



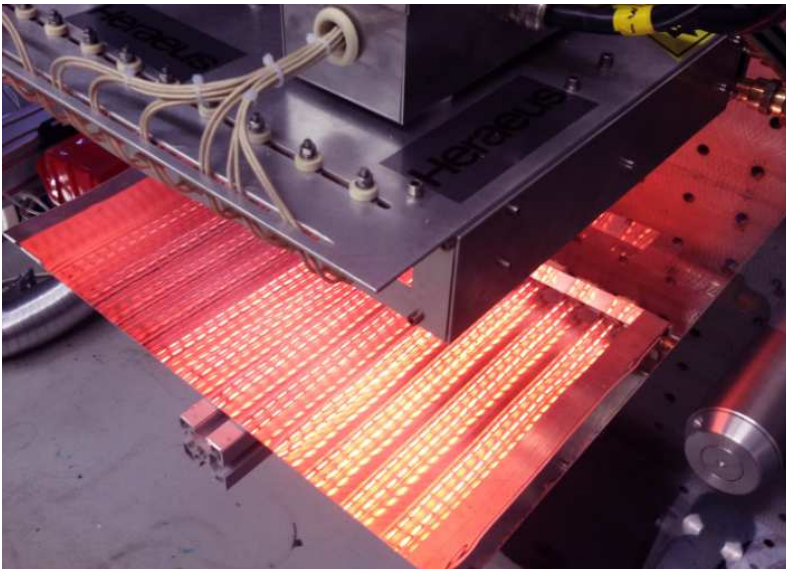
Tailored Infrared Tool for Drying and Sintering Processes in Printed Electronics

Today a wide range of potential applications for printed electronics and printed functionalities are under development and many young companies are working on the industrialization. Different printing technologies such as screen printing or inkjet printing are used for applying several types of inks, for instance organic and metal based ones, on different substrate materials (e.g. polymers, papers, glass). Next to the deposition of these materials with the appropriate printing technology, post-treatment processes such as curing, drying and sintering play a key role to evolve a function (e.g. conductivity, semiconducting or dielectric properties) of the printed layers. Today the kind of post-treatment technology strongly depends on the materials used as ink, the substrate and the processing: batch processing mainly applied in functional sheet-fed printing or primarily continuous processing in web-fed processing.

A unique infrared module including an intelligent control unit can manage nearly all important requirements, e.g.: emitter power density, homogeneous energy intensity on the substrate, web speed R2R, peak wavelength corresponding to emitter filament temperature, reflector technology (metals and quartz) for efficiency, equipment cooling, reflection and absorption properties of ink and substrate and some more important like the distance between emitter and product.

With our technique it is not necessary to change emitters, modules or other equipment between different applications. This increases productivity tremendously by managing different applications with one tailored infrared tool for drying and sintering processes in Printed Electronics.

Using Heraeus technology it is possible to manage the process complexity in two ways. Firstly, the infrared module can be equipped with one kind of infrared emitters only; an intelligent control unit manages the different operation conditions for different application requirements. Secondly, a drying and a sintering zone in one infrared module can be achieved by using two different emitter types, one type for each heating zone.



Features

- matching to ink, substrate and printing technology in two possible ways
- selection of infrared emitters exactly to required wavelength and power or
- intelligent control unit enables matching to different applications

Technical data

- infrared power density in a range between 20 and 220 kW/m²
- emitter filament temperature of around 1,200 to 3,000°C
- web speed up to 60 meters per minute

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