

# Fact sheet Infrared heating



Using technologies that help to improve energy productivity<sup>1</sup> is a sure way to optimise production processes and, as a result, grow your business.

Switching from traditional heating and drying systems powered by gas, heavy fuel oils and other alternative fuel sources to systems powered by electricity, infrared technology is an attractive option to achieving improved production and duty cycles in a more efficient manner.

1. Energy productivity is defined as the ratio of output divided by energy consumption

## Technology insights

Electric infrared heating and drying systems transfer heat energy instantly and directly to a product that requires heating – there is no need for an intermediate medium such as air or water.

- Electromagnetic waves heat products without wasting excessive energy, even in areas with large volumes of cooler air.
- Electric infrared heating and drying systems produce very little visible light and emit zero harmful emissions, thus making them friendlier to the environment than other conventional heat sources.

The technology suits sensitive materials that require less intense heat and processes that need quick response times or shorter bursts of intense radiation. For instance, electric infrared ovens can quickly and easily vary the intensity of emitted heat while achieving power densities of up to 400 kW/m<sup>2</sup>.

- This characteristic makes electric infrared heating and drying systems an ideal technology for heating metals rapidly.

Medium wavelength electric infrared heating is especially well suited to curing and drying coatings; it corresponds well with the absorption bands for water, which most coatings contain. As infrared heating does not penetrate surfaces deeply and generally only heats outer surfaces, the technology is especially suited to dry coated and printed products.

On the other hand, broadband infrared heating is well suited to fabric curing and drying, and provides excellent colour fastness without fabric loss due to edge burning (that occurs when using traditional gas systems).

## Technology benefits

Infrared heating for drying, curing, pre-heating and scorching processes offers several advantages over convection heating, because:

- There is no direct contact with the product to be heated or dried
- Drying and heating rates are high
- Infrared emitters offer a high degree of controllability of the heat source
- Infrared emitters offer a high degree of uniform heat distribution across an entire surface
- Infrared emitters deliver heat in exact amounts directly to a specific point
- Infrared emitters can be adjusted precisely to varying material properties
- Infrared radiation can be focused for a specified time
- Unlike traditional heating, infrared heating does not dry the surrounding air

Hybrid systems that combine infrared heating and fuel-fired convection ovens are another technology solution to heat certain processes effectively. Infrared

heating systems (or hybrid systems in the case of certain applications) offer:

- Cost savings due to high overall efficiency
- Improved product quality
- Improved product throughput
- Less wastage or product loss due to process heat control
- Continuity of fuel supply
- No production delays or interruptions as a result of fuel delivery delays
- No requirement of upfront payment for bulk fuel handling or storage
- A cleaner energy source compared to coal, gas or heavy fuel oils

Improved drying and curing processes can help to optimise energy use and grow your business

## Optimise your energy use

Eskom's Energy Advisors, in regions across South Africa, offer advice to business customers on how to optimise their energy use by:

- Understanding their energy needs
- Understanding their electrical systems and processes
- Investigating the latest technology and process developments, including electric infrared heating and drying systems

- Understanding the cost saving benefits of using more efficient technologies
- Recognising areas where energy is used least and most
- Analysing how to reduce energy investment costs
- Considering how energy use patterns can be changed from peak to off-peak periods



Call **08600 37566**, leave your name and number and request that an Energy Advisor in your region contacts you.



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