

# TEMPERATURE MEASUREMENT ON FLAT GLASS LINES

## THE OPPORTUNITY

During the manufacturing process, accurate control of the process temperature and ramp rate is critical to ensuring a quality product.

Non-contact infrared measurement systems have been well established for use on the float glass production line. However, fully understanding the importance of the pyrometer parameters is needed to select the correct instruments.

Pyrometers selected for temperature measurement in the float bath and to measure the cooling profile in the annealing section (Lehr) require a narrowband spectral response to ensure that only the surface of the glass is measured. Additionally, care must be taken to avoid reflection from heating elements that are installed in the float bath chamber, and flame interference in the leading portion of the float bath.



## OUR SOLUTIONS

After the glass melting tank, the temperature profile in the next two process steps, the tin bath and annealing Lehr is required to be monitored to ensure quality, stress free product. The tin bath can be considered as two zones, the hot zone where we need to measure through burning gas flames, and the cooling zone where we need to measure only the glass surface without burning gas. In the hot zone it is important to measure at  $3.9\ \mu\text{m}$  to measure through the gas burners which control the viscosity of the glass. For this step we use the Impac IPE 140/39 pyrometer.



Impac IPE 140/39

After the glass has the correct viscosity, the glass comes to the cold zone in the tin bath where we measure the surface temperature of the glass with an Impac IN 5/5 pyrometer. In both of these zones, the use of site tubes to minimize stray radiation from the glow bar heater may be required.

In the annealing lehr, the surface temperature is measured with the Impac IN 5/5 pyrometer to control the target temperature and speed to relief thermal stress of the flat glass for further process steps.

### IPE 140/39

- Temperature ranges between 20 and 1800°C
- Measurement through flames and combustion gas without influencing the measurement (Viscosity of the glass highly depends on temperature)
- Penetrating measurement into glass
- Reduction of emissivity errors

### IN 5/5

- Temperature ranges between 100 and 2500°C
- High accuracy due to digital linearization of the output
- Small spot sizes, minimum 1.1 mm
- Adjustable exposure time
- Compact housing

## YOUR BENEFITS

- Complete solution with full accessories to speed installation
- Enable closed loop control of heating element, to improve accuracy and stability
- Improved monitoring of cooling rate to produce stress free product



Impac IN 5/5



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