



CASE STUDY

Four-season sustainable climate control for 247TailorSteel

Comfortable indoor climate and energy-efficient cooling for the 'sustainability mission' of 247TailorSteel



World leader in adiabatic cooling



Summary

247TailorSteel, a leader in the customized laser-cut sheets, was facing many complex issues like high internal heat load, negative pressure, unstable temperature, lack of fresh air, and insufficient ventilation. For finding the sustainable and innovative solution, it conducted extensive research and chose Oxycom due to its unique two-stage adiabatic cooling. After positive feedback from employees from the first project, Oxycom's climate control solution expanded to its other factories.

Read further to get the complete overview of this business case with the diverse perspectives from management, production and the operations team.

Interviewees:

- Carl Berlo CEO
- Frank Gelen COO
- Barry Hulshof Process Engineer
- Joost van Lith External Advisor



"In terms of 247TailorSteel's sustainability vision, Oxycom is a perfect fit and will be mentioned in 247TailorSteel's 2022 ESG report."

Carl Berlo

CEO, 247TailorSteel





About 247TailorSteel

247TailorSteel has been working in the sheet steel machining industry for over 15 years. With the help of their advanced software, it supplies customized laser-cut sheets and tube material online to thousands of customers worldwide.

It operates more than 50 laser-cutting machines and more than 30 bending machines on a total floor area of 115 000 m² comprised of different halls such as incoming goods hall, plate production hall, bending hall, tube laser hall, and expedition hall.

At glance: 247TailorSteel's factories with Oxycom's technology

- Varsseveld (NL) – 18 000 m²
- Oud Gastel (NL) – 25 000 m²
- Oyten (GER) – 7 000 m²
- Hilden (GER) – 10 000 m²
- Langenau (GER) – 15 000 m²
- Hooglede (BE) – 17 000 m²

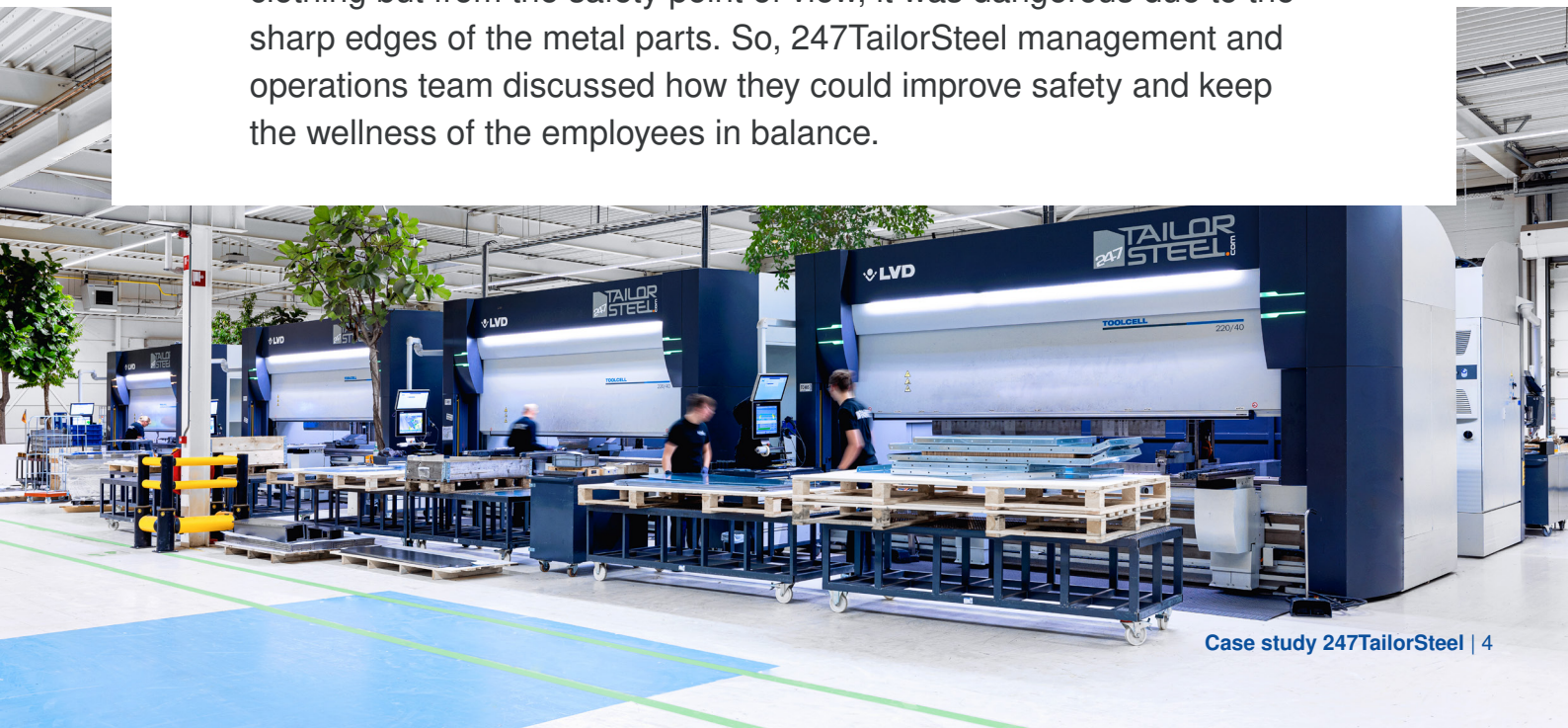


High temperatures and negative pressure led to uncomfortable working conditions.

247TailorSteel struggled to offer a comfortable climate to its employees. Due to excessive heat generation by laser cutting machines in the plate production hall **temperatures rose above 38-40 °C** in summer. At the Varsseveld factory, the production equipment started tripping.

In the laser cutting hall, the process generates dust and metal particles, dangerous to inhale. Although the exhaust fans in the 12 laser-cutting machines suck out 24 000 m³/h (2 000 m³/h each) of dirty air from the cutting process, resulting in **negative pressure**. In winter period the negative pressure caused uncomfortable cold draft for the people. All these factors created an uncomfortable working environment, resulting in lower 'employee productivity' in the factory.

To keep working in high temperatures, employees started to wear light clothing but from the safety point of view, it was dangerous due to the sharp edges of the metal parts. So, 247TailorSteel management and operations team discussed how they could improve safety and keep the wellness of the employees in balance.



To solve the problem, the company took some passive cooling measures like opening the doors, use of specific heat-resistant foil on the windows and replacing the bitumen on the roof with white reflective roofing foil. Heat load was reduced partly but these measures proved to be not sufficient.




“After joining the company, I learned that we had some annoyed operators in our production halls where we bend the steel, bending machines generate lots of heat. People were just not happy.”

Carl Berlo
CEO, 247TailorSteel

Challenges:

- Lack of fresh air
- Temperature fluctuations (high in summer and low in winter)
- High internal heat load due to excessive heat generation by machines
- Production equipment tripping due to high temperatures
- Uncomfortable working conditions
- Negative pressure causing cold drafts






Highly efficient, innovative and sustainable climate control for 247TailorSteel.

The technical complexities of the 247TailorSteel production operations like laser cutting and bending made it challenging to find the right solution. 247TailorSteel compared adiabatic cooling solutions to normal compressor AC units and hence decided to go for an adiabatic solution.

They reached out to four different companies offering adiabatic solutions for cooling and ventilation. A business case was made considering the efficiency of the system, how deep it will cool, water consumption and one the more important factors, will temperature and humidity end up within the comfort zone advised by ASHREA.

“Sustainability is very important for us. We have strong KPI drivers internally to optimize our ESG performance and if you have a solution for optimizing the working environment, how can you do that with the lowest carbon footprint. After consideration of all these benchmarks, Oxycom stands out strongly and works best-in-class.” – **Carl Berlo, CEO, 247TailorSteel**



“We wanted to achieve a healthy and comfortable indoor climate in an environmentally friendly and extremely efficient way. With the calculations we received, we were convinced that the Oxycom system would be our best choice.”

Frank Gelen

COO, 247TailorSteel

Decisive factors

Oxycom stood out in comparison to its competitors due to its **highly efficient, innovative, and sustainable two-stage adiabatic climate control solution** that offers deeper cooling, less moisture and creates a comfortable, fresh, healthy climate all year round.



Deeper cooling in comparison to competitors



Expected indoor temperature and humidity; corresponding to the test results



Efficiency of Oxycom's IntrCool units



Low energy consumption; 90% lower energy consumption in comparison to traditional air conditioning systems



ESG (Environmental, Social, Governance) factors



IntrCooll installation: Easy and straightforward like Lego.

After extensive research covering all the initial checks, testing, and simulation tests, 11 units of Oxycom's patented IntrCooll were installed at the factory in Varsseveld (Netherlands) in August 2021. Due to very positive employee experiences, 18 IntrCooll units were installed in Langenau (Germany) to provide employees with an optimal working environment. To enhance ventilation, AirOptimizer diffusers are added for optimal ventilation and perfect air distribution. *"In some halls, after installing Oxycom's units, it is more like freezing in summer in Varsseveld(NL), very efficient!"* – **Joost van Lith, External advisor, 247TailorSteel**

"Oxycom's system's adaptability and flexibility did a commendable job in tackling the complex issue of preventing negative pressure in the halls, especially in the winters." - **Frank Gelen, COO, 247TailorSteel**

Joost van Lith (external advisor to the project), *"It's very easy to install Oxycom products. Within one day, 9 units were installed on the roof at the Langenau factory, from unloading, unpacking to the installation on the roof".*

"After Oxycom's systems were installed, nobody spoke about the high indoor temperatures anymore. So that's my conclusion. It works. It just works. It gives people what they want. A stable temperature and a pleasant, ventilated area. So, our employees are super happy with the indoor climate now."

Carl Berlo, CEO, 247TailorSteel



Providing heating and ventilation in one with high savings on energy costs.

Because of the high internal heat load in combination with the negative pressure, the Heat Reclaim Modules were installed in every 247TailorSteel factory. The HR module uses the heat under the roof to heat up fresh filtered outside air to compensate the negative pressure.

“In Langenau, at zero degrees outside, Oxycom’s units mix the fresh cold air with the warm air collected under the ceiling, filter it and bring it to the shop floor.” – **Joost van Lith, external advisor**

Every factory with an existing heating system was integrated to the system to have the optimal effect of cooling, ventilation and heating. However, due to the high internal heat load the heating systems are occasionally required.



“The support from Oxycom was very good and flexibility of IntrCool units to integrate with our existing heating system is impressive.”

Barry Hulshof,
Process Engineer, 247TailorSteel



Long-term technical collaboration for lower carbon footprints.

The collaboration between Oxycom and 247TailorSteel is based on the common values of sustainable growth while taking care of its people and the environment. To further reduce the carbon footprint, there are plans to use solar energy to run the IntrCooll units and use rainwater for the water supply to the IntrCooll units. Impressed by Oxycom's innovation and customer-centric values, 247TailorSteel laid out long-term plans with Oxycom to create a sustainable future.

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“Obviously Oxycom will be our definite partner and we are happy with our cooperation as we are served in the right way.”

Carl Berlo

CEO, 247TailorSteel, Netherlands





Bart Reinders - CEO - Oxycom

Are you looking to create a comfortable and healthy climate with massive energy savings?

Oxycom is here to help. Our specialists give you free customized advice on sustainable two-stage adiabatic cooling, 100% natural ventilation, air distribution systems, and heating.

Get advice





About Oxycom

At Oxycom, we are pioneers. We design our highly innovative natural cooling systems with one goal: to reduce the global carbon footprint required to cool, ventilate, and heat buildings. Since 2002, we have been developing innovative adiabatic climate solutions. Oxycom has years of experience with numerous applications worldwide. Our broad expertise enables us to complete any project with our partners/ installers successfully.

Discover more

