GLASS LEVEL MEASUREMENT

Improving level control for efficient and high-quality glass production

BERTHOLD

MEASURING THE GLASS LEVEL
TO IMPROVE YOUR PRODUCTION

Glass in various shapes and compositions encounters us in our daily lives as building material, laboratory equipment, optical instruments and household products.

Industrial glass melt furnaces are used in glass production to melt raw ingredients (batch) into a molten glass at temperatures exceeding 1200°C. Level control just after the outlet of the melt furnace is one of the main process control challenges to facilitate efficient and high-quality glass production. Due to the harsh conditions, non-contacting measurement methods are mandatory. Standard online furnace level control methods, such as optically based technologies like lasers, do not produce reliable and reproduceable results without constant, almost daily, maintenance and upkeep. Furthermore, optically based measurements require the refractory to be completely removed, hence exposing the furnace heat and gases to nearby workers which is creating a potential risk for workplace safety incidents.

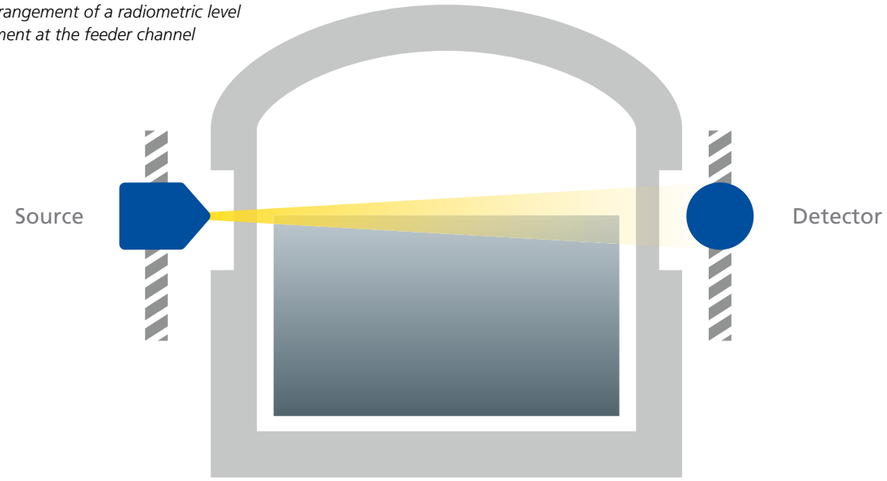
Radiometric based level measurements offer best in class reliability and safety for the glass industry to aid in streamlining glass production and producing consistent quality glass while minimizing costs and maximizing throughput.

Glass manufacturing also takes many shapes and sizes, but to create glass, a raw ingredient mixture or “batch” must first be melted. Melt furnaces are large enclosures with dense refractory brick layers on all sides including at times a refractory roof.

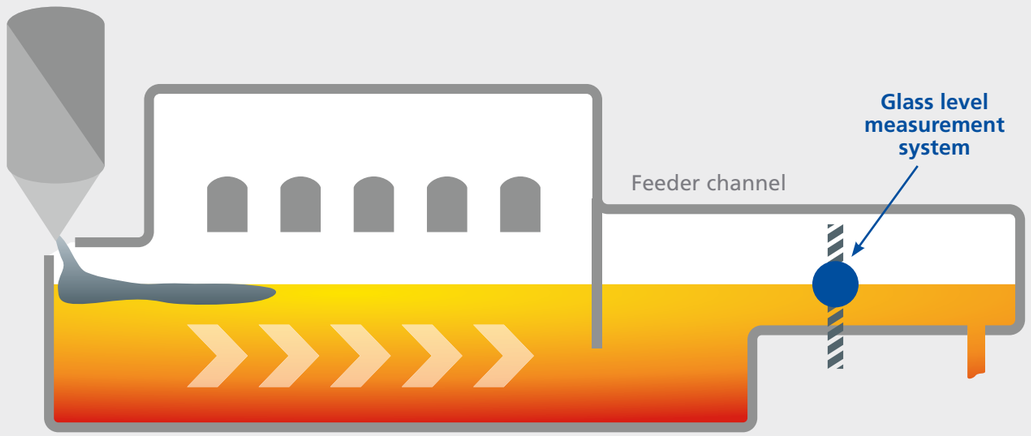
Non-contacting, nuclear glass level measurements use gamma radiation directed across the width of the feeder channel to correlate changes in measured radiation with a rise or fall in molten glass level. There is no need for a complete removal of the refractory.

Gamma radiation interacts with matter. The amount of radiation arriving at the detector thus depends on the shading of, the molten glass in our case. For highest accuracy source and detector are mounted on a frame that is adjustable via spindles, to perfectly align both to each other.

Typical arrangement of a radiometric level measurement at the feeder channel



Glass level at the feeder channel



Advantages

- Online level measurement
- Good repeatability of the measurements
- Resistant to dust and gas
- Removement of only some of the refractory bricks is necessary
- Not impacted by dust
- Environment not exposed to furnace heat and gases
- Long terms stability, easily matching the melt furnace lifetime

Features

- Non-contacting measurement
- Not exposed to the harsh process conditions
- Simple and precise adjustment of the calibration position via slider
- Typical measuring ranges 0...5 mm to 0...50 mm (0...0.2 in to 0...2 in)
- Accuracy +/- 0.5 % of measuring range
- Achivable resolution 0.05 mm (0.002 in)

THE EXPERTS
IN MEASUREMENT TECHNOLOGY

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Using our varied product portfolio, our enormous specialized knowledge and extensive experience, we develop suitable solutions together with our customers for new, individual measurement tasks in a wide variety of industries and applications. Berthold Technologies is specialised in radiometric process measurements for 70 years. This is our core competence with state-of-the-art and cutting edge products and solutions covering a vast range of industries and applications.

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