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Heraeus Infra-Red Provides The Answer In Silk Finishing

A fast response, medium wave infra-red system from Heraeus Noblelight is helping to maintain the high quality of woven silks at the Suffolk factory of Stephen Walters.

Stephen Walters & Sons Ltd. was founded in 1720 and specializes in the jacquard weaving of innovative, fine fabrics for men's and ladies' apparel and neckwear, combining artisan skills with the latest technology. The company creates bespoke woven fabrics from noble fibres including silk, cashmere and linen and was responsible for the wedding dresses of Princess Anne and Princess Diana, as well as the gown for the investiture of Prince Charles. It operates a fully vertical mill, where the entire process, from design concept to finished fabric can be followed through the factory.

The finishing of woven silk requires the introduction of steam to improve the drape and handle of the fabric. Consequently, super-heated steam is introduced to the fabric and this dissolves some of the proteins in the strands to make the silk more flexible and softer. The silk then passes over and around heated rollers, where any remaining condensate is removed.

The silk finishing machine at Stephen Walters needed modernising to improve the control of the process, both in terms of the steam delivery to the fabric and the consistency of temperature across the heated rollers. The company turned to consultant Nigel Wright of Sorus Engineering, Bury St Edmunds, for help to find the solution.

Traditionally, controlling the heating of the rollers had been done by re-circulating steam, water or oil but the manufacture of the insides of the rollers would have been prohibitively expensive. It would also have greatly increased the weight of the rollers, which would have entailed the introduction of a gantry with lifting gear to enable periodic maintenance of the rotary seals to be carried out. Electrically-heated rollers were also considered but, again, these would have been too heavy. Engineering and electrical complexities prohibited the use of cartridge heaters.

Fortunately, a simple and elegant solution was found in the use of fast response, medium wave infra-red heaters from Heraeus and two 17kW, stand-alone cassettes fitted to heat the outer surface of the rollers. Their heat output is regulated from 0-100% by a pyrometer-controlled stand-alone unit to maintain a pre-set temperature on the roller surface and the contact area of the fabric is adjusted by linear actuators connected to idler rollers.

Since installation, the new system has proved very successful. As Wayne Roberds, Technical manager at Stephen Walters, confirms, "We now have greater control over the process and can quickly change the roller surface temperature to suit the fabric being finished. This means that we also enjoy better reproducibility and reliability, with energy-efficient roller heating."

Heraeus specialises in the production and application of high quality energy sources covering the electro-magnetic spectrum from ultraviolet to infra-red. It has over 40 years experience in infra-red

technology and offers the expertise, products and systems to provide efficient and effective solutions to drying, heating and curing problems throughout industry.

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The Heraeus Infra-Red System at Stephen Walters