BATCH PROCESS WIRE

Base :

The base is designed to ensure a maximum of stability of the latter during the various cycles it has to undergo.

With its support grids in cast steel and its specific system for the support of the load in the base, we can design furnaces up to 75 tons load.

The design of the latter, optimising the circulation of the protective gas at high speeds, is contributing to achieving a perfect homogeneity of the temperature inside the load.

Each annealing base is equipped with a high performance fan wheel driven by a gas-tight motor and controlled by a frequency converter which optimises the circulation power in all phases of the heat treating cycle. With a direct hold on the fan wheel and a water cooling, a particular care has been brought to the reliability of this material that is essential for the good homogenisation of the temperatures in the load by convection.

Highlighted points :

- ☞ **Stability of the base**
- ☞ **Automatic clamping**
- ☞ **High velocity fan**

RM 7

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Atmosphere bell :

In order to ensure a perfect stability of the protective bell, this one is made in corrugated steel. The presence in this one of a guiding cylinder for the protective gas is striking off any heterogeneities of temperature inside the load.

For big dimensions bases or furnaces working with hydrogen, some hydraulic clamping systems can be foreseen in order to ensure a perfect tightness between the base and the protective bell. Further to the clamping system, the tightness is ensured by the presence of a toric joint that is cooled with water. The sequences of the PLC, approved by TÜV as far as the safety aspects within the framework of the hydrogen atmosphere are concerned, ensure the safety of the operations all along the cycles. Before the start of a cycle, a tightness test is controlling that all the conditions are met for starting a cycle without any risk of seeing the load being polluted by some traces of oxygen or of accidentally introducing some air under the cover in the presence of hydrogen!

The presence of a guiding cylinder for the protective gas under the cover is also allowing a perfect control of the convection of the protective atmosphere under the cover.

Highlighted points :

- **Corrugated bell (stability)**
- **Gas cylinder for the optimising of the atmosphere circulation**
- **Automatic clamping**
- **Auto-check control of the tightness**
- **High velocity fan**

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Furnace :

The furnace is lined with energy saving lightweight insulation made from ceramic fibre material. The low heat storage of this material also contributes to an easier control of the furnace.

The heating of the furnace can be carried out by some gas burners or some electrical resistances. The eventual installation of a combustion fumes recuperator in order to save a bit of energy is also possible. For an easy and safe operation, the FIB bell-type furnaces have a centralised connection for the fluids, gases and electrical wiring. When the furnace is going down on the base, all the connections are automatically done by a system of spindles.

Highlighted points :

- **Light density insulation fibre**
- **Gas or electrical heating up**
- **Automatic connectors**
- **Possibility to install a heat recovery system**

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Cooling bell :

The cooling bell is equipped with a system of fans that are aspiring some cool air along the lateral walls in combination with the intensive circulation of the protective atmosphere under the atmosphere bell. The cooling speed has of course been determined in order to always remain compatible with all the bases and heating cycles of the furnaces.

Highlighted points :

- **Minimisation of stress thanks to the circulation of air**
- **High circulation of air**

Control of the fluids :

The whole panel related to the distribution of fluids is allowing a full control of the sequences. This one is supervised by the PLC, with some redundant tests in the case of the exploitation of hydrogen furnaces, and all the elements of the panel have been selected for their reliability.

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Control of the installation :

Easy operation of the plant and reproducibility of the heat treating processes are ensured by PLC-control of the installation or in relation with a data acquisition system.

The signals of this PLC (Allen Bradley or Siemens) are then brought back to some touch-sensitive screens, each base having its own touch-sensitive screen. Thanks to a simplified interface with the display of synoptic data on a touch-sensitive screen, the operator has the possibility to see at any moment the situation of his installation, set points, hourly consumptions, immediate display of any alarm and so on.

The control of the installation is made via this control screen on the basis of a password given according to the customer's own wishes.

Highlighted points :

- **Visualisation of the status of each base**
- **Use-friendly screens**
- **Automatic highlighting of any alarm**
- **Entering the cycle segments via the screen**

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Data acquisition :

Within the spirit of full traceability of quality, the equipment can be coupled with a data acquisition system that can be supplied as an option.
The software Wonderware Intouch? has been chosen for its development platform that can be easily configured.

Tailored according to the wishes of the customer, this product is allowing the recording of the history of all the cycles as far as the temperatures as well as the consumptions by ton of wire are concerned.

This software is having a database that is compatible with Office and Windows and therefore, the exploitation of its data by other programs is made easier by the exportation of the collected data.
Possibly connected with a local Ethernet network, the history gathering platform can possibly be connected with an existing mainframe.

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This tool that is having extraordinary possibilities is an essential partner for any quality manager searching for the possibility to inform his customers in the best possible way.

Highlighted points :

- **Tailor-made data acquisition**
- **Real-time charts and quality reports**
- **PID control tuning**
- **Immediate alarm diagnostic**
- **Trend charts**
- **Synoptic data**
- **Easy report of the data to another Windows or mainframe platform**

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