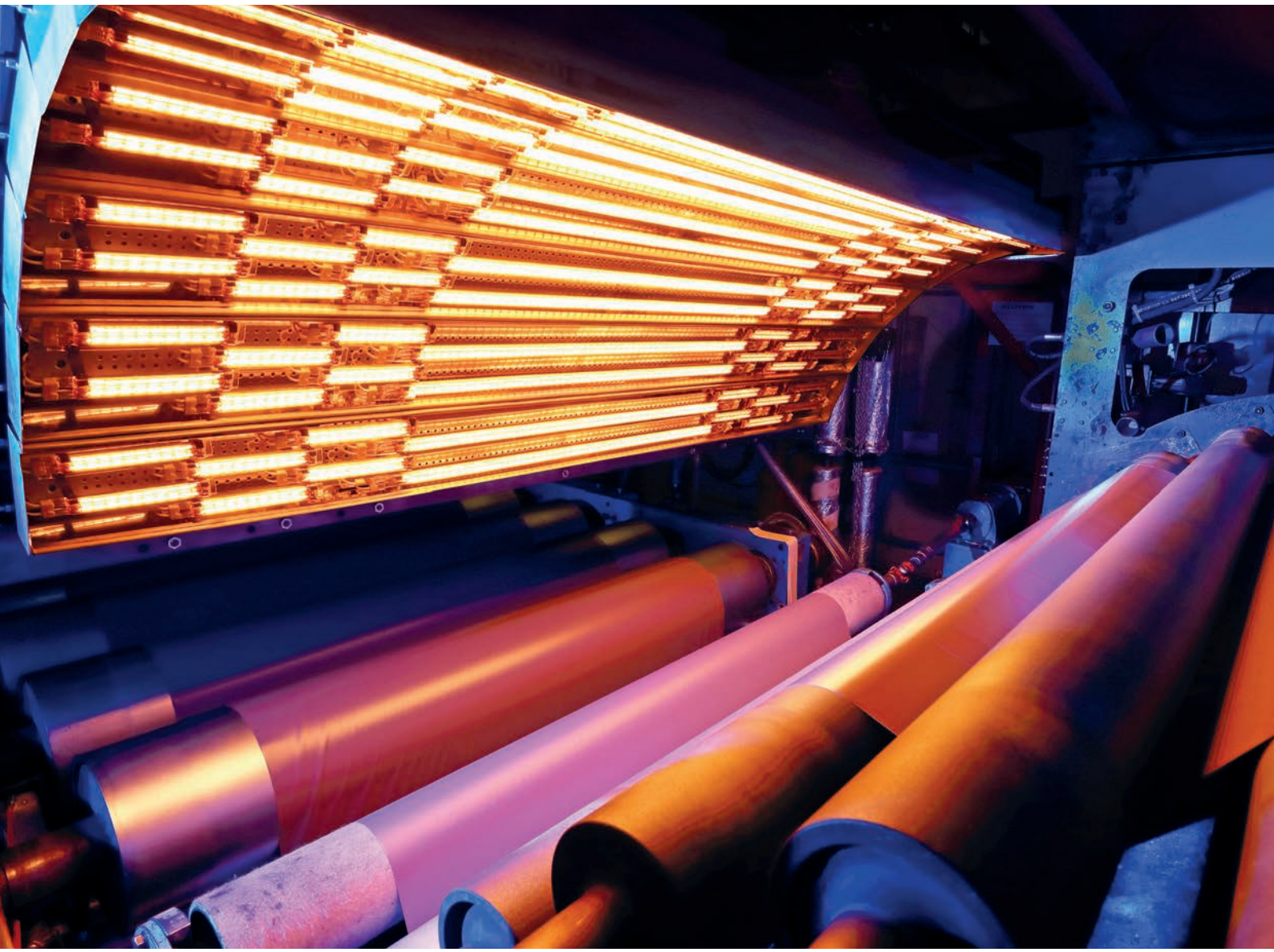


FAST RESPONSE INFRARED SYSTEMS

To reduce heating fall-off at the edges of material webs or heat damage in the event of unanticipated system stoppages when drying sheet web materials, modern infrared systems are used to provide the heat. These can also be retrofitted and reduce energy consumption.

Thick, tear-resistant and weather-proof polymer sheets are used to seal flat roofs. Especially with the manufacture of multi-layer sheets, it is important that the layers must be robustly and rigorously joined together. A simple retrofit with a Noblelight infrared system has made the production processes for a British roofing system manufacturer even more reliable. IKO is well-established as the UK market leader in the design, manufacture and installation of roofing and waterproofing systems, mainly single- and multi-layer systems for flat roofs. Here, a first layer polymer material is joined with a textile base

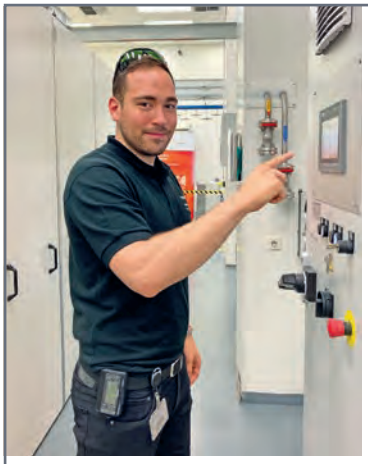
Marie-Luise Bopp, *Head of Marketing, Excelitas Noblelight GmbH, Kleinostheim*

scrim and this assembly can then be completed with the addition of one or more further layers of polymer in a continuous process.

IR SYSTEM ENSURES STRONG POLYMER–POLYMER BONDING

A sheet web of scrim-backed polymer, at speeds up to 10 m/min, is brought into contact with a further polymer web on a drum. The surface of the scrim-backed polymer is heated to allow fusion to take place. The heating is carried out by an infrared system contained in a specially constructed reflector which follows the curvature of the drum to ensure homogenous heat transfer. The infrared system uses six fast response medium wave emitters and two Carbon Infrared (CIR) emitters. The CIR emitters ensure that all moisture is driven from the polymer while the shorter wavelength of the fast response medium wave emitters is more penetrative, providing deeper heating.

The new system, designed and built by Excelitas Noblelight, replaces a previous IR system, which had proved unreliable in operation. However, as Andrew McArthur, production engineer at IKO, points out, "The retrofit of the new system proved quite easy, even though we had little space for manoeuvre. And we are now obtaining more reliable and better-quality polymer adhesion at this important stage of production."



WORKING TOGETHER TO CREATE TAILOR-MADE HEATING

For many years Excelitas Noblelight has been providing infrared and UV solution for the industrial and scientific sectors. Its in-house Applications Centre offers customers the possibility to carryout practical tests under qualified technical supervision. Tests are carried out and evaluated in collaboration with customers. Our aim is to offer the best emitter type and the best configuration to suit specific applications, so that the heating process precisely and efficiently matches customer requirements.

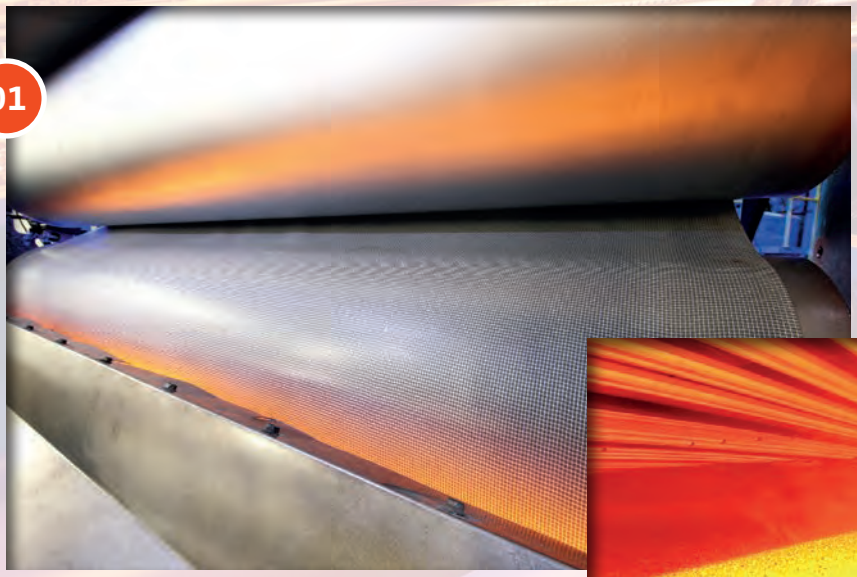
CÜNEYT ÖZER, *Application specialist at Excelitas Noblelight in Kleinostheim*

PRECISE HEATING CONTROL FOR THE EMBOSSING PROCESS

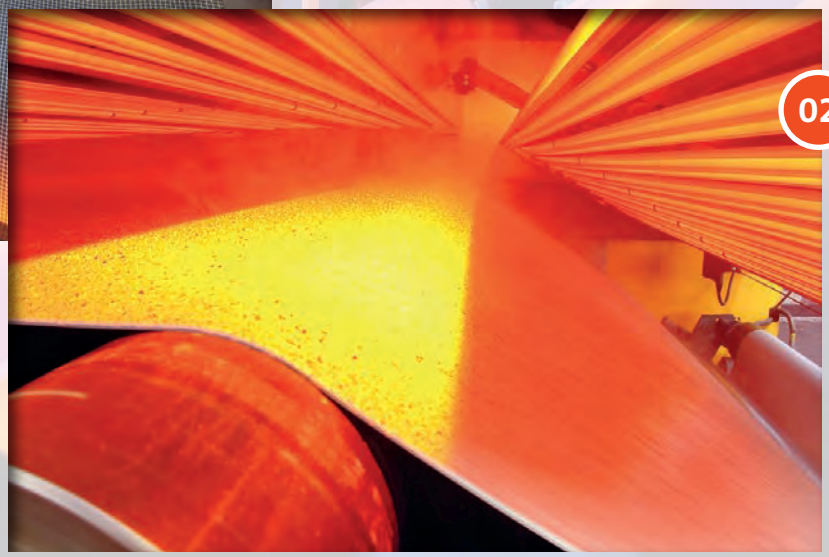
Renolit of Cramlington. UK manufactures laminates for furniture and foils for lamination onto exterior window profiles and doors. An important part of the production process is the embossing line, as many of these PVC-based laminates are embossed with a wood grain finish.

For this, the plastic foil web runs through a heating station. Patterns for the desired feel and look are then impressed into the soft surface, while the foil passes between a steel roller and a rubber counter roller. Optimum effect is achieved when the heating takes place as close as possible to the embossing gap/embossing calendar, because the longer the heating process lasts, the complete foil web is heated more deeply. This can lead to unwanted pulling or stretching of the soft foil as it is further processed

When upgrading the existing embossing system, Renolit replaced the ceramic heating system with short-wave infrared emitters. These are arranged in individual cassettes, creating heating zones which can be controlled independently of each other. The cassettes follow the contour of the web path, so that heating always takes place at the same



01 Infrared optimises the joining of materials in the manufacture of polymer roof-sealing sheets



02 Infrared systems are used at different points in a production line making vinyl floor coverings

distance from the foil and is thus significantly more even and consistent than previously.

The tailored heating provides precise control of the heating, so that energy is consumed efficiently. The foil is quickly brought to the set temperature so that increased production speeds are achieved. Moreover, as the short-wave emitters respond in a matter of seconds, the danger of damage to web is minimized in the event of unexpected conveyor stoppage as the heating elements can be switched off in an instant.

EFFECTIVE CURING OF PVC LAYERS

Infrared systems from Excelitas Noblelight are fitted at various points in a production line for vinyl flooring solutions at the Maidstone, England factory of Tarkett Ltd. They allow the company better control of the production and improve manufacturing flexibility.

The manufacture of floor coverings at Tarkett Ltd involves depositing a PVC paste in various thicknesses onto a PVC carrier sheet, which has a glass fibre mat. By introducing silicon carbide and aluminum oxide into the top layer, the floor covering is made non-slip. PVC flakes can also be added to impart a particular aesthetic look.

The application of heat is an important part of the process, both to dry the carrier layer This was formerly achieved by long wave infrared metal foil emitters but these have now been replaced by modern medium wave, infrared emitters. The carrier sheet is heated by an infrared module across the web width and by two Carbon IR modules at the edges. This ensures homogenous heating and minimizes heat loss in the edge zones. This heating removes the moisture from the carrier material to allow good bonding for the subsequent application of PVC paste and to prevent bubbling.

IR emitters located immediately after the first paste application station provide surface drying before volumetric heat is applied by an oil-heated roller. The PVC web then passes to a second paste application station, after which it is heated by a third IR system before being conveyed further for final cure.

> DAMAGE TO THE WEB IS MINIMIZED BY THE FAST RESPONSE TIME OF THE INFRARED EMITTERS

The installation has proved extremely successful, as Terry Guy, production engineer at Tarkett Marley explains, “The new system allows us the flexibility to cater for different product lines, with different thickness of PVC layers and its controllability means that we can adjust heating to suit specific line speeds.”

Images: *Excelitas Noblelight 2024*

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