



Induction Heated Vacuum Heat Treatment Systems IOV

Vacuum Systems

IOV

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IOV systems are used in a wide range of high temperature processes and they are particularly useful for sintering and heat treatment processes.

Applications

Sintering processes

Heat treatment processes

- Degassing
- Graphitizing
- Distillation
- Impregnation
- Reducing
- Carburization

Characteristics

Inductively heated vacuum heat treatment systems with high operating temperatures specially for the manufacture of hard materials.

Standardized components for a broad application spectrum and useful space volumes from 34 to 338 liters.

System design

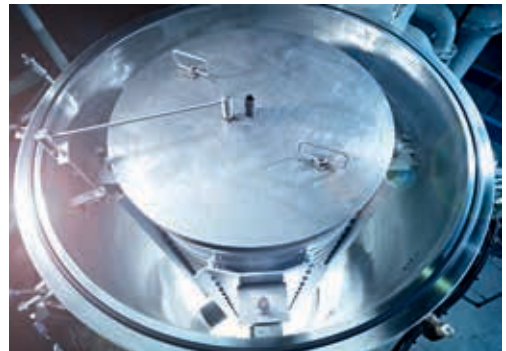
The IOV series is manufactured in four standard sizes each with a normal (1,600°C) and a high temperature version (2,200°C).

A staged series of vessel diameters provides the respective length of vessel matched to the most advantageous ratio.

This results in the optimum diameter/length ratio for the dimension of the induction coil and the heating element and therefore the useable space.

Advantages for the customer

IOV systems are extremely robust furnaces and they are especially useful for processes where dust incidence or temperatures of > 2,500°C are involved.



Equipment description

IOV systems comprise essentially the following basic modules:

Furnace vessel

The vessel is arranged vertically. Vessel and lid are of stainless steel and double-walled for liquid cooling.

Heating element

The heating element consists of an induction coil and the heating unit. The heating unit usually is a series graphite susceptor and a thermal insulation layer of graphite felt.

This design minimizes the heat loss and enables economic use of power. Additionally an extremely homogenous temperature distribution in the working chamber is attained.

In special cases, especially where a carbon free environment is required, susceptors of refractory metals are used.

Power supply

Power is supplied via a static medium frequency transistor converter with a frequency from 2 to 4 kHz.

Cooling system

Components subjected to heat in the system are provided with liquid cooling.

Accessories

For the various operational purposes there is a range of accessories, for example temperature measurement or for dewaxing where sintering is involved.

Versions

The double system, which is available in all sizes in the range, provides a highly economic solution.

A double system comprises two complete furnaces but only one MF system and only one pumping station.

The system is then operated in cycles in such a way that one furnace is evacuated and heated while the other is cooling down.





PVA TePla – The Company

As a vacuum specialist for high-temperature and plasma treatment processes, PVA TePla AG is one of the world's leading plant engineering companies. Its core competencies are in the fields of hard metal sintering and crystal growing as well as the use of plasma systems for surface activation and ultra-fine cleaning.

With its systems and services, PVA TePla enables and supports the innovative manufacturing processes and developments of its customers, primarily in the semiconductor, hard metal, electrical/electronic and optical industries – as well as the energy, photovoltaic and environmental technologies of tomorrow. Corresponding to its main customer markets, PVA TePla is divided into three business divisions, Industrial Systems, Semiconductor Systems and Solar Systems.

Industrial Systems – The Division

The Industrial Systems Division of PVA TePla specializes in the development, construction and marketing of thermal plants and systems for processing top-quality materials at high temperatures.

With almost 50 years experience from more than 1,000 systems supplied worldwide, testimonials from big names in the industry and a diversified range of process plants, the Industrial Systems Division of PVA TePla AG sets technological standards that have seen it grow to become a global market leader in the provision of vacuum sintering plant for hard metals in particular.

Vacuum Systems – The Products

The core competency of PVA TePla is to build resistance and inductively heated systems for vacuum and high temperature applications and heat treatment.

Especially graphite resistance heated vacuum (COV) and pressure (COD) systems for the universal application of dewaxing, vacuum sintering and the subsequent isostatic pressing of metals, carbides, alloys and ceramics are main products of the Industrial Systems Division.

Metallic heated high-vacuum heat treatment furnaces (MOV), designed for typical applications like vacuum brazing, degassing, sintering and cleaning are a further successful products.

Inductively heated melting and casting systems (VSG) for melting of metals, alloys and special materials under high-vacuum, fine-vacuum or inert gas atmosphere and heat treatment furnaces (IOV) for sintering and carburising applications round up PVA TePla's product range of vacuum systems.

Rev. - Stand: 010