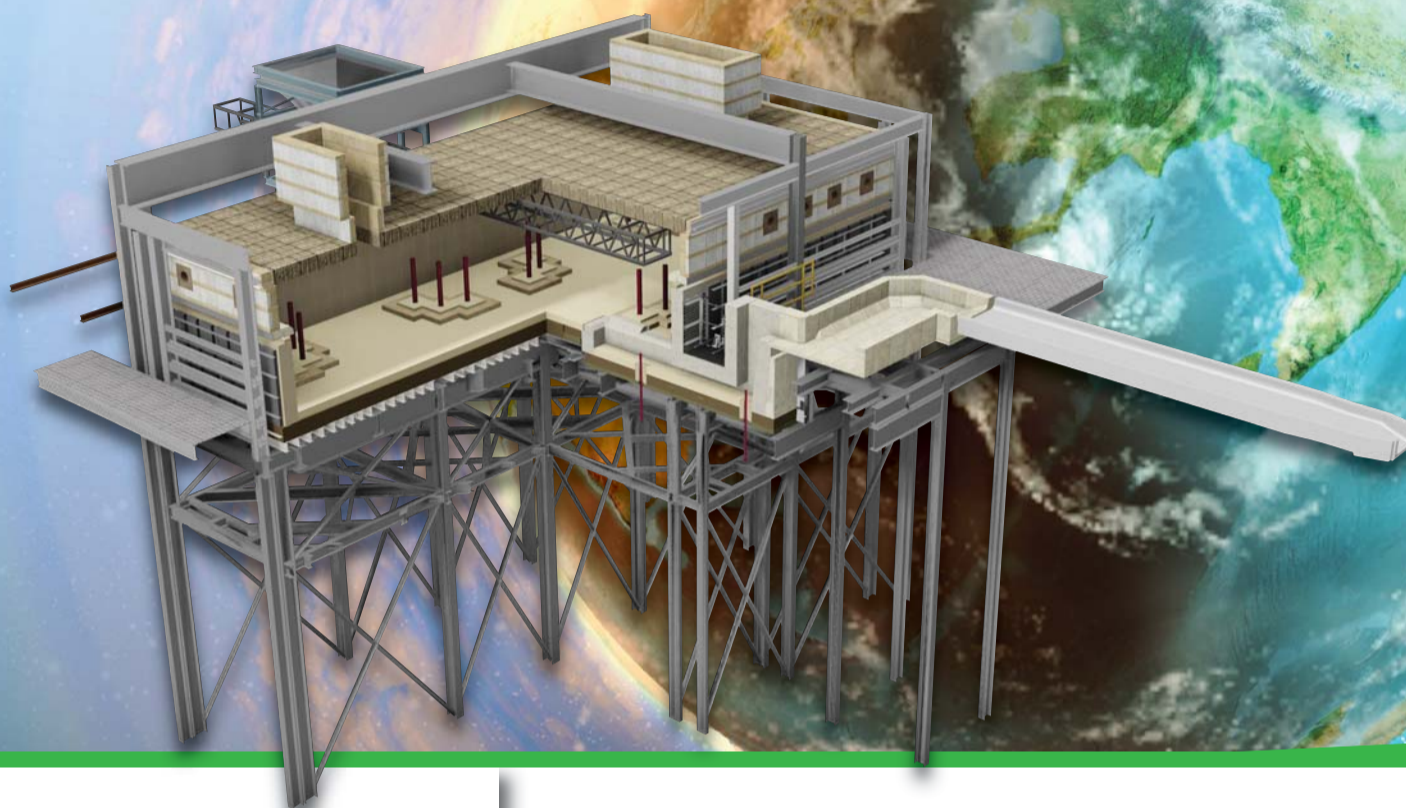


# TECO @ THE HOT END

## The Green Issue



### One Group - Six Companies

As part of the TECO Group, Toledo Engineering, Tecoglas, and KTG Systems, can offer total furnace 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 provide high quality industrial automation engineering services and custom control systems.

The TECO Group has been designing, building and modernising for the world's primary glass manufacturing industry since 1927.

### TECO

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## The Future of the Furnace

With a broad climate change pact struck to cut greenhouse gases by at least 40% by 2030, perhaps now is a good time to discuss the future of the furnace.

The final wording of the well-documented "Paris Agreement" was adopted by all of the 195 UNFCCC participating member states and the EU to reduce emissions as part of the method for reducing greenhouse gas. The members promised to reduce their carbon output "as soon as possible" and to do their best to keep global warming "to well below 2°C" [35.6°F].

Although slowly changing with increasing consumer environmental awareness, the trend continues to be driven by commercial pressures in favour of low cost production. Unfortunately low cost tends to mean fossil fuel use with the minimum amount of emission control to satisfy local regulation.

Unless there is a step change in specific environmental legislation enforced by governments or there becomes a reliable, renewable source of competitively priced electricity, manufacturers will continue to produce glass by the cheapest means possible.

Legislation has to be fair; it would be a brave decision for one country to go down the decarbonisation route when other countries do not follow suit. If the majority still rely on fossil fuel then the electric adopters may suffer financially through glass imported from countries still producing glass through fossil fuel methods unless trade barriers are put in place to stop this from happening.

The change is slowly coming but there will be an economic price to pay which all stakeholders and consumers must work to absorb.

So what might the furnace of the future look like? Already there is more use of electricity, with evermore boost being installed into fossil fuel furnaces with some going fully oxy-fuel or all electric. Ultimately more and more glass will be melted electrically utilising electricity from "at source" carbon capture power stations or via renewables.

This being the case, the "eco" furnaces of the future are likely to be smaller, use considerably more electricity as a form of primary melting energy and have shorter life cycles. It could mean two rebuilds for every one needed with a traditional furnace. Apart from the obvious efficiency and environmental benefits, there will be shorter rebuild times with glass to glass downtime considerably reduced.

The TECO Group's commitment to the furnace of the future is real; Tecoglas, a UK member of the TECO Group, is a contributing partner to the Advisory Board of Glass Futures Limited. The very essence of Glass Futures is to drive changes in technology for the glass industry.

The TECO Group has developed designs for all electric and hybrid furnaces over many years; so whatever your vision is for your furnace of the future, we are well positioned to design, build and modernise any type of furnace using multiple fuel types, anywhere in the world.



**feature:**

**It's Highly Efficient & Environmentally Friendly**

For fossil-fuel-fired furnaces, electric boosting can increase melting capacity, improve glass quality and reduce emissions.

**Electric Boosting is an efficient way of putting energy into the glass in the furnace.**

Electric energy added at the “hot spot” will increase convection flow. Boosting under the batch blanket will provide supplemental energy for added tonnage.

A good estimate is to assume that you require 660 kWh to increase capacity by one tonne per day.

Combining the KTG SX Electrode holder, with its renowned robust design and service history, boost systems can be introduced during furnace design, repair and in some circumstance during production.

Our skilled engineers are available to assist in the implementation of boost systems, electrode holder installations and electrode advancement requirements throughout the world.

**Types of boost system.**

- Single, two or three phase transformers and firing systems
- Bottom, side wall or top entry electrode systems
- Electrode firing over a wide range of frequencies
- Electrodes installed at hot spot or under blanket
- Installation with original furnace, at rebuild of a furnace or during a campaign
- Electrodes made of molybdenum, tin oxide or other metals and metal oxides depending on type of glass.



01 Typical TECO electric melter showing electrodes



02 The KTG Engineering SX electrode holder

E L A Z X C T D E J I Z E D T E C B G D E E V R  
 L E G I S L A T I O N B V X I C L V P U I O K L  
 E M C E A Q U I J E A C H R E S I C E C U E L E  
 C D E I Y C V F V S N O I S S I M E X Z M P A Y  
 T A R G E T S O N W Q U Y O O L A S S R Z B O P  
 R E A P A R I S A G R E E M E N T V Y O C R M A  
 I W Y V C E E S P L C L G T M C E D A N R E A L  
 C A R B O N X I B A G E W I G E C L E A N T A M  
 B Q E W P E O L E A A C W A N E H Z X C V B N Y  
 O D D G A W E F L L I T F T M E A P L K J Y T E  
 O J U R L A P U M K N R E F U R N A C E X A E R  
 S A C E A B L E E T I I P R E C G C F G H J K Y  
 T H E E M L R L E G A C M O Y Y E A E Y E C E C  
 E C U I A E B V X E W I R Q L U T B X Z E O P P  
 Z W S C V S N M O N O T Y M P L A N E T R A E L  
 G A Y E O A W S L G N Y Q U F N U Z X C B N K I  
 T Y H Y I S G Y T I L I B A N I A T S U S E C S  
 J H J K U D H M E N L K J H G F D S I A E D I C  
 S J O I Y F J U Y E A E T E C H Z X C O V B N M  
 A M P A T G K J G E P O I U Y T Y G R E N E M E  
 D N L E R H P U O R G O C E T T R E W Q N M D S  
 V B L D E J K M W I Q S X W D V E F B R G N T H  
 T B Q D R T N E M N R E V O G Q A Z X C U J Q B  
 E A C W D T E C O G L A S M K G D E F R G T A P

**wordsearch:**

AIR POLLUTION	CARBON
CLEAN	CLIMATE CHANGE
EAE TECH	ELECTRIC BOOST
ELECTRICITY	EMISSIONS
ENERGY	FOSSIL FUEL
FURNACE	GOVERNMENT
KTG ENGINEERING	LEGISLATION
PARIS AGREEMENT	PLANET
REDUCE	RENEWABLES
SUSTAINABILITY	TARGETS
TECO GROUP	TECOGLAS
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