Press Release

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Innovation Becomes More Efficient and Environmentally Responsible as SITECO Employs Low-Temperature Cleaning from Henkel

Lighting systems are becoming increasingly efficient and sustainable thanks to state-of-art LED technology. Manufactures like market leader SITECO are working on making the production of lighting casings even more cost-effective and economical than ever. Innovations in low-temperature cleaning from Henkel have allowed the company to save around a third of the energy used in the coating processes.

Amid the magnificent scenery of Traunreut in Upper Bavaria, around 10km from the Chiemsee lake, one company has been 'making light' for 40 years. SITECO, which became part of the OSRAM Group in 2011, runs the competence centre for OSRAM Lighting Solutions here.

On a production area stretching over 26,000m², new lighting casings are pretreated and painted, LED modules pre-assembled, and entire ready-for-sale lights are made to order from individual parts and modules. Thomas Klement, Head of Coating Technology, leads a tour of the modern paint shop, where street lamps and stadium floodlights are prepared to withstand all weather conditions. The process of their preparation includes cleaning, conversion coating, and powder coating.

Large suspension elements measuring over three metres in length and 1.8 metres in height carry the lighting components through the various steps of the coating process, which has been used for pretreatment and powder coating since 2010.

The six phases of the pretreatment process are as follows:

1. Degreasing by spray cleaning
2. Rinsing with clear water
3. Rinsing with clear water
4. Rinsing with fully desalinated water
5. Conversion coating
6. Rinsing with fully desalinated water

The plant is set up for constant, 24-hour operation through five days a week. As plant manager Hans-Joachim Herbst explains: “Up to 250,000 square metres of steel, aluminum, sheet metal and other metals pass through the process every year – and we see almost everything. The choice of material depends on what the finished product will be used for. For us, the important thing is that the plant and the system components in it allow us to process multiple metals, both now and in the future.”

Finding the Right Chemistry for Greater Efficiency

This point was also crucial in a pioneering switch recently made at the plant. Together with its dealer and Henkel sales partner, BCD Chemie GmbH, the company was seeking to make savings in the production process. “The plant is responsible for around 23% of our total gas consumption for the year,” Herbst continues. And the biggest consumer of gas is easy to identify. In the first stage of the process at the six-zone plant, technical cleaning is done by spray pretreatment. This is necessary to remove residue and deposits on the surface of the material, and to degrease the parts. If this step is skipped or not done carefully enough, defects can arise in the subsequent process steps, and the quality of the final lighting products decreases. The energy problem lies in the fact that, until recently, the cleaning fluid has had to be heated to around 60° Celsius using a gas burner, and the recirculation pumps and fans had to be driven. In addition to this, the majority of the energy used in spray cleaning is lost through evaporation and suction.

Dr Marko Poleschak, the member of BCD Chemie field sales staff who is responsible for this area, had already heard of Henkel's BONDERITE low-temperature cleaning when the talks entered their first round. “It was clear to us that the only parameter we

could modify was the cleaning process, i.e. the chemistry itself. We have been working with Henkel on customer-specific solutions for many years now, and were able to build on this technology leadership and on the long-standing, trust-based partnership with the technical team here in Düsseldorf. In planning, it was of course essential to retain the existing process and not to cause any additional costs in the form of plant conversion." In short, the goal was to reduce the temperature to save energy in the existing plant, while retaining unchanged mechanics and the same treatment time to at least maintain – if not improve – the quality of the cleaning, and to create additional capacity for contract coating in the future.

These requirements were a perfect fit for the performance parameters of the new BONDERITE low-temperature cleaning system.

The alkaline two-component cleaner can be used at room temperature, making heating to the usual 60° Celsius a thing of the past. Thanks to the combination of special builders and surfactant components, this new and efficient low-temperature cleaning system can be used to replace most spray and immersion cleaning processes currently on the market. There are no negative properties such as foam formation, discoloured surfaces, or parts made defective due to drying. Andreas Maslowski, who works in functional coatings at Henkel Technical Service, confirms: "At the preset bath parameters that we and BCD Chemie recommend, the cleaned parts have a 100% hydrophilic surface, offering the ideal base for subsequent process steps."

The reduced temperature allows SITECO to reduce its annual energy consumption by 30%, as the gas burner in the six-zone plant can be left switched off almost all year round. Only on very cold winter days will the cleaning fluid perhaps need to be warmed to room temperature.

Another advantage is that the parts are cool after cleaning, so they do not influence the subsequent processes such as conversion coating. After all, all other steps in the process can be conducted at room temperature. In other words, the plant can now work at the same low-temperature level throughout the process – all the way to the adhesive water dryer. Low-temperature cleaning also reduces the usual evaporation loss in the cleaning bath.

Reaping the Benefits of Reliability and Environmental Protection

“The potential savings while maintaining the same plant performance are extremely impressive,” says Herbst enthusiastically. “But that is not the only reason the switch pays off for us. Because the gas burner stays off, the plant is ready to use much faster. The noise and heat in the entire environment are also reduced dramatically. This makes for a much safer and more pleasant working environment for production staff. The increased process reliability also frees up capacity for contract coating,” he continues.

The new low-temperature cleaning system also makes a contribution to environmental protection. The reduced energy input, the elimination of water vapours, and the fact that additional chemicals such as phosphoric acid are no longer required when the bath is recharged all play a huge part in making production more sustainable.

Reducing the Temperature for Faster Treatment

The switch also included a move to a new BONDERITE product in step five of the process – conversion. BONDERITE M-NT, a phosphate-free, liquid conversion coating for metals, increases the corrosion resistance of the parts and ensures the best possible adhesion of the coating. The BONDERITE M-NT technology is compatible with all common coating times and application processes, and it combines multi-metal-capable coatings from room temperature with the fastest treatment times.

Exceeding Expectations with Top-Class Results

The switch to the new BONDERITE products in low-temperature cleaning and conversion not only makes the processes at SITECO more economical, it also ensures that the result is immaculate in quality, as proved by salt spray tests on a range of materials. After a test period of 240 hours, the parts were tested for adhesion and corrosion resistance. “We were able to find little or no infiltration,” Head of Coating Technology Klement concludes. “The results absolutely meet our

standards and are just as good as before, if not better. They have exceeded our expectations!”

In addition to the absolutely top technology in the products, this positive result is are real win for the cooperative partnership between Henkel, BCD Chemie, and SITECO. “A switch like this takes courage and trust in what colleagues can deliver,” says Maslowski, expressing his happiness at this beacon project. Herbst adds, “We put our faith in Henkel and thus in innovation, and we have not been disappointed. We can now be proud to be the first in the market to run our plant at low temperature throughout. We want to continue developing in this field all the time and are open to benchmarks with other production companies. We could also envisage taking on coating orders from companies outside the OSRAM Group.”

Confirming Cleanliness with Precise Lab Testing

The performance of low-temperature cleaning can be quantified by determining the residual carbon content on the surface of the cleaned parts. In a laboratory test, the residual carbon on the surface must be less than 20mg/m^2 in order to achieve a surface that can be moistened with water. The water break test is an easy way to show the cleaner's degreasing performance. If the water film on the surface of the cleaned test object breaks open, there is still residual oil on the surface. If the water film moistens the entire surface, the test object has been completely degreased, meaning that no defects are anticipated in coating.

About SITECO and OSRAM

SITECO, a company based on the Bavarian town of Traunreut, has been a subsidiary of the OSRAM Group since 2011, where it is part of the Lighting Solutions division.

OSRAM Lighting Solutions offers full lighting solutions for business customers worldwide under its OSRAM, SITECO and Traxon Technologies brands. In addition to innovative lighting solutions for offices, industry, public buildings, shops, streets, and sports venues, the portfolio also includes intelligent lighting management systems and services connected to project planning and implementation. The service

includes energy audits, consultancy, planning, installation and programming, as well as financing and maintenance. The company's passion, decades of experience and deep-rooted expertise in lighting allow it to create breathtaking, innovative and state-of-the-art lighting solutions for a sustainable and energy-efficient future.

Headquartered in Munich, OSRAM is one of the world's top two lighting producers. The company employs around 34,000 staff worldwide and achieved sales of more than €5.1 billion in the 2014 fiscal year (to 30th September).

About BCD Chemie GmbH

BCD Chemie GmbH has been dedicated to the treatment of surfaces with great commitment and broad product expertise for more than 30 years. As the leading provider of chemicals for industrial surface cleaning and treatment, BCD Chemie offers comprehensive product concepts. You can find more information at www.bcd-chemie.de

BONDERITE – a registered trademark of the Henkel Group

Henkel operates worldwide with leading brands and technologies in three business areas: laundry and home care, beauty care, and adhesive technologies. Founded in 1876, Henkel holds globally leading market positions, both in the consumer and industrial businesses, with well-known brands such as Persil, Schwarzkopf and Loctite. Henkel employs almost 50,000 people and reported sales of €16.4 billion and an adjusted operating profit of €2.6 billion in the 2014 fiscal year. Henkel’s preferred shares are listed in the German stock index DAX.

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Henkel AG & Co. KGaA

The suspension elements that manoeuvre the items to be coated through the plant are 3.20 metres long and 1.80 metres tall.
Photo: Henkel AG & Co. KGaA / Olaf Mündelein

The SITECO plant for six-phase pretreatment can work with a number of different metals.
Photo: Henkel AG & Co. KGaA / Olaf Mündelein

Quality control (left to right): Thomas Klement, Head of Coating Technology at SITECO; Andreas Maslowski, Henkel Technical Service Surface Treatment; SITECO Plant Manager Hans-Joachim Herbst; and Dr Marko Poleschak, member of technical field sales staff at BCD Chemie.
Photo: Henkel AG & Co. KGaA / Olaf Mündelein

Where it all happens: Andreas Maslowski and Dr Marko Poleschak check the temperature and quality of the low-temperature cleaning bath.
Photo: Henkel AG & Co. KGaA / Olaf Mündelein

The low-temperature cleaning bath is not even at 30° Celsius.
Photo: Henkel AG & Co. KGaA / Olaf Mündelein

The alkaline two-component cleaner performs perfectly: the parts display a 100% hydrophilic surface.
Photo: Henkel AG & Co. KGaA / Olaf Mündelein

Plant Manager Hans-Joachim Herbst, and Head of Coating Technology at SITECO Thomas Klement check the cleaned parts with Dr Marko Poleschak of BCD Chemie.
Photo: Henkel AG & Co. KGaA / Olaf Mündelein

The 10 LED streetlight is one of SITECO's best-selling products.
Photo: SITECO Beleuchtungstechnik GmbH

This roundabout in Bensheim is newly lit with SITECO streetlight products.
Photo: SITECO Beleuchtungstechnik GmbH

These streetlights in Singen have been renovated by SITECO.
Photo: SITECO Beleuchtungstechnik GmbH