

# ECO FURBISHING

THE INNOVATIVE GLASS PLANT OPTIMISATION PROGRAMME



**HORN**  
GLASS INDUSTRIES

*innovation*  
ENGINEERED IN GERMANY

# INNOVATION ENGINEERED IN GERMANY

---

HORN® Glass Industries AG is a German company specialising in the design and supply of complete glass melting technology and providing innovative solutions for the glass industry, worldwide. With over 130 years of experience in glass melting, HORN® has extensive know-how regarding modernising existing glass melting furnaces as well as the design of new ones. ECOfurbishing is the HORN® product which meets the rising demand of the entire glass industry to optimise furnaces in terms of energy, emission values, glass quality, performance and flexibility.

ECOfurbishing is the result of many years of experience and innovation which have been proven to be hugely successful at major glass manufacturing plants around the globe. HORN® furnaces produce more than 35,000 tonnes of glass per day worldwide, a testament to the company's professionalism, reliable service and commitment to innovations such as ECOfurbishing glass melting furnaces.

## WHY FURNACE OPTIMISATION?

The global glass industry is exposed to the constant pressure of competitiveness due to the many glass producers operating and vying with each other. Therefore, glass manufacturers are required to reduce their production costs and sell their products at a lower rate than their competitors. Unfortunately, increasing prices for energy and raw materials counteract these endeavours.

## THE OBJECTIVES

- **Meeting stricter legislative requirements on emission limits**
- **Improving profitability and productivity**
- **Dealing with increased energy and raw material costs**
- **Meeting the demand for better quality by glass producers**
- **Improving competitiveness**
- **Meeting the market's demand for product quality and flexibility**

Additionally, legislation reduces limits for exhaust emissions while the buyer's market is forcing glass manufacturers with high quality standards as well as a wide product range to produce glass more flexibly.

Standard furnaces often cannot live up to these high standards. That is why HORN® provides a wide range of solutions to optimise existing glass melting furnaces or build new plants that meet the needs of the operator.



# HOW ECOFURBISHING MEETS YOUR NEEDS

## AT A GLANCE

- Lower energy consumption and optimal NOx emissions
- Optimal ratio of fossil fuel and electric boosting power according to local power prices
- Unique port neck design in terms of air velocity, mixing point, burner block position, flame touch area and recirculation also taking into account fuel and batch properties
- Superstructure design for complete combustion at low residual oxygen content and low heat loss due to excellent insulation
- Usage of the latest combustion system with HORN® DUALFLAME AC or MC with easy to adjust burner brackets, which are available with single burner and separate inner and outer nozzle control
- Totally stable and ultramodern process control system and separate safety control system
- Totally closed doghouse
- Latest batch chargers for totally closed doghouse with fully adjustable servo-motor driven two-paddle system HVR® 600S-2P and HVR® 700S-2P for best batch distribution
- Perfectly designed refractory material for optimal energy/cost ratio, lowest leak air and minimum glass leakage risk
- Customised platforms, steel constructions and furnace cooling for easiest maintenance
- HORN® ggENOX system with sidewall nozzles to inject air, oxygen or natural gas for internal recirculation and secondary combustion (can be installed at all furnaces while operating)

## BENEFITS

- **Long term NOx level less than 600 mg/Sm<sup>3</sup>**
- **Energy reduction**
- **Higher glass quality**
- **Increased furnace output**
- **Flexible furnace in terms of performance, glass colour and fuel usage**
- **Increased furnace lifespan**
- **Optional application with batch preheater system**
- **Thermal homogeneity**



# ECOFURBISHING IN ACTION

---

## **INCREASE IN GLASS QUALITY AND FURNACE OUTPUT**

- Electric melting boosting and barrier boosting
- Bubbling system
- Weir wall
- Optimal glass bath design including melting area, doghouse position and glass bath depths

## **USAGE OF PREHEATED BATCH**

- Completely closed doghouse and prolonged doghouse lifespan
- Reduced carry-over
- Outstanding burner port design in order to meet the requirements of the preheated batch e.g. for the lowest carry-over

## **HIGHER FURNACE FLEXIBILITY**

- Furnace with barrier wall and refining area
- Multi-colour furnace using electricity and bubbling for fast colour change
- Electric refining boosting for faster change of colour
- Particular furnace design for multi-colour furnaces

## **FLEXIBILITY IN TERMS OF FUEL**

- The HORN® dualfuel burner allows firing with gas and/or oil, and fast reaction to fuel price fluctuations
- Fuel supply stations for (heavy) oil and gas
- Mixing stations for biogas, biomethane or LPG
- Installation of measuring devices for recognition of changing heating value and implementation in process control system (e.g. EUROX® oxygen probe, wobble measurement, gas analyser, extractive flue gas analyser)



### **INCREASE IN FURNACE LIFETIME**

- Automatically controlled flux line cooling
- Paving of flux line (triple paving provision)
- Ceramic welding (with cooperation partner)
- Hot repair service
- Furnace hot inspection service by endoscope
- Low carry-over in regenerators by port neck and dog-house design
- Regenerator design for the lowest ageing effect
- Refractory quality assessment by experienced specialists (support for companies which buy their own refractories)

### **TROUBLE-SHOOTING**

- Technical assistance in terms of batch composition, raw material application and furnace adjustment
- Computer modelling
- Analysis of glass quality problems with solution report
- Consultancy for furnace colour change
- Combustion optimisation



LET'S GO FULL CIRCLE. [WWW.HORNGLOSS.COM](http://WWW.HORNGLOSS.COM)

The key to HORN®'s extensive expertise in all fields of glass melting technology is the profound understanding of each detail within the entire process, making HORN® the specialist for technological progress and innovation for each aspect of a glass plant. In addition to its knowhow about individual elements such as furnaces, HORN® has expanded its services to become a one-stop supplier for turn-key plants. From initial planning to full operation - HORN® stands by you all the way.



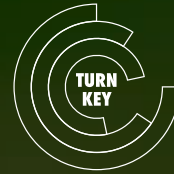
**PLANNING +  
ENGINEERING**



**MANUFACTURING**



**SERVICE /  
INSTALLATION +  
SUPPORT**



**LET'S GO  
FULL CIRCLE.**



**HORN**  
GLASS INDUSTRIES

HORN® GLASS INDUSTRIES AG  
BERGSTRASSE 2  
D-95703 PLÖSSBERG/GERMANY

TEL.: +49 9636 / 9204-0  
FAX: +49 9636 / 9204-10

[WWW.HORNGLOSS.COM](http://WWW.HORNGLOSS.COM)

04/2020