Product Specifications

Phoenix Fusion Machines

The Phoenix series of Fusion Machines are designed to allow the preparation of permanent and homogeneous fused beads under accurately reproducible conditions.

XRF Technology and Phoenix have become synonymous with quality, durability, repeatability and an ability to fuse the most difficult of materials, anywhere anytime. This includes operation at high altitude and the analysis of materials such as ferro alloys, silicates or sulphide's

There are a number of models available, each with a variety of options including loss on ignition, automatic ammonium iodide injection and oxygen injection. If you produce only 1 sample per day or 2000 samples per day a Phoenix is available to meet your requirements.

QUALITY

Fused Glass Disc Quality
The quality of the fused glass disc is paramount in our thinking.

Reproducibility
Independent tests have confirmed that the reproducibility of the fused glass discs is excellent. The variation between samples (0.3% RSD) compares very favorably with other methods of bead preparation and far better than pressed powders (2 - 4% RSD). The homogeneity, both within and between beads, is the result of detailed attention to every aspect of the glass disc preparation process.

Mixing of Flux and Sample
The swirling mixing motion is pre-programmed into the operating cycle which ensures that the sample material is evenly dispersed throughout the flux producing a homogeneous mix.

Cooling of Moulds
The cooling of the fused sample in the mould is another critical aspect of glass disc quality. The rate of cooling can be precisely controlled with 2 cooling rates available.

Auto Locking Crucible Holders
These eliminate the possibility of cross contamination which was always a concern with the old style crucible clamps.

Variable Speed Swirling
This feature allows the chemist to select the correct speed to enable the inside wall of the crucible to be washed by the swirled sample. Therefore giving both planetary and vertical mixing in standard crucibles.

Pre-Heat/Oxidation
We offer this feature for the most important reason of all -our clients want it! It is typically used in the cement industry, where pre-heat allows for the slow dissipation of gasses during the fusion process, thereby preventing the sample material overflowing the top of the crucible. This option is also used in other applications to slowly bring the crucible up to temperature thereby increasing crucible life.

Individual Burner Select
Each set of crucible and mould burners can be selected individually. This is an extremely useful feature for experimental work or when different temperatures are required for separate burners.
Savings in oxygen and gas usage can be achieved by careful selection and management of this function.

Oxygen Injection Facility (Optional)
An oxygen injector can further enrich the atmosphere resulting in a more even fusion process within the mix and protects Pt/Au ware from excessive corrosion.

Ammonium Iodide Injection (Optional)
Ammonium iodide tablets may be added as a wetting, mixing or releasing agent when pouring the fused sample into the mould. XRF Technology has developed a unique ammonium iodide injection system which is pre-programmed to dispense the tablet into the crucibles during the fusion process.

Melt-Loss (Optional)
To enable melt-loss to be calculated accurately, the Phoenix can be pre-programmed so that each crucible and its contents are weighed after fusion has taken place and the results compared with the original weights. After the melt-loss has been calculated, the program will re-heat the now solidified samples to melt point and then pour them into moulds.

DESIGN & BUILD QUALITY

To achieve the highest level of bead quality demands precision engineering and a disciplined approach to design. Every feature designed and built into the Phoenix is there to either enhance the quality of the samples or its productivity.

Computerised Controls
The Phoenix can be supplied with optional computerised control. A customised PC is supplied with the Phoenix. The computer control package offers the user a host of benefits:- pre-programmed fusion recipes, pre-set operating cycles, computer or manual operation, "built-in data base, graphical user interface. A major benefit of the Phoenix is that it can form a vital component in the laboratory's own Quality Assurance System, particularly if the organisation wishes to gain accreditation under an International Quality Standard (ISO).

Moulds
The use of ringed mould holders and circular moulds reduces the usage of platinum and leads to more uniform cooling.

Construction
The internal componentry is attached to either the chassis of the machine or to internal panels. This method of construction results in better build quality and in ease of access for servicing.

User Friendly Features
The Phoenix is fitted with a tray to catch any sample material in the event of a spillage. The tray simply pulls out for cleaning. Granite pads are located in front of the moulds and on each shoulder of the machine for temporary placement of platinum wear.

Individual Burner Manifolds
Each burner is mounted on its own manifold block which allows precise positioning of each burner under the crucible and mould.

SAFETY

The Phoenix is designed so that the most potentially dangerous part of the operation - the transfer of the sample to the mould - is done automatically and not by hand. In addition every Phoenix is fitted with:

Thermal Temperature cut-outs
Power, gas and oxygen shut down if the internal temperature of the Phoenix exceeds a pre-set level.

Pressure Sensors
Oxygen and air supplies is pressure monitored. If the pressure drops below a pre-set value, a cut out will be activated.

Pour Cycle Interlocks
Prevent pouring until the moulds are in position above the burners.

Teflon Hose
Is used for all gas and oxygen lines. The thermal cut outs are designed to shut down the machine before temperatures are high enough to effect this heat resistant and fire retardant material.
The above might be termed the primary safety features built into every Phoenix. XRF Technology support these by personally commissioning each machine, by our willingness to service the machine throughout its life and by offering training courses for laboratory personnel in the operation of the Phoenix.

Technical Specifications

Model	PX-VFD/M	PX-VFD/R	PX-VFD/S	PX-VFD/MD (MOULDABLE)	PX-VFD/ I	PX-VFD/I	PX-VFD/D
Analysis Method	XRF	XRF	XRF	XRF	ICP	ICP	ICP
Number of beads produced simultaneously	3,4 or 6	2 or 3	1	4 or 8	NA	NA	NA
Number of dissolutions produced simultaneously	OPT	NA	NA	NA	2, 3 or 4	6, 8 or 12	2 or 4
Variable speed swirling	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Separate mould timer	Yes	Yes	Yes	NA	NA	NA	NA
Can be used at high altitude without modification	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual burner selection	Yes	Yes	NA	Yes	Yes	Yes	Yes
Reset any time	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual burner manifolds	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjustable pour delay	Yes	Yes	Yes	NA	NA	Yes	Yes
Can heat moulds heavy duty moulds to 160gm	Yes	Yes	Yes	NA	NA	NA	NA
Automatic pouring into moulds	Yes	Yes	Yes	NA	NA	NA	NA
Two stage cooling	Yes	Yes	No	Yes	NA	NA	NA
Fully regulated cooling	Yes	Yes	Yes	Yes	NA	NA	NA
Autolocking crucible holders	Yes	Yes	Yes	NA	Yes	Yes	Yes
Heavy duty mould holders	Yes	Yes	Yes	Yes	NA	NA	NA
Moulds retracted & cooled over separate cooling jets	Yes	No	No	No	NA	NA	NA
Moulds cooled in-situ above burners	No	Yes	No	Yes	NA	NA	NA
Recipe database	Yes	No	Yes	No	No	No	No
Pre-Melting	Yes	Yes	No	Yes	Yes	Yes	Yes
Separate Oxygen Injector	Optional	Optional	NA	Optional	Optional	Optional	Optional
Ammonium Iodide Injector	Optional	Optional	NA	Optional	Optional	Optional	Optional
Melt Loss	Optional	Optional	Optional	NA	NA	NA	NA
Loss on Ignition	Optional	Optional	Optional	NA	NA	NA	NA
Size - Height	310mm	250mm	200mm	310mm	250mm	310mm	310mm
Size - Width	880mm	620mm	350mm	880mm	620mm	880mm	880mm
Size - Depth	630mm	450mm	290mm	630mm	450mm	630mm	630mm

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