Electric Melt Furnaces
Introducing...

Cold-top Electric Melt Furnaces are the most energy-efficient and environmentally friendly method of glass melting available. Since the electric melting process became viable in the early 1950's, TECO has designed and built hundreds of cold-top furnaces across the world.

We also supply electric boosting systems which integrate with existing fossil fuel furnaces to help meet production and environmental requirements. Although the price of electricity can be a limiting factor, electric melt furnaces can still prove cost effective.

With our depth of experience in electric melt processes, we understand how best to apply electrical energy to any glass making process.

For more information about our individual services please contact us:

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The cold-top electric melt furnace, operating on the Joule principle, is an ideal glass melting process; both energy usage and emissions are the lowest available. The melting takes place vertically. Efficiency is enhanced by the insulating “batch blanket” or “crust.” The temperature drops from roughly 1400°C (2550°F) at the batch/glass interface to 50°C (122°F) at the blanket surface. As a result, a cold-top furnace operates in the 75% efficiency range, about twice that of its fossil-fuel counterpart.

The batch blanket also reduces emissions by condensing volatiles within the blanket and returning them to the melting interface.

Designed to optimize performance and maximize efficiency, TECO cold-top melters and boosting systems feature bottom rod (vertical) electrodes to help minimize current density and maximize electrode life. Sidewall electrodes with higher current density are used where needed, such as adding electric boost during a campaign.

Modelling
Both physical and computer modelling can be used to establish maximum current densities. TECO can then configure the electric melters with current density kept low enough to ensure the electrodes will last the campaign life of the furnace.

Electrode selection
TECO will provide the correct electrode material depending on glass chemistry and ensure the correct size, shape and method of installation as determined by current density requirements.

Mixed batch considerations
TECO can implement batch plant improvements at existing facilities without interruption to glass production to improve mixed batch consistency, or provide a new batch plant at a new installation.

To avoid unbalanced electrical loading, TECO uses symmetrical two- or three-phase circuits with balanced loads.

In addition, the systems are engineered to apply electrical energy where it will most improve the melting process.

**Electric boosting**
Can increase melting capacity, improve glass quality and reduce emissions in fossil fuel fired furnaces.

**High frequency power**
For special boosting applications, frequencies of up to 1,000 Hz can be used to extend the life of the electrodes when heating glass that contains heavy metals.
As part of the TECO Group, Toledo Engineering, Tecoglas and KTG Systems can offer complete capabilities in glass furnaces of all types, with KTG Engineering supporting this activity as glass plant equipment manufacturers. Zedtec are the TECO Group specialists in forehearth and working end technology. EAE Tech provides high quality industrial automation engineering services and custom control systems.

The TECO Group has been serving the world’s primary glass manufacturing industry since 1927.