THE NEED FOR A GOOD, HEALTHY WORK CLIMATE IN THE CAN INDUSTRY

FRESH FACTORY

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"People feel better in Colt conditions."

THE NEED FOR A GOOD, HEALTHY WORK CLIMATE IN THE CAN INDUSTRY

Keep workers happy, improve productivity, reduce absence, retain staff and maintain consistent product quality

Contents:

In many can production facilities, working conditions often fall short. Employees may find themselves in environments that are either too hot or too cold due to the heat generated by machinery or external weather conditions. Additionally, workers in these plants may have to cope with uncomfortable drafts, airborne metal particles, and vapors from oils used in the production process. The result? Dissatisfied employees, higher absenteeism, reduced productivity, and ultimately, production loss.

Creating a healthy and productive work environment is becoming a priority in the can industry. When companies focus on improving the work climate, they benefit in multiple ways: higher employee morale, reduced absenteeism, and increased productivity. A well-regulated internal environment also boosts product quality and reduces production loss, which translates into significant financial savings. Moreover, good working conditions enhance a company's appeal as an employer, making it easier to attract and retain talent.

The stakes are high, particularly in today's labor market, where finding and retaining skilled technical staff is increasingly challenging.

Research shows that workers value their health above all else, making a comfortable and healthy workplace essential in retaining your workforce. However, creating an optimal work climate in can production plants is a complex task. It involves managing factors such as temperature control, extraction of potentially harmful substances like metal dust and oil vapors, and maintaining high product quality standards. Simply installing a cooling or heating system is not enough. A more sophisticated approach is required—one that considers the unique challenges of your production environment and the need for both employee well-being and operational efficiency.
In this white paper, we will explore the essential characteristics of a healthy work climate in the can industry, the benefits of optimizing these conditions, and a step-by-step guide to achieving them. We believe that just as we invest in creating 'Fresh Schools' for our children, we should also prioritize building 'Fresh Factories' for our employees, ensuring a healthy and productive future for both workers and companies alike.

1. THE CHARACTERISTICS OF A GOOD, HEALTHY WORK CLIMATE

Numerous studies have highlighted the effects of work climate on people's performance. For example, various tests and measurements in the field reveal that for each degree the temperature rises above 20°C, there is a 4% drop in productivity. Consider, then, what the effect will be when temperatures soar to over 30°C and sometimes even head towards 40°C on hot summer's days.

Nonetheless, how people perceive their work climate doesn't just depend on temperature. It also depends on a wide array of other factors, such as relative humidity, radiation temperature, air quality (fresh air) and comfort. A work climate is a complex blend of these factors, with interpretation of working conditions obviously varying from situation to situation. The five factors mentioned always play a role to some extent or other.

You won't hear any complaints when working conditions are nice, pleasant and comfortable. But if one or more parameters were to veer away from the norm, then the work climate would no longer be optimal. The NEN ISO 7730 standard makes it possible to identify these issues and assess the thermal comfort of the can factory based on PMV and PPD values.

PMV is an abbreviation of Predicted Mean Vote. The value 0 pertains to thermal equilibrium, with a positive value signifying 'hot' and a negative value signifying 'cold'.

PPD is the abbreviation for Predicted Percentage Dissatisfied. This percentage is derived from the PMV value. Where a PMV value is 0, the accompanying PPD value will be 5%. A continuous PMV of 0.0 cannot be achieved in practice, for reasons such as internal thermal load varying (lighting on or off) and outdoor climate fluctuating (sun or cloud cover). Hence conventional practice is to adopt a bandwidth running from -0.5 PMV to +0.5 PMV to ascertain whether the thermal comfort level is adequate.

The NEN ISO 7730 standard therefore provides guidance for the purposes of assessing people's comfort on the shop floor and takes into account the most important factors that characterise the work climate, such as temperature, humidity and air quality.

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2. THE IMPORTANCE OF GOOD AIR QUALITY IN CAN PRODUCTION

Air quality is a critical factor in maintaining a healthy and productive work environment, particularly in industrial settings like can manufacturing. During production, various contaminants—such as dust, fumes, and chemicals—can be released into the air, potentially compromising the air quality and negatively affecting workers' health.

Ensuring clean, breathable air is not just about comfort; it's about safeguarding employees from the harmful effects of poor air conditions, which can lead to health issues, reduced productivity, and higher absenteeism. Prioritizing high air quality helps create a safer, more efficient workplace, benefiting both employees and overall production outcomes.

In typical production environments, poor air quality can lead to recurring health issues like shortness of breath, headaches, throat irritation, and dry respiratory tracts. These symptoms not only increase absenteeism but also reduce performance on the shop floor.

In the canmaking industry, the risks can be even more severe. Harmful substances and fumes, such as chromium-6 and other chemicals released during production, pose significant health risks. This is why strict substance-specific limits must be adhered to in line with safety regulations. The exact standards will depend on your specific production processes, but many air quality issues stem from insufficient ventilation. Good ventilation is the foundation of clean air in the workplace, helping to reduce contaminants and improve overall air quality.

However, depending on the production requirements, additional technologies like ionization and filtration can be used to further enhance the air quality beyond what ventilation alone can achieve.

Ultimately, maintaining high air quality in your can production facility promotes better long-term health for staff while creating a safer, more focused work environment. Fresh air increases energy levels and concentration, enabling workers to perform more safely and efficiently.

3. WHAT ARE THE BENEFITS OF A GOOD WORK CLIMATE

The significance of maintaining healthy working conditions—with clean air, comfortable temperatures, and adequate lighting—is undeniable. But what tangible benefits can an optimal work climate bring to your can production facility?

Higher productivity

We feel good at a temperature of 20ºC, with each degree above that resulting in a significant drop in productivity. Using the right technologies to ensure a constant temperature will enable optimum performance among workers.

Lower absenteeism

It's not only the case that workers perform less efficiently in a hot environment; the risk of accidents and absence due to illness increases proportionally to the temperature rise too. Moreover, the substances and fumes released could also have an adverse effect on workers' health if you fail to extract the contaminated air.

Consistent product quality

Some machines or products need a constant temperature to produce the desired level of quality. Major fluctuations in temperature and humidity can have a detrimental effect on quality. A good indoor climate will ensure that you achieve consistent product quality and less downtime.

Lower costs

It used to be that climate control systems were energy-hungry and could push up energy costs until they constituted up to 87% of overall costs. Nowadays there are technologies that actually have extremely low energy consumption or enable reuse of energy. To take one example, adiabatic cooling consumes 75% lessenergy and generates 80% less CO2 emissions than a airconditioning ventilation system. Use of modern technologies and innovations will quite literally produce a Fresh Factory with less adverse impact on the planet and low recurring costs. Which is why it's sensible to look at the Total Cost of Ownership (TCO) rather than just the initial investment.

Recruiting and retaining staff

A healthy work climate also helps when it comes to recruiting and keeping talented people and fostering their sustainable deployability. People are becoming more vocal, regard the work climate as a significant secondary employment condition and demand an optimal working environment – particularly within industry. Being healthy and comfortable and having nothing to complain about will make them less likely to job-hop. And it doesn't stop there, as you'll also be boosting your appeal as an employer for potential employee.

Sustainable production: reusing energy and heat

Sustainability is a high priority for more and more businesses. Their ambition is to improve their carbon footprint by all means possible while simultaneously striking a balance between that and ensuring growth and profitability. The work climate plays a role here too by reducing energy consumption and (re)using energy sources effectively and efficiently.

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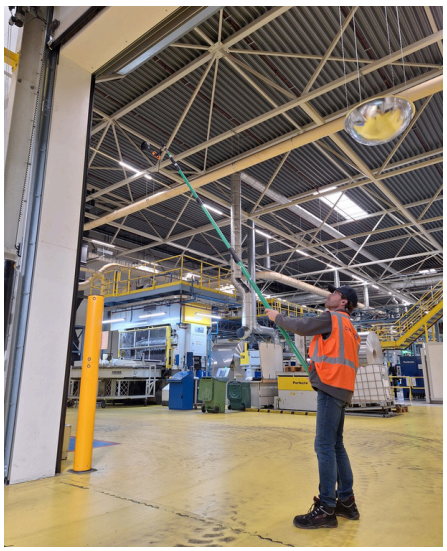
4. FROM ACCURATE MEASUREMENTS TO VALIDATING EQUIPMENT: A STEP PLAN

There's no standard solution for a good, healthy work climate. And nor could there be, as each and every factory and production plant has different climatological conditions. Each specific situation calls for a unique solution. We refer to this innovative concept as the Fresh Factory, which is about creating a comfortable work climate with clean air, the right temperature and adequate ventilation. But the solutions required to achieve this will depend on the situation and the nature of the request

In a Fresh Factory, the climate control system will be adaptive, continuously tailoring its response to the conditions indoors and the weather outdoors. Dirty air gets extracted, or even filtered and reused. If need be, the system will mix the air with filtered air from outside. Pumping clean air into the production area at a constant temperature in all seasons, in such a way that negative pressure and draughts are prevented. A number of steps are essential when creating a Fresh Factory to ensure that the ultimate solution is also appropriate to your specific situation.



1. Accurate climate measurements

A thorough work climate survey is necessary to gain insight into the issues that your indoor climate presents. This survey entails us performing a variety of measurements in terms of airflows, internal and external thermal load, humidity level, contamination, air leakage and air quality. We also look at your factors pertaining to staff, such as metabolism and workwear.

Work climate measurements are necessary because standard calculation tools and key indicators for industry prove inadequate due to the sheer variety of issues and processes. For example, whereas the challenges for the food industry may be extremely stringent hygiene requirements, negative pressure and positive pressure, the issue facing a metal factory may be the release of fumes and gases. The pharmaceutical industry requires high-care areas, while the plastics industry needs cooling and waste processing plants to combat odours. All complex issues for which standard calculation tools won't suffice. There's a risk that equipment will end up being oversized or won't achieve the intended result. This isn't a risk if a thorough work climate survey is carried out.

2. Conception and design

Once the customer's wishes and requirements have been charted and the results of the work climate survey are in, the next step is to turn this input into a suitable design. Is the situation complex? If so, Computational Fluid Dynamics (CFD) might help. This is a technology that renders the efficacy of climate control systems highly predictable. Thus enabling you to accurately calculate, assess and optimise the efficacy of a design at an early stage. Measurements and, potentially, the use of CFD mean you can rest assured that you'll be getting a design that definitely achieves the desired result. If this is the initial design, then we'll put it to the customer and brainstorm to come up with a solution together. Ultimately, and factoring in any additional input, we'll turn this into a definitive plan containing customised solutions.

3. Production and implementation

The next step is to produce the systems and implement them. The benefit of Colt International is that we produce the components that the solution encompasses ourselves, meaning we aren't dependent on the market and are always in a position to deliver bespoke work to meet customer demand or challenges. Directly gauging need among end users enables us to use innovative solutions to manage things accordingly and optimise our products.

4. Validating equipment

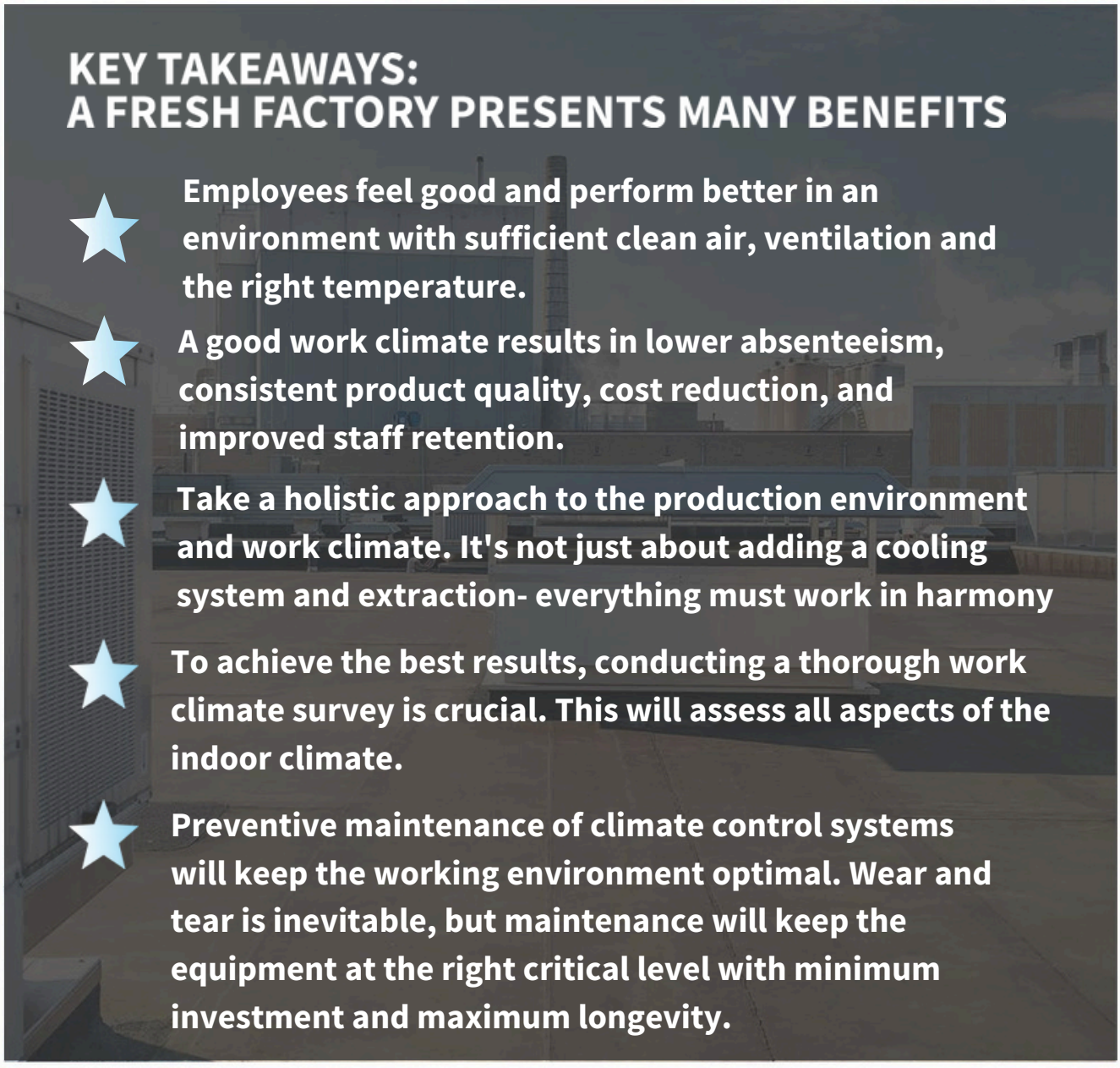
Validating the equipment is the final, crucial step. After all, you'll be eager to know whether the solution also satisfies the fundamental requirements. Control measurements are used to check whether the desired results are also being achieved. Are these results in line with what was agreed beforehand? This validation process is important not just in terms of gauging whether the equipment is fulfilling expectations but also to fine-tune and hone it if need be.

5. THE ADDED VALUE OF MAINTENANCE

Creating a good work climate – and thus a Fresh Factory – is one thing, but ensuring that the conditions remain optimal is no less important. Climate control system maintenance is essential in that regard.

Good, frequent preventive maintenance will ensure you have reliable equipment that stays in tip-top condition throughout its lifespan. Thus preventing ad hoc repairs and enabling you to forecast risks. The better the maintenance is kept under control, the better the equipment will perform. Wear and tear to climate control systems is inevitable, but maintenance will keep the equipment at the right critical level with minimum investment and maximum longevity.

Climate control systems are complex, with fine-tuning being essential. Any fault or defect can have (sometimes major) consequences straight way, from the temperature climbing too high in a production area and a significant drop in productivity as a result to bacteria and mould growth in the production process. Good maintenance will help you to continuously provide a pleasant working environment.



DISCUSS YOUR QUERY WITH A CLIMATE CONTROL SPECIALIST

Investigating how you can ensure that your working environment stays optimal? Struggling to find out what steps to take in that regard? Or are you keen to just chat about how you might go about creating a Fresh Factory?

Whatever your query or challenge, our specialists will be happy to give you some no-obiligation advice to enable you to make headway creating the best possible working environment.

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Colt, part of Kingspan Light + Air Netherlands b.v. is an international business which has been specialised for over 90 years now in the development, production, installation and maintenanceof systems that ensure working environments and home environments in which air quality is guaranteed. Colt is active in both industry and utilities.

Climate control

Colt's priority for the future is the careful use of natural resources and the development of energy-efficient solutions. At the heart of this are innovations, energy-saving technologies and the combining of existing technologies with new developments, thereby contributing to creating sustainable solutions

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