

## Glass-Melting Furnace

### ◆ System Overview

Regenerative glass-melting furnaces usually require a mixture of sequencing, loop control and sometimes computer modelling.

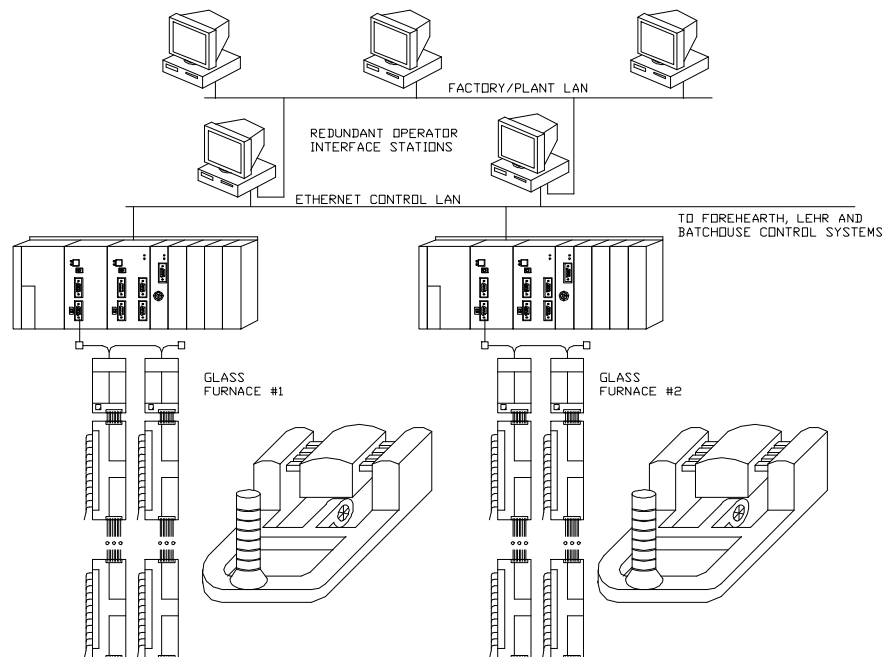
Consistent temperature and combustion control requires multiple levels of cascade PID loops and customised double-cross-limit algorithms for maximum efficiency and environmental results.

Sequencing is for control of the gas firing and airflow dampers used to reverse furnace firing based on either on time or temperature.

Implementation of electric melting electrode controls using large transformers further increases furnace efficiency.

The V-series 2000 system can measure, calculate and control the required temperatures, flows, pressures, levels and energy. It would use Process I/O bus and Direct I/O bus as required.

### ◆ System Configuration



### ◆ Features

(1) The L2 Loop Control module takes care of process measurement and control loops as well as the condition and actions required for furnace reversal sequences. Redundant hardware option should be considered, as the furnace cannot be allowed to cool unless it is due for rebuilding.

(2) The majority of furnace I/O is connected to the Process I/O modules and any hi-speed processing is through the Direct I/O modules mounted in the main chassis (eg. glass-stirring bubbler pulses).

(3) The Ethernet Control LAN connects to the Local Operator Interface Stations (OIS) that can be setup in a redundant configuration.

(4) Both OIS are connected to the factory/plant LAN and control the level of access into the furnace control system.