



Presse release of the company IST METZ GmbH

November 2010

Heat recovery with (UV) system

Model Kramp, a company that specialises in high-quality packaging printing, moved to a new premises in Hanau in May of this year. The new building boasts a complex system for heat recovery, which also includes the drying systems from IST METZ. The heat recovery concept will be used for heating or cooling the premises, depending on the time of year.

This is a very large project that Model Kramp, subsidiary of Model Holding AG based in the Swiss town of Weinfelden, is involved in. It all started around five years ago when the previous location became too small and the property lease ran out, explained Head of Production Wolfgang Kern. The search was on for an alternative. Finally, a site was found only one-and-a-half kilometres from the original location and just as accessible. It wasn't long before the question of energy supply and costs came up, how it would be possible to utilise the excess heat produced during printing and gain a degree of independence from energy suppliers. The solution was a heat recovery system for the entire building that, together with the air-conditioning system, would halve CO₂ emissions. Reference values were comprised for the machines and individual components using heat recovery calculations carried out by IST METZ beforehand. Confirmation of these values was provided by measurements from the drying systems used in the previous building.

Warm in winter, cool in summer

One of the most important components of heat recovery is of course the heat itself, produced by the printing machines during operation. The system implemented by Model Kramp stores the heat in a stratified storage tank that has a capacity of 90,000 litres and is buried in the ground. All offices in the building are kept warm with an under-floor heating system that can be adjusted in each room. Warm air is blown into the production rooms and warehouse to increase temperatures. In summer, cooling ceilings provide for a comfortable climate. The cooling takes place in three stages. During the first stage, warm air is extracted from above the hall roof. As soon as the temperature outside rises above 32 °C, the second stage kicks into action. The warm air is then blown through a spray of water, cooling it of 10 °C. Should the temperatures rise even higher, which is certainly a possibility in midsummer, the third



Presse release of the company IST METZ GmbH

November 2010

stage takes off with a cooling unit dampening the peak temperatures. Generally, though, Model Kramp can survive without this support for around 280 days of the year. Also integrated into the air-conditioning system is the supply of osmosis water for the production rooms.

Model Kramp has fitted its printing machines with central compressors since the mid 1990s. When in operation, these machines produce waste heat up to 65 to 75 °C. Together with the excess heat from the UV systems, this is enough to supply the entire building with hot water. For the actual production process, there is no hot water required. It is only in the common rooms where the company requires hot water, supplied by a smaller, additional tank.

UV lamps playing an important role

IST METZ, the UV lamp specialist, has long been a partner of Model Kramp. The printing supplier purchased in its first printing machine with UV technology as early as the mid 1980s, fitted with a UV system from Nürtingen. As recently as last year, Model Kramp invested in a state-of-the-art Roland 700 from Manroland. The long-standing and successful collaboration with IST METZ meant it was their drying technology that was installed in the new machine. The UV systems from IST METZ are designed for maximum utilisation of UV output both in terms of reflector coating and reflector geometry. Together with the power supply devices and UV lamps, performance is delivered with the lowest of energy requirements. There have since been four sheet-fed offset printing machines in this series set up in production, operated with conventional infra-red and warm-air dryers, as well as UV systems. All of which are supplied by Nürtingen's IST METZ. As the drying systems offer considerable heat recovery potential despite efficiency optimisation, it was clear that the experts from IST METZ would be involved right from the very start of the project. Together with the engineering team, representatives from IST METZ and the printing machine manufacturer Manroland drew up plans and broke new ground together. What resulted was a solution tailored specifically to suit Model Kramp. The engineers from IST METZ had plenty of experience to draw on and succeeded in solving a task that varied greatly from any standard application.



Presse release of the company IST METZ GmbH

November 2010

Use of heat exchangers

The possibilities for utilising energy potential are clearly shown by this recent machinery investment. Alone the power consumed by hot-air or infra-red dryers, as well as with UV units, is 346 kW in parallel operation. Despite a sophisticated heat management system, water cooling is what this high-performance UV system requires, just like a car engine, to ensure continuous operation. Cooling water flows continuously around the heated housing components of the UV unit. Without the heat recovery system, the thermal capacity of the heated water would be discharged back over the hall roof, unused, via a cooler. By using a heat exchanger, energy can be “retrieved” from up to 11,000 litres of water every hour. For this, the drying units need to reach a temperature of approximately 60 °C. From a socket temperature of 45 °C, the heated water is directed to the stratified hot water storage tank and used, when necessary, for the air conditioning of the building. And it is not only the energy from the water that can be used. Even with the earliest dryer installations, up to 9,900 m³ of water flows every hour through waste air heated to around 50 °C in the air/water heat exchanger. To sum up, approximately half of the energy supplied to the IST dryer can be used for the heat recovery system.

The entire heat recovery system at Model Kramp is controlled by a building management system. In order to monitor the efficiency of the system and make adjustments where necessary, there are counters installed everywhere. The convenience and stability delivered by the system has already proven to be extremely satisfactory. A conclusive assessment as to whether the system meets efficiency expectations cannot yet be made after only six months in operation; this will first become apparent once the cold period sets in.

Customers appreciate sustainable production

The comprehensive “green” commitment shown by Model Kramp is also appreciated by the company’s customers. Up to 98% of production is carried out for well-known cosmetic manufacturers, with collapsible boxes leading the way. It is the large customers, in particular, who are more interested than ever in sustainable production. “The customer should be able to identify with us,” concludes Wolfgang Kern, and this has proven successful too.



Presse release of the company IST METZ GmbH

November 2010

The new building has also been designed to include solar panels. This would lead to a reduction of the already comparably low CO₂ emissions and facilitate a self-sufficient supply of energy to the building. The speed at which today's technology and tomorrow's investments depreciate is tied in with the costs of primary energy which are likely to rise in the future. One thing for sure is that Model Holding AG has successfully prepared for this with its new sustainable building. Thinking beyond today and tomorrow is, after all, a part of its corporate philosophy. As it is at IST METZ.

*Presse release of the company IST METZ GmbH
November 2010*



Image 1: Head of Production Wolfgang Kern in the exhibition area of Model Kramp, a company that specialises in collapsible boxes.

*Presse release of the company IST METZ GmbH
November 2010*



Image 2: The heated cooling water and the usable exhaust air are directed past a heat exchanger to a central buffer storage tank.

*Presse release of the company IST METZ GmbH
November 2010*



Image 3: The drying units for all printing machines are integrated into the heat recovery system