

# APPLICATION NEWSLETTER

## July 2024



### Content of this Newsletter

1. - Application Newsletter – OEM Business
2. - Industry fields
  - 2.1 - Induction heating
  - 2.2 - IR heating
  - 2.3 - Thermoforming
  - 2.4 - PET bottle machines

 optris



## 1. Application Newsletter – OEM Business

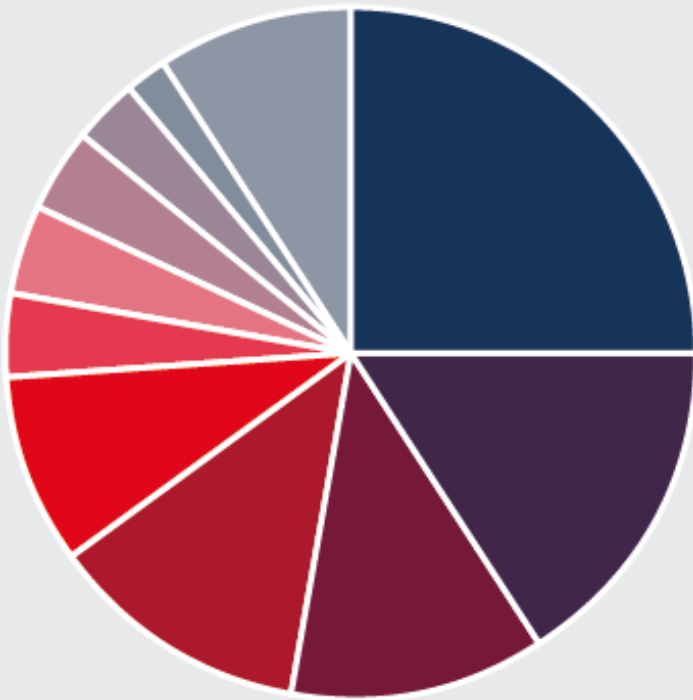
OEM business is the most wanted business we want to create as it provides a certain ground noise to stabilize your business. Of course there are areas with higher density of machine builders and others with less. We would like to give you an overview of where Optris is active and successful.

We would like to give more insides of our success stories and we want to make it easy for you to find similar applications. This Application Newsletter will give you the most important OEM's for Optris worldwide. It will help you to communicate the right Optris solution to new or even given customers. No matter what kind of business or industry, somewhere around the globe we probably have done a similar application already. We have seen cases where different plants under the same company name even did not know about a successful installation for quality improvement, e.g. So we see a demand of active communication, especially for such high potentials and big names as you will see in this application newsletter.

Read about the application and the required key features. See if the branch office of the given names is in your territory.

1. Application Newsletter – OEM Business

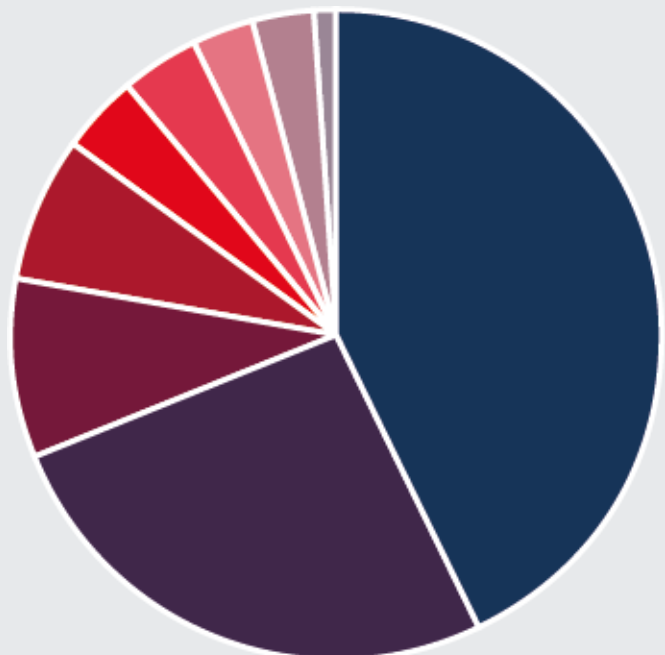
### OEM units per Year



- 25% CT LT
- 16% CT Laser M
- 12% CSM LT
- 12% Imager LT
- 9% CT M
- 4% Imager SW
- 4% CT ratio
- 4% CS
- 3% CT P
- 2% CS Vision
- 9% misc.

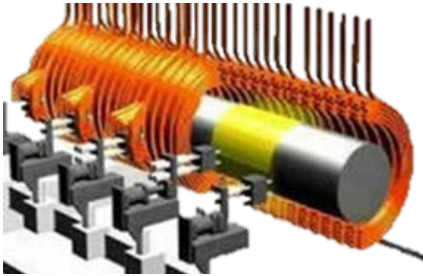
### OEM Industries

- 43% Induction heating
- 26% Plastic
- 9% IR heating
- 7% Medical
- 4% Construction / Road
- 4% 3D Printing
- 3% Glass
- 3% Automotive
- 1% Safety



## 2. Industry fields

### 2.1 Induction heating



Induction heating is of course a wide field of different applications. Whether it is about heating up metal parts for further treatment, forming, fitting, soldering or even hardening. All those applications have in common the inductor, which is acting as a primary transformer and the work-piece which acts as a secondary short circuit. As soon as a metal part enters the magnetic field the parts heats up caused by the induced circulating eddy currents inside the part.

The inductive heating process can be controlled precisely by knowing the temperature of the part inside the magnetic field. Typically, the inductor itself is limiting the visual access to the part. In addition, very often the process creates difficult environment caused by water, fume or dust. For that reason, ratio pyrometers are the most popular device for temperature measurement of the parts inside the inductor.

Depending on object size, sensor position and conditions sometimes also other sensors with high D:S ratio or IR imagers are used. One advantage of using IR imagers like the PI1M or Xi1M can follow the hot spot even if the inductor is moving. Figure 2 give one example of a hardening process which creates challenging conditions and a moving target. Here the PI1M detects the hot spot to control the process.

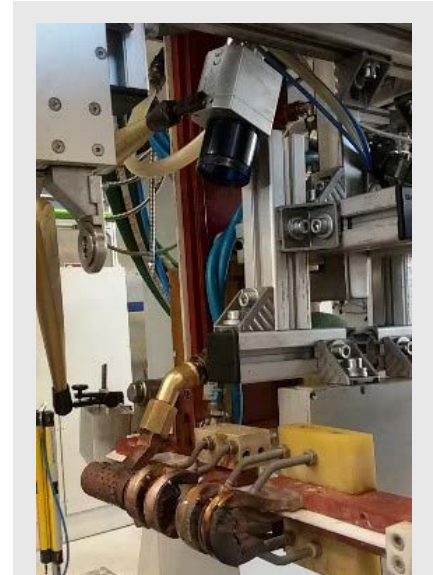


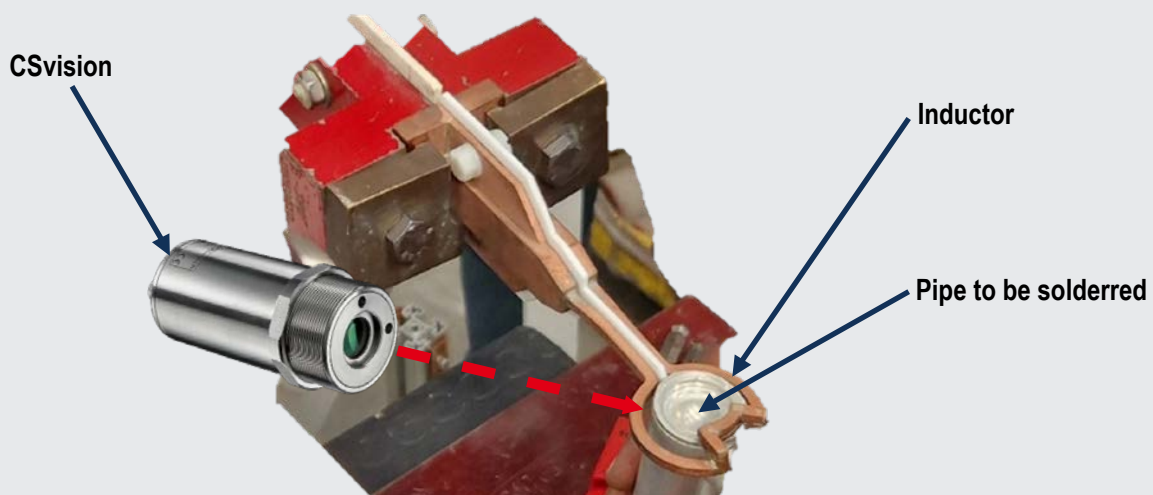
Figure 1:  
Surface Hardening monitored by Optris PI1M



Figure 2:  
Crank shaft hardening

#### Inductive Soldering:

The CSVision controls the heating up process during soldering of two metal parts. Between both parts the tin alloy needs to be heated up but must not exceed a defined limit to avoid any damages of the outer two metal parts. Precise measurement as well a fast signal output is important for the application.



This customer manufactures different sorts of inductive heating machines. This soldering machine line in particular requires approx. 30 units of CSvision per year.



## 2. Industry fields

### 2.2 IR heating

IR heaters are used in many different industry sectors. The most popular fields with a certain demand for Optris products are to find in the fields of automotive (paint drying and curing), plastics (thermoforming/preheating), food (roasting, drying).



One important thing to consider is wavelength. Most IR heaters operate in short or medium wavelength. For that reason LT sensors (8-14  $\mu\text{m}$ ) are well suited in most IR heating applications. CTLT is the most popular sensor in this field.

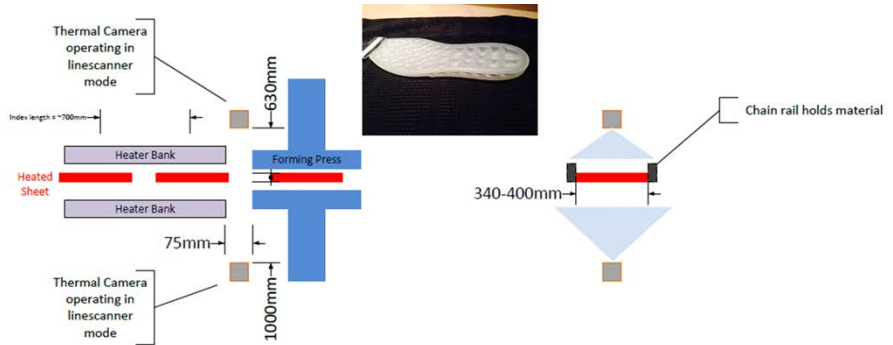
The sensor typically is placed near the heaters in the same direction the heater radiates the object. The sensor permanently measures the surface temperature of the object. As soon as the defined temperature is reached, the sensor signal is used to stop the heating process. The process of drying or heating now is optimized by time, energy consumption and by quality, too.



## 2. Industry fields

### 2.3 Thermoforming

At this process Polyurethane sheets are heated up to between 150-170°C before they move into a forming station. Between the heating section and the forming station two IR cameras are installed to check the surface temperature of the moving sheets on the top and on the bottom side. The heated plastic sheets are passing the cameras every 10 seconds. During this time the cameras scan line by line the surface temperature of the moving plastic sheet and finally the software PIX-Connect creates a complete image of the plastic sheet. The linescan can be triggered on temperature with a self trigger area or it can be triggered with an output signal which comes from the thermoform machine.



After the complete linescan, the software creates an automatic snapshot and saves the image for documentation into a snapshot history. Temperature profiles, different measure areas, a hot spot detection and the possibility to forward alarm situations to another process as for example a PLC gives for the thermoform application an optimized quality check.

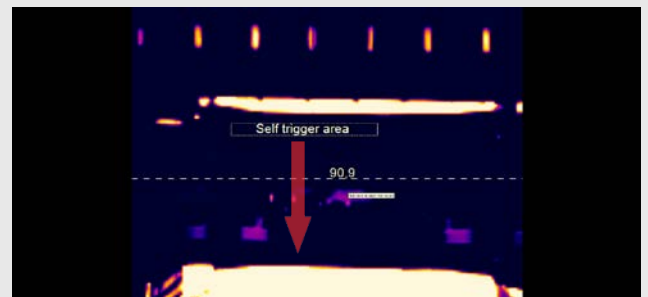
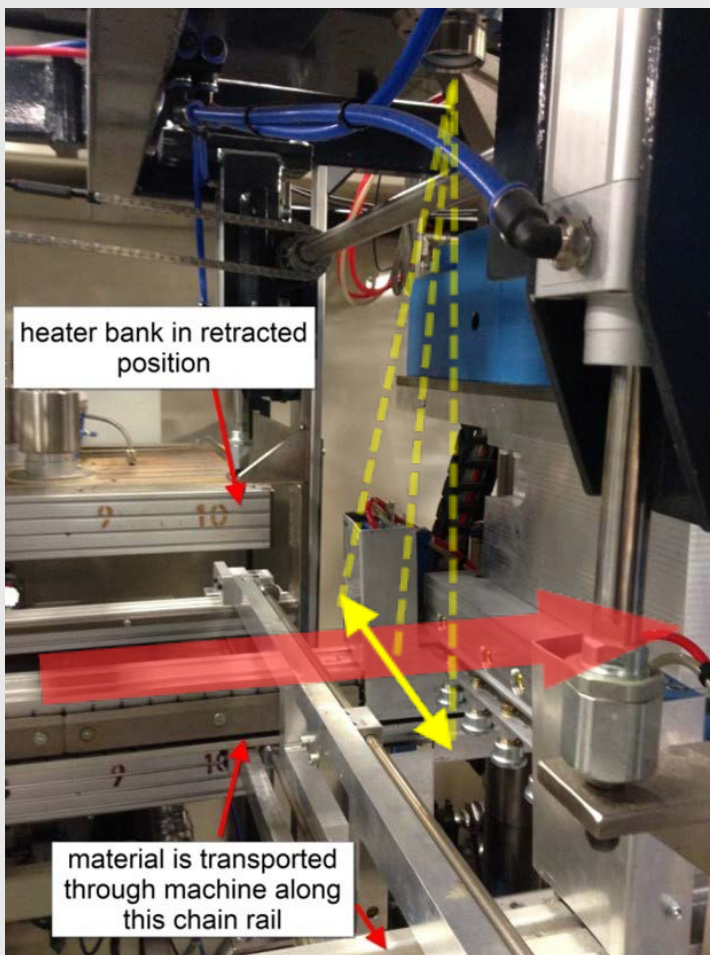
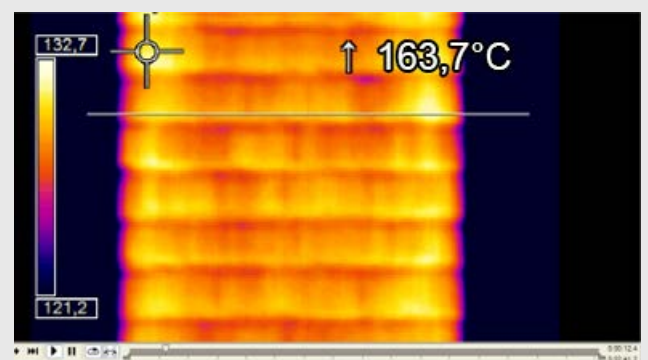


Figure 1:  
Selftrigger area defined in the PIX Connect Software

Figure 2:  
Application and linescan measurement setup

Figure 3:  
The final picture and result of the linescan function





## 2. Industry fields

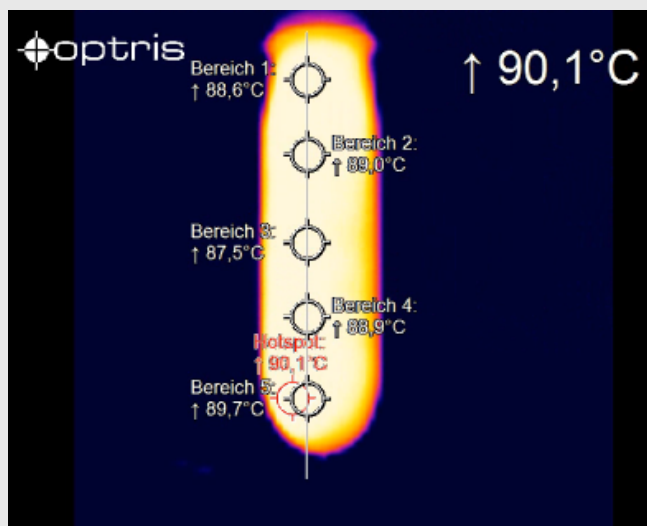
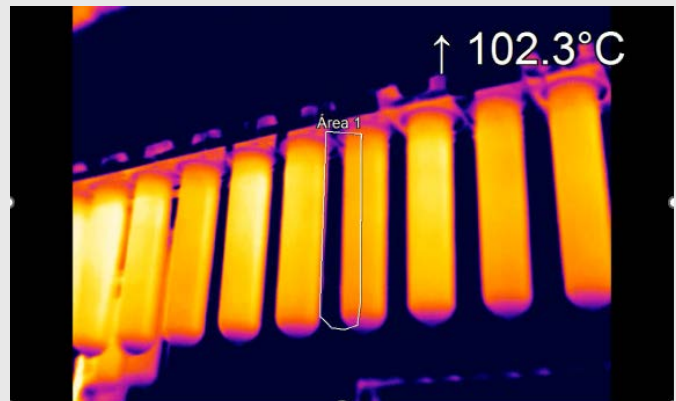
### 2.4 PET bottle machines

Plastic bottles made from PET are widely used for all kind of liquids especially for soft drinks.

There are two basic molding methods for PET bottles, one-step and two-step whereby we focus on the latter. The first machine injection molds the preform, which resembles a test tube, with the bottle-cap threads already molded into place. The body of the tube is significantly thicker, as it will be inflated into its final shape in the second step using stretch blow molding.



The initial phase involves heating the PET bottle preform to the required molding temperature, while ensuring uniform heating of the inner and outer body walls.



The second step is bottle blow molding. The uniformly heated bottle preform is fed into the blow-molding mold via a chain, and high-pressure sterile air is blown into the bottle preform.

