



Henkel Ltd,
Wood Lane End,
Hemel Hempstead,
Hertfordshire HP2 4RQ
Adhesive Technologies
Phone: +44 (0)1442 278000
Fax: +44 (0)1442 278071
www.henkel.com

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LOW TEMPERATURE CLEANING PROCESS SAVES MONEY & PROTECTS THE ENVIRONMENT

Thanks to state-of-the-art LED technology, lighting systems are becoming increasingly efficient and sustainable and companies such as SITECO are ensuring lighting casings play their part too. Henkel's low-temperature cleaning developments have allowed SITECO, which became part of the OSRAM Group in 2011, to save around a third of the energy used in coating these components.

In its production area stretching over 26,000 square metres, new lighting casings are pre-treated and painted, LED modules pre-assembled, and entire ready-for-sale lights are made to order from individual parts and modules. The process includes cleaning, conversion coating and powder coating and the plant is set-up for 24-hour operation, five days a week. Steel, aluminium and a wide variety of metals are SITECO's materials of manufacture and the ability to process multiple metals is essential as its products are used in all environments.

Management knew that the plant was responsible for around 23% of the company's total gas consumption for the year, with the lion's share consumed by the first of six processes – technical cleaning by spray pre-treatment. This is required to remove residue and deposits on the surface of the material and to degrease parts. If skipped or not done carefully, defects can arise in subsequent process steps and the quality of the product is compromised.

Clearly there was potential to make cost savings as the existing cleaning fluid needed to be heated to around 60°C using a gas burner and the process also involved driving recirculation pumps and fans; evaporation made the process even more inefficient.

The goal was to retain the existing process to avoid the cost of new plant but to reduce the temperature and therefore energy consumption of the cleaning phase by changing its chemistry. SITECO wanted to achieve the same treatment time to maintain, or better still, improve the quality of cleaning and create additional coating capacity.

Thirty percent energy savings

SITECO had already developed a long-standing and trusted partnership with Henkel for customer specific solutions so the prospect of moving to the company's BONDERITE® low-temperature cleaning process was not a daunting one.

At the heart of Henkel's BONDERITE® process is an alkaline two-part cleaner that can be used at room temperature and to replace most spray and immersion cleaning processes currently on the market. It doesn't foam, discolour surfaces or cause parts to become defective through drying.

SITECO's adoption of BONDERITE® cleaning has resulted in a 30% reduction in its annual energy consumption as, for most of the year, no fluid heating is required. Only on very cold winter days does the fluid need to be warmed to room temperature. Another big advantage is that the parts are cool after cleaning so temperature doesn't influence the subsequent processes which are all conducted at room temperature. In other words, the plant can now work at the same low-temperature throughout every stage, all the way to the adhesive water dryer.

"The energy savings are impressive but the switch pays off for us in other ways too," explained Plant Manager Hans-Joachim Herbst. "Because the gas burner stays off, the plant is ready for use much faster and the noise and heat in the entire environment are also reduced drastically. This makes for a much safer and pleasant working environment as well as increasing process reliability."

The new low-temperature cleaning system also protects the environment. 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.

Immaculate quality

The switch also included a new BONDERITE® product in the conversion process. 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 introduction of two BONDERITE® elements in the overall process has not only made production more economical but has boosted quality too, as proved by salt spray tests on a range of materials. After a test period of 240 hours, the parts were assessed for adhesion and corrosion resistance and were found to have little or no infiltration; an outcome that exceeded SITECO's expectations.

Hans-Joachim Herbst concluded: "We put our faith in Henkel and innovation and we have not been disappointed. We are proud to be the first in the market to run our entire process at low temperatures and are now envisaging taking coating orders from companies outside the OSRAM Group."

About Henkel Henkel operates globally with a well-balanced and diversified portfolio. The company holds leading positions with its three business units in both industrial and consumer businesses thanks to strong brands, innovations and technologies. Henkel Adhesive Technologies is the global leader in the adhesives market – across all industry segments worldwide. In its Laundry & Home Care and Beauty Care businesses, Henkel holds leading positions in many markets and categories around the world. Founded in 1876, Henkel looks back on more than 140 years of success. In 2016, Henkel reported sales of 18.7 billion euros and adjusted operating profit of 3.2 billion euros. Combined sales of the respective top brands of the three business units – Loctite, Schwarzkopf and Persil – amounted to more than 6 billion euros. Henkel employs more than 50,000 people globally – a passionate and highly diverse team, united by a strong company culture, a common purpose to create sustainable value, and shared values. As a recognized leader in sustainability, Henkel holds top positions in many international indices and rankings. Henkel's preferred shares are listed in the German stock index DAX. For more information, please visit www.henkel.com