

Forglass Mixing Electrode™ Q&A



Dr. Marian Klisch heads the R&D department at Forglass.
Here are his answers to 7 most important questions asked by our clients.

1. What is the Forglass Mixing Electrode (FME)? Is it a kind of stirrer that delivers electric energy?

It is an electrode with an additional bubbling function that allows you to quickly move the hot glass from around the electrode to the areas where it is needed most: under the batch blanket or where sand dissolution or clarification takes place.

2. What is the purpose of using FMEs?

Intensification of heat and mass transfer processes, which allows for better melting results in a shorter time with less energy expenditure.

3. Generally, bubbling is used only in the barrier, but the FMEs are also and mainly mounted in the melting zone. This sounds revolutionary!

The idea of mixing by bubbling in the melting zone (as seen in the simulation picture on the cover) guided us from the very beginning of work on the Mixing Electrodes. We have now confirmed in

computer modelling that the FME system creates perfect synergy between forced longitudinal and updraft convective currents in the melting tank, which allow for much faster heating of the batch, faster dissolution of sand and faster bubble removal.

4. Can FMEs help to reduce energy consumption below 800 kcal/kg?

Yes, because in furnaces equipped with FME it is possible to drastically reduce the reaction time between the batch components, as well as sand dissolution and homogenisation time, thus reducing the energy needed for merely maintaining the temperature. Without FMEs, these processes occur much more slowly.

5. Does faster melting make it possible to increase pull?

Yes, our CFD modelling results show the potential of 5% more glass from the same furnace. And this can also be translated into higher quality of glass.

6. What about corrosion of the furnace?

The gas stream released from the FME's top propels the hot glass towards the surface. The thermal conditions of refractory materials at the tank's bottom are milder compared to standard molybdenum electrodes, so we expect corrosion to be less of an issue with FME.

7. Have the FMEs been tested in furnaces?

Yes, they have undergone extensive testing in an experimental furnace designed and built by Forglass. In two separate tests lasting 3 months each, they were subjected to operating conditions much harsher than in an industrial furnace and they passed these tests brilliantly! We've confirmed that FME carry no operational or technological risks and they are ready to save furnace operators a lot of money!

**More questions for Dr Klisch?
Call or write to us at the address below.**



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