SET ALLIANCE

Case Study

- New project
- Project operational
- Project update

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Achieving Sustainability with CAaaS

Tamturbo supplied a Mid-West food manufacturer with a 185 kW oil-free, high-speed turbo air compressor under a Compressed-Air-as-a-Service (CAaaS) model.

The customer pays per cubic metre of air consumed, with no upfront capital investment, replacing an ageing, non-oil-free compressed air system that could no longer meet the plant's efficiency and air-purity requirements.

Region

Mid-West, USA

Sector

Food and Beverage

Retrofit or new

Retrofit

Project size

185kW

Technology

Water cooled, oil free high-speed turbo air compressor with monitored remote support, optimization, problem solving and control.

Project implementer

Tamturbo
JUST AIR

Knowledge partner

BASE
Driving investment in climate solutions

Background

Similarly to electricity, water and heat, compressed air is a fundamental utility used across industrial facilities to power machines, tools and processes, and to move materials and ingredients. Unlike those other utilities, industrial plants are almost always responsible for producing their own compressed air on-site.

Compressed air production is estimated to account for around 10% of industrial electricity consumption, and roughly 5% of total global electricity use.

Tamturbo's Touch-Free™ technology is designed to address this challenge: oil-free industrial turbo compressors with non-contacting internal parts, intended to eliminate friction, wear and the associated failure modes of conventional compressor designs, significantly increasing efficiency.

The Need

A major Mid-West food ingredient producer, managed by a global food industry company producing multiple American and international brands, operates under company-wide climate targets aimed at substantially reducing carbon emissions.

Compressed air systems across the company's sites account for an average of around 10% of electricity consumed, making them one of the larger contributors to the plants' CO_2 emissions.

In food and beverage manufacturing, the purity of compressed air is critical. Fully oil-free compressed air is essential, but legacy compressor technologies often meet this only at the cost of lower efficiency.

The plant originally relied on such a legacy system, consuming 200 to 250 kW of electricity continuously.

"Tamturbo is delighted to contribute to our customer's sustainability targets - Implementing impactful projects on our clients' sites is Tamturbo's priority".

- Hannu Heinonen, EVP at Tamturbo

The Solution

Tamturbo installed a Touch-Free™ TT185 high-speed turbo compressor, using active magnetic bearings, a high-speed motor with variable-speed drive (VSD) control, and essentially frictionless rotation. As a result, the system's rotating components do not require lubrication and experience minimal wear.

The installation includes remote monitoring and bi-directional remote support, allowing Tamturbo to oversee performance, troubleshoot issues and carry out 90% of interventions remotely.

Engineered with the circular economy in mind, Tamturbo compressors boast a long lifespan, minimal maintenance, high energy efficiency, and effective energy recovery from hot water, reaching up to 90°C for use in various industrial processes. The condition-based service approach eliminates the need for time-based maintenance, further reducing downtime and costs.

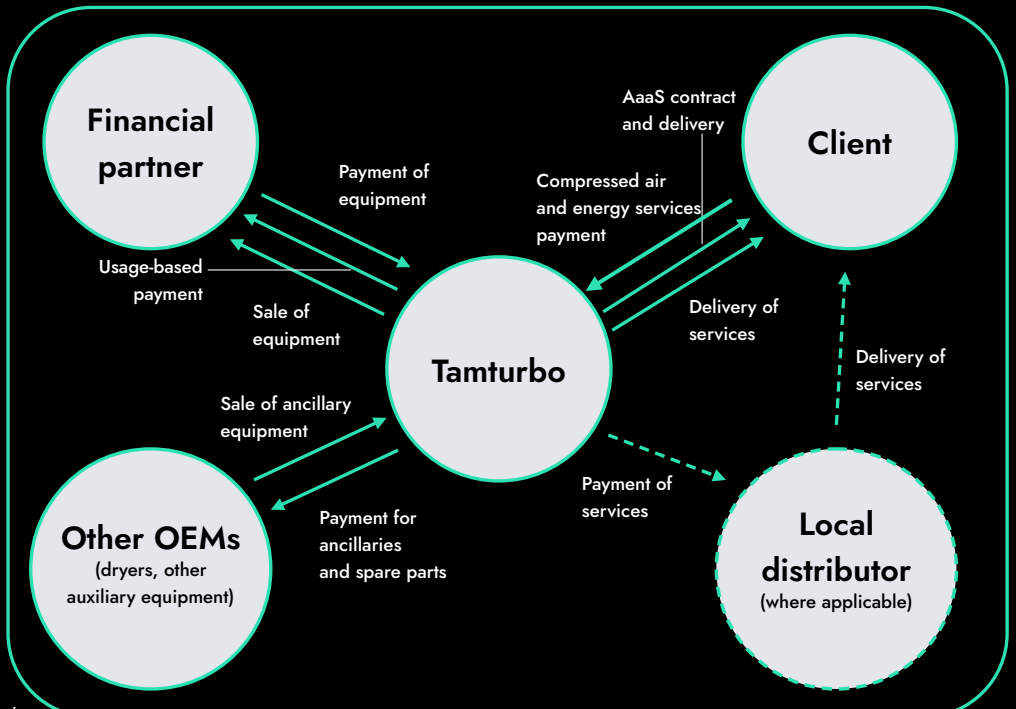
By cutting electricity consumption by an average of 10-30%, the solution ensures immediate savings for the customer.

About the as-a-service Contract

Tamturbo's innovative As-a-Service model gives customers several ways to pay: a fixed fee per month, a variable fee based on the air used and the energy recovered, or a combination of a fixed base fee with a variable, consumption-based fee. Depending on the option chosen, the arrangement can be structured as an off-balance-sheet transaction under US GAAP or IFRS.

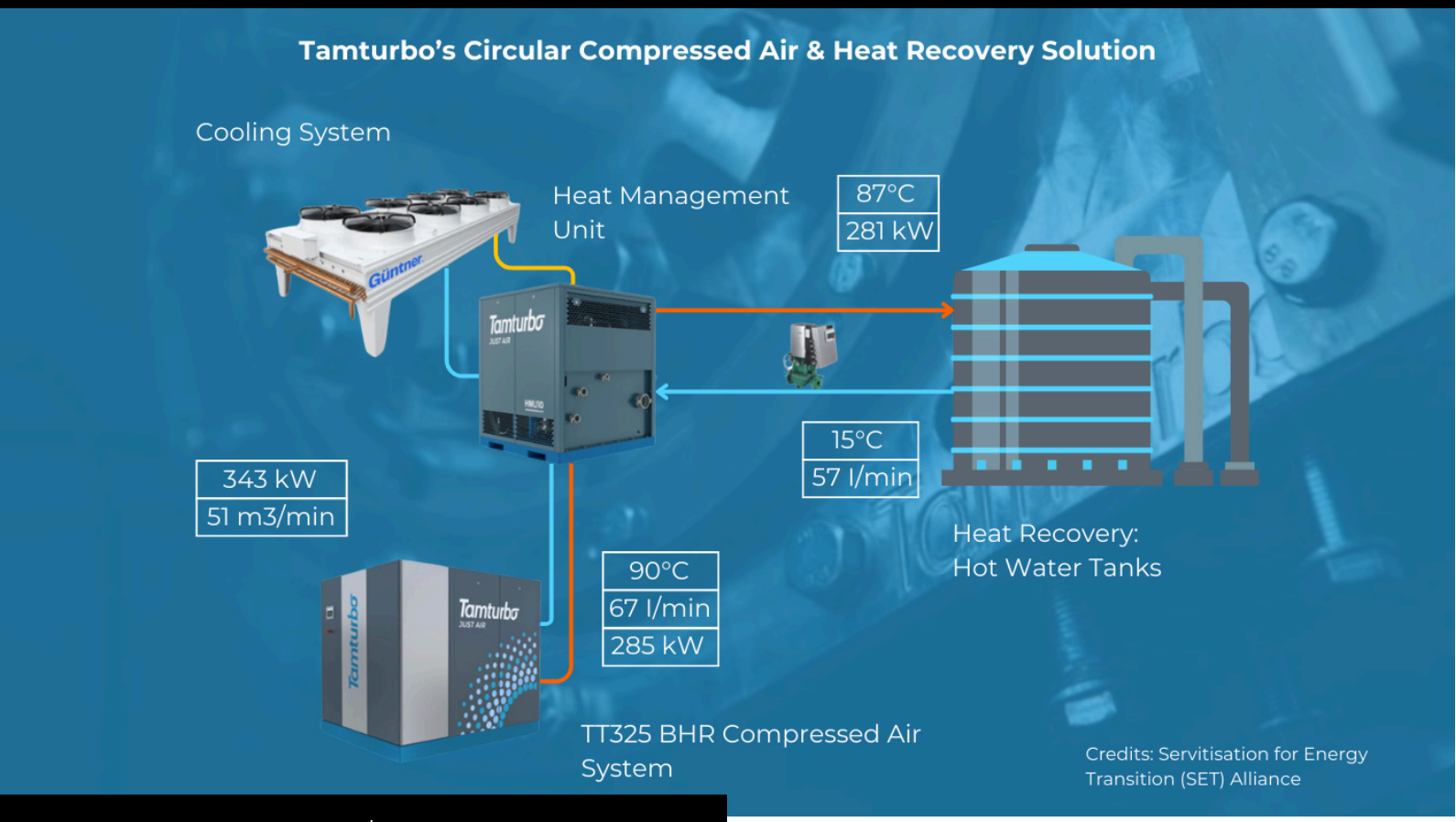
For this project, the customer chose the consumption-based option: pricing is based on two simple metrics, €/m³ for air consumption and €/kWhe for energy recovered, with the price of recovered energy tied to the customer's own energy tariff to encourage its use while supporting CO_2 reduction. Tamturbo retains responsibility for the equipment, its performance and its maintenance throughout the contract term, and the customer makes no upfront capital investment. There are no fixed capacity charges under this structure; a minimum monthly fee applies in periods of low utilization, to ensure continuity of service. Contract duration includes a 12-month rolling term linked to a four-year initial term.

Typical project flow



As-a-service benefits:

- No CAPEX investments for higher quality oil-free compressed air and energy services
- Remote operation control and preventive maintenance
- Immediate energy savings of up to 30%



"In our commitment to make our operations more efficient, we identified this new type of air compressor as a low-hanging fruit for savings. Tamturbo's solutions have been selected on five continents, some with no CAPEX impact through their Touch-Free™ Air "as a Service" model."

- Customer representative

Next Steps

Energy Recovery from the equipment is not widely understood or used today. Tamturbo is helping an increasing number of companies to save energy, reduce emissions, and to source equipment outside of the Capex process.

Project Results

Compared to the plant's previous legacy system (200–250 kW continuous draw, non-oil-free), the Touch-Free™ installation is reported to deliver:

- An estimated 10–30% reduction in electricity consumption for compressed air production
- Estimated annual savings of approximately 914 tonnes of CO_2e and USD 150,000 in electricity costs

Contact Information

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