

Manufactured in Germany

ROHDE

PROCESS AUTOMATION

Modern Control Units

Our control units for the control of our furnaces are of course equipped at the highest technical level. Thyristor controllers for the control of the heating and alternating-current inverters for the regulation of the rotation speed of the fan motors are a standard for us as well as the use of efficient program controllers and programmable from memory controls.

We do of course design and manufacture our control units. Therefore our experts can react fast regarding questions or changes.

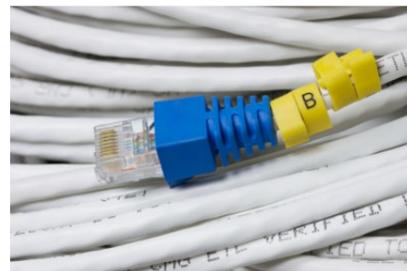
Our control units are not only prepared for the use of energy management systems to reduce peak loads, but also remote maintenance solutions are part of our product range. Our remote maintenance enables naturally also the transmission of software updates through remote maintenance connection directly to your furnace. Therewith the software of your heat treatment equipment is always up to date.

In case of errors we can of course intervene and give helpful advices for troubleshooting to your maintenance team – sometimes even before you even notice the failure.

Powerful Controls and Program Regulators

We can utilise besides a powerful SPS of course also all common program controllers for the automated and reproducible run of different processes. Our standard is based on a SIEMENS-control. This enables the connection of our furnaces to nearly all management systems and networks. For the operation of the furnace besides SIEMENS-controls in different performance classes we also offer the typically implemented systems in heat treatment such as program controllers from Eurotherm, Process Electronic or Stange.

Our biggest advantage: We are not bound to any system. We will be happy to advise you on the different systems and will show you the advantages and disadvantages of the different controllers regarding your individual application.



PROCESS CONTROL

Do not leave anything to chance

Our process controls ensure at all times that your load is optimally heat treated. We do not only control the temperature, we control the whole process. Depending on your requirements, your furnace will be equipped with the suitable sensor technology which allows us to ensure a constant good result of your heat treatment.

ROHDE Online-Diffusion System

The software we have developed for online diffusion can be utilised for standard gas carburising processes as well as for carbo-nitriding processes. For any carburising depths between 0,2 – 10 mm (in theory up to 20 mm are possible) the program initially calculates on the basis of the material a proposition for a treatment program and predicts the duration of the complete treatment.

The program then suggests a multistage process whereas in the first stage the C-level is calculated automatically depending on the carbon activity (carburising near smoke limitation). In the balancing stage of the diffusion the C-level is automatically adjusted in order to achieve the desired C-concentration in the surface.

By means of permanent online calculation the treatment program is adjusted to the actual furnace parameters (temperature, C-level, furnace atmosphere etc.) The current carbon content in the surface layer can be displayed graphically up to the desired carburising depth during the whole treatment.

Once the target-parameters (carburising depth and C-content of the surface layer) are reached, the treatment program finishes automatically.

ROHDE Control System for Gas-nitriding- and Nitro-carburising Processes

Besides our online diffusion calculation for carburising processes, we have developed a reliable control system for gas-nitriding- and nitro-carburising processes. The core of the nitriding system is an especially developed sensor which supervises the decomposition of the ammonia due to the thermo-dynamical balance. In conjunction with a lambda sensor this nitriding sensor allows us the exact determination of the composition of the furnace atmosphere.

Our control system enables us to achieve reproducibly the requested nitriding depths and at the same time to distinguish between gamma' and epsilon-layers. Furthermore our control system is able to control besides nitriding index, nitriding depth and compound layer the porous zone as well as a minimal epsilon. During the post-oxidation treatment we control besides the depth of the oxide layer also the ferrite oxidation H₂O/H₂.



est. 1979