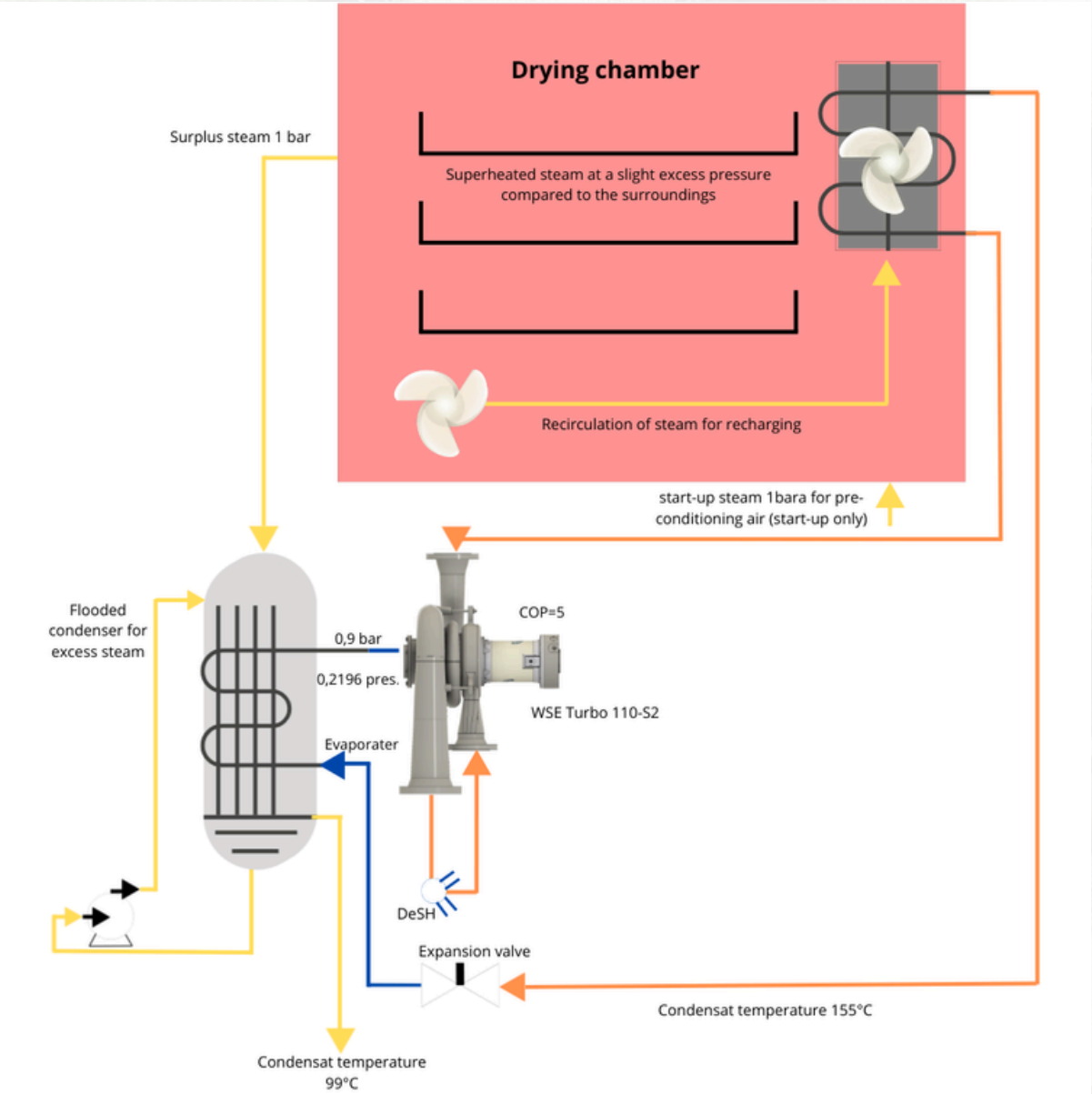
A case within superheated steam drying system was analyzed using typical process values:

- Inlet steam temperature: 145 °C (recirculated)
- Exhaust steam temperature: 110 °C
- Thermal load: approximately 1080 kW

By integrating a two-stage heat pump, the steam demand can be nearly eliminated:

- Electrical power required: 200 kW
- Achieved COP (Coefficient of Performance): 5.3

This results in substantial reductions in both energy consumption and CO_2 emissions.



Figur 1: Simulation with Heat Pump integration on column C2.

Economic and Strategic Potential

The case estimates a strong long-term economic performance, even with conservative assumptions. Key advantages include:

- Lower operational costs as energy and carbon prices rise
- Scalability across existing and future dryer systems
- A meaningful contribution to corporate decarbonization goals

The concept also supports broader electrification strategies and aligns with global sustainability targets.

ESTABLISHING SUSTAINABLE PROCESSES

With the elimination of combustion-based heating, the WSE Turbo system plays a central role in advancing industrial decarbonization. It directly supports net zero goals by significantly lowering the carbon intensity of production
one liter at a time.

From a financial perspective, the system delivers a strong return on investment with a projected ROI of just 2–5 years. Its compatibility with government decarbonization incentives further enhances the economic appeal.

Designed for flexibility, the modular WSE Turbo system can be easily replicated across multiple facilities, enabling scalable energy transformation with minimal operational disruption.

Connect with our international sales teams

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