



Sinter HIP Furnaces COD

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COD Sinter HIP furnaces combine dewaxing, vacuum sintering and subsequent isostatic densification under pressure (gas of hard metals (cemented carbides) or technical ceramics with treatment in fine vacuum, reactive gases and high pressure gas up to 100 bar.

Application

Dewaxing

- of green bodies manufactured with methods like form pressing, extruding or PIM-technique
- with partial pressure (Ar, N₂, H₂)
- with flowing H₂ burn off system
- with pressure control and monitoring of binder evaporation
- for all conventional binders: conventional paraffines, PEG, micro wax, methyl cellulose etc.

Sintering

- under vacuum or Hydrogen
- reactive gases (stationary/flowing)
- with pressure control
- with shift in gas direction

Treatment with pressure gas

- for isostatic compaction with inert gas at sinter temperature
- high pressure rapid cooling from sinter temperature with cooling fan

Material application

- Hard metals
- PM-special alloys
- Technical ceramics

Characteristics

COD furnace vessels are double-walled for water cooling, made of fine grain steel, in horizontal or vertical design. The heating insert is made of graphite. Due to separate controlled heating zones, gas pre-heating, most efficient design of thermal insulation and an extremely accurate measuring and control system an optimum temperature homogeneity can be achieved in the useable space. The special design of the thermal insulation results in a considerably extended life time and reduced heat losses compared to conventional designs.

A micro-processor controlled program sequence ensures a fully automatic and reproducible process and a uniform product quality. PC-operating and related data handling comply with the demand to a responsible quality assurance.

Sinter HIP furnaces type COD consist of the following subassemblies: Furnace vessel, current feedthroughs, heating insert, temperature measurement, cooling water device, vacuum system, el. power and control, dewaxing system and gas treatment. The basic equipment can be extend with considerably additions, like recooling water closed loop system and charge loading systems.

Benefits for users

- High efficiency caused by the design of low-loss thermal insulation system and functional construction of the furnace
- High product quality due to excellent temperature homogeneity in vacuum, during pressure gas rise and sintering
- Well elaborated technical safety philosophy for the reliable and full automatic furnace operation
- Best dewaxing and cooling times
- Quick availability of the furnace caused by fully pre-tested and pre-adjusted furnace in the works of manufacturer incl. hot pressure cycle and authority acceptance
- Reliability, long life time, operator-convenience and utmost high efficiency

Special features

- COD furnaces with 60 bar or 100 bar operating pressure with Argon
- Max. operating temperature 1,600 °C (2,100 °C for ceramics)
- Usable volume: 4,5 l to 825 l
- Max. usable length: 3000 mm (118")
- Design in subject to the usable length with 2 - 6 heating zones
- Many special features available like a side-to-side gas flow system
- Temperature homogeneity in the usable space is ± 7 K
- Final vacuum: 5×10^{-2} mbar
- Automatic control of the entire process including pressure gas operation
- Operating via PC including data logging and data storage

Design versions (examples):

	Furnace type: Operating pressure: Usable space (WxHxL): Usable volume: Charge load: Power rating: HP gas consumption (Ar):	COD 733 RL 60 500x550x3000 825 2,500 700 121	COD 733 RL 100 500x475x3000 712 2,500 760 207	bar mm l kg kVA kg
	Furnace type: Operating pressure: Usable space (WxHxL): Usable volume: Charge load: Power rating: HP gas consumption (Ar):	COD 733 R 60 500x550x1600 440 1,500 485 83	COD 733 R 100 500x475x1600 380 1,500 525 143	bar mm l kg kVA kg
	Furnace type: Operating pressure: Usable space (WxHxL): Usable volume: Charge load: Power rating: HP gas consumption (Ar):	COD 633 R 60 500x550x1000 275 1,000 336 67	COD 633 R 100 500x475x1000 240 1,000 415 115	bar mm l kg kVA kg
	Furnace type: Operating pressure: Usable space (WxHxL): Usable volume: Charge load: Power rating: HP gas consumption (Ar):	COD 533 R 60 300x300x900 80 300 190 31	COD 533 R 100 300x250x900 70 300 210 54	bar mm l kg kVA kg
	Furnace type: Operating pressure: Usable space (WxHxL): Usable volume: Charge load: Power rating: HP gas consumption (Ar):	COD 033 R 100 150x100x300 4,5 30 50 12	bar mm l kg kVA kg	

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 (COCl) systems for the universal application of sintering, 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 (OV) for sintering and carburizing applications round up PVA TePla's product range of vacuum systems.

Türkiye Mümessili

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