

Infrared Heat for the Textiles Industry

NobleLight


excelitas®

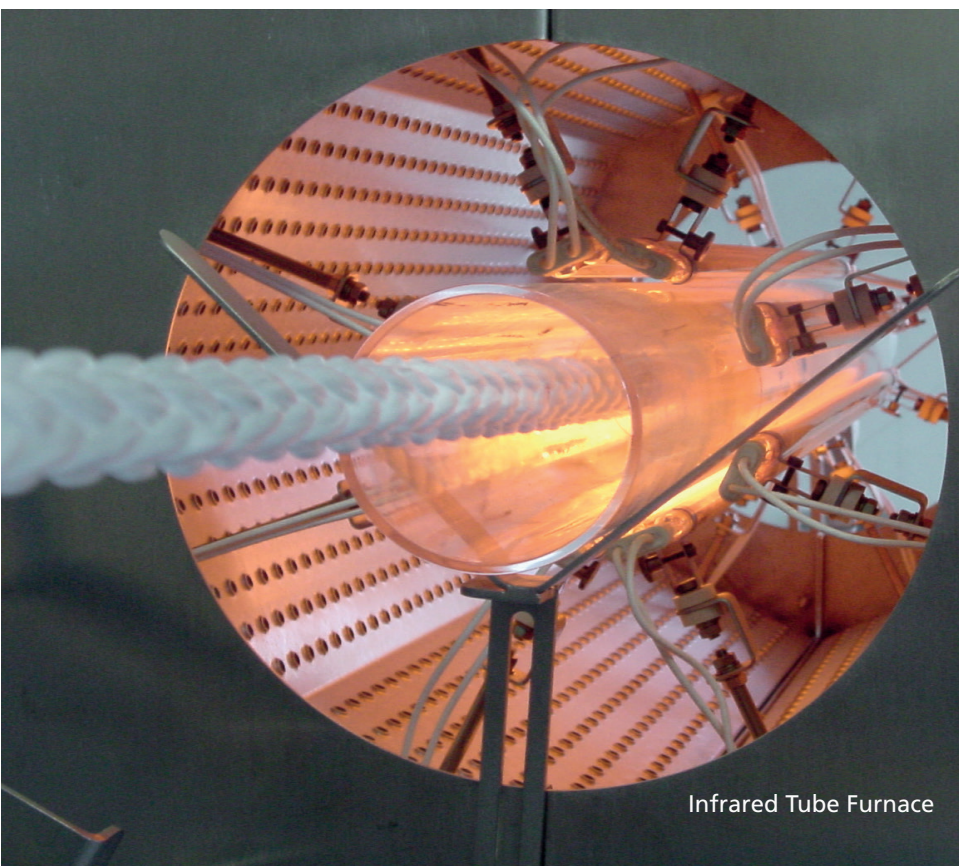
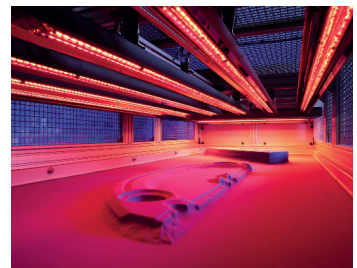
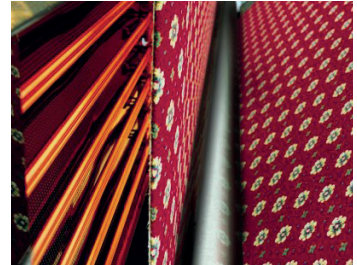
Technical Information

Warmth on Textiles

Many different heating and drying processes are required during the manufacture and processing of textiles. High value, technical textiles must be fixed reliably and qualitatively, coatings on fabrics and materials need to be dried as quickly as possible. The demands on heating systems are continuously increasing and heating processes must keep pace with manufacturing processes.

Infrared is a proven source of heat in textile processing, as infrared transfers high heating power in very short times. This helps to reduce energy consumption, to increase production speeds and to lower production costs.

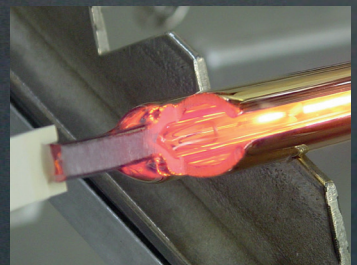
Quartz glass infrared emitters are as well established as conventional methods such as warm air and steam but are far superior to ceramic and metal emitters as they can be matched exactly to product and process in terms of wavelength, shape and power.



Infrared Tube Furnace

Yarns, ropes and filaments

Filaments and yarns benefit from the infrared slot heater. The heating coil runs in one channel of the twin tube emitter, while the filament is guided in the other channel. The gold reflector directs the energy directly to the filament. For ropes, there are infrared tube furnaces that concentrate the energy directly on the rope. Here in particular, infrared technology saves energy and increases production speed.



IR slot heater

Technical Textiles

Technical textiles are used in many exacting applications. Material for functional clothing is water-repellent and breathable at the same time. By means of a silicon-coated nylon fabric, an airbag can unfold in fractions of a second. During their manufacture, technical textiles require various heating processes – and often infrared emitters help these processes to be carried out efficiently.

Cure For Dyeing

A custom-built Noblelight infrared system from Excelitas is helping the British company Century Dyeing to carry out a drying process within a very short time window and very tight space constraints. Century Dyeing, part of the Allied Textiles Group, is one of the UK's leading commission dyeing companies. The company works with high value synthetic fabrics to produce finished products such as parachutes, tents and hot air balloons.

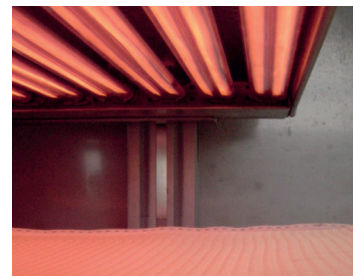
- High quality synthetic fabrics
- Sufficient drying within a short time window and tight space constraints
- Full-scale 88 kW system
- Pre-drying in front of Stenter
- Containing nine 9.8 kW emitters
- Control with an optical pyrometer and control panel display at the exit point



Infrared Heat for High Distance Textiles

Infrared emitters heat high distance materials quickly and evenly, as they generate heat both in the surface and in the depth of the material. As result, the fixing section can be shortened, freeing space for the space-consuming web.

- Quick and even heating on the surface and in the depth
- Shortening of fixing section
- Medium wave Carbon emitters



Infrared System helps improve Airbag Manufacture

A Noblelight carbon infrared drying system, from Excelitas, is helping Airbags International to improve the manufacture of side impact airbags and has significantly reduced scrap levels on a coating line. The cushions for airbags are produced from Nylon 66 and an important stage in the finishing process is the silicon coating of the nylon web, after it has been washed and dried and then fixed in a Stenter.

- Drying and preheating of nylon fabric
- Controllable heaters help to save energy
- Medium wave Carbon Infrared heaters with response times within seconds
- 120 kW system of 64 emitters, 2 kW each
- Heating up to 120°C
- Line speeds of up to 30m/min
- Web widths of 2 m and 2.4 m
- Controlled by an optical pyrometer



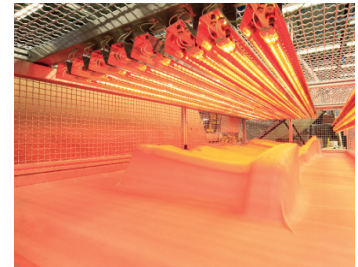
Textiles in Automotives

Heating stages should not constrict the manufacturing process. Infrared heating technology helps to modernize production and improve quality. Infrared emitters ensure that car seat covers are crease-free, that interior carpets fit perfectly – and that airbags deploy rapidly in an emergency. It pays to think infrared when we are talking about cars.

Infrared Heat Helps Bentley Make the Headliners

Two purpose-designed infrared heating systems are helping to ensure a perfect fit and increase longevity of the headliner interior leather trim on Bentley Continental's 4-door and 2-door models.

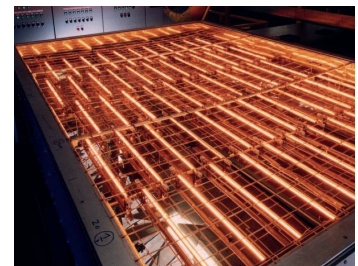
- Headliner interior leather trim connecting to substructure
- Drying of adhesives
- Two systems
- One with 15 fast response medium wave emitters each of them 5 kW serves 4-door model
- Second with total power of 108 kW in two units of 54 kW serves 2-door model
- Heating time of around 3 minutes
- PID control



Infrared system improves the quality of carpet blank moulding

An infrared heating system is helping Collins and Aikman to improve the quality of carpet blank moulding at their Newcastle-under-Lyme factory.

- Moulding of carpet blanks to produce in-vehicle fitted carpets
- Heating of blanks before they are located in the moulding machines to ensure optimum efficiency
- Quality improvements
- Energy savings, as the emitters are powered exactly as required
- Infrared system using carbon emitters
- Sixty 2 kW carbon emitters provide 15 individually controllable zones
- Power in each zone can be individually set



Infrared Heating System Speeds Up Adhesive Curing on Vacuum Presses

Fast response, medium wave Noblelight infrared emitters from Excelitas are being used on equipment manufactured to ensure the correct permanent bonding of an adhesive, even at high operational temperatures.

- Activation of adhesive for the wrapping of leather, fabric or pvc
- Fast response, medium wave infrared emitters with integral gold reflector and ruby anti-glare coating
- Module consisting of two zones, one with 5 kW emitters (102 cm heated length) and one with 7.35 kW emitters (150 cm heated length)
- PID-controlled
- Fast response within seconds
- 144kW nominal power and three individually controllable zones

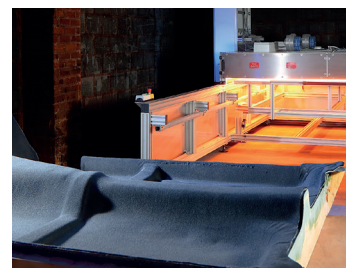




Infrared Helps Fit Carpets in Classic Cars

A fast response, medium wave Noblelight infrared system from Excelitas is helping in the creation of tailor-made carpets for refurbished classic cars at the Worcestershire workshop of Custom Car Carpets.

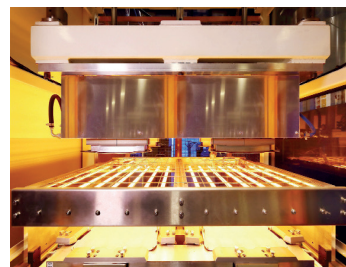
- Softening and moulding blanks
- Temperature of blank monitored by pyrometer
- Emitters switch off automatically once preset temperature is reached
- Fast response medium wave infrared emitter
- 3 x 34 kW modules
- Pyrometer control



IR System Reduces Both Energy and Cycle Times For Automotive Interior Trim Supplier

A Noblelight infrared system fitted to a purpose-built machine designed by P&D Engineering is significantly reducing energy costs and cycle times in the production of soft-trimmed automotive interior products at the Coventry factory of KJ Ryan. The new system has also proved more cost-effective than earlier systems which relied on ceramic heaters.

- Fast response medium wave infrared emitters
- Reduced energy consumption
- Quicker ramp-up time



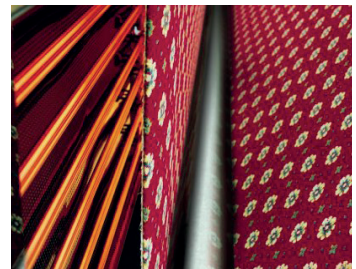
Home Textiles

Fibres and yarns are dyed, carpets are coated on their reverse side, curtains or blinds are printed – and infrared technology is always there to help ensure that the required heating process is carried out quickly and effectively. There is a broad spectrum of wavelengths, shapes and power outputs to choose from, the heating can be perfectly matched to product and process. That saves on time, effort and operating costs!

Carpet Backing with Infrared Improves Productivity

A Noblelight medium wave infrared system from Excelitas is helping to double line speeds, while significantly reducing on-line maintenance problems at the Wilton Carpet Factory in Salisbury.

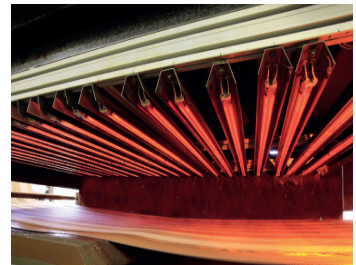
- Medium wave emitters
- IR-System 64.5 kW
- Emitters arranged in three zones to cater for the different widths of carpet
- One centre zone, two edge zones
- Heated length can be set at 1150 mm, 2000 mm, 3150 mm and 4300 mm
- Pre-heating of latex carpet backing
- Line speed was doubled
- Significant reduction of maintenance



Infrared Heat Increases Productivity of Flameproof Textiles

Forgotten candles or a short circuit in the toaster – if a fire starts at home it should not get out of control.

- Drying of latex flame-retardant coating on upholstery cloth
- Drying of fire-retardant solution on curtains
- Medium wave Infrared heaters dry three times faster than previous long wave
- 21 medium wave Infrared heaters, with 4.5 kW each in an aluminum framework
- Arranged in seven banks of three emitters
- Switched on and off to match the heating profile of the product to be dried



Infrared helps blind-manufacturer speed up production

An infrared pre-heating system has solved a production bottleneck problem, by allowing production line speeds to be significantly increased at the Chesham plant of Living Connections, one of the leading manufacturers of window blinds in the UK.

- Medium wave emitters
- 30 kW
- Six 5 kW elements of 2 m length each
- Precise control by pyrometer, linked by remote indicator to the operator
- Pre-heating solves bottleneck problem
- Medium wave infrared heat dries resin dye on textile blinds
- Line running speeds could be increased



Clothing

Many different heating and drying processes are required during the manufacture and processing of textiles. High value, technical textiles must be fixed reliably and qualitatively, coatings on fabrics and materials need to be dried as quickly as possible.

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Carbon emitters dry textile print on t shirts

Carbon infrared emitters optimize the drying of prints on T-shirts and other textiles in dryers by Calmatech BV, The Netherlands.

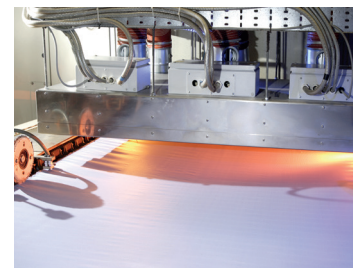
- Drying of prints on T-shirts and other textiles
- Targeted heat at the surface prevents overheating of surroundings
- High energy efficiency through infrared emitters
- Replacement of up to 24 short halogen emitters with a maximum of nine carbon emitters
- Medium wave carbon infrared emitters
- Reflector plate behind the emitters
- Drying of each screen ink in 2 - 3 seconds
- Easily programmable control by operator or automatic control



Drying of Water-Repellent coating on fabric

A carbon infrared system is helping to increase production line speeds by providing pre-drying of a water repellent coating applied to a specialized fabric used in the manufacture of outdoor clothing.

- High quality outdoor clothing
- With water-repellent coating
- Efficient drying increases production speed
- Fast response of heaters ensures that fabric cannot be overheated
- Carbon medium wave infrared system
- Pre-drying in front of Stenter
- One stainless steel cassette
- Containing 27 4.6 kW emitters, arranged in herring-bone fashion for maximum power density
- Closed loop control with optical pyrometer



About Excelitas Technologies

Excelitas is a leading provider of advanced, life-enriching technologies that make a difference, serving global market leaders in the life sciences, advanced industrial, next-generation semiconductor, aerospace and defense end markets. Headquartered in Pittsburgh, PA, USA, Excelitas is an essential partner in the design, development and manufacture of photonic technologies, offering leading-edge innovation in sensing, detection, imaging, optics, and specialty illumination for customers worldwide. Excelitas is at the forefront of addressing many of the relevant megatrends impacting the world today, including precision medicine, industrial automation, artificial intelligence, connected devices (IoT) and military modernization.

Contact us here:

Phone +49 (6023) 405-9600
hng-infrared@excelitas.com
hng-contact@excelitas.com

Visit our website:
www.noblelight.com



www.excelitas.com

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Inhouse XNG 06/25

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