

CMF Sinter 25 CG Sinter Furnace

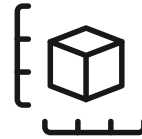
The Swiss-Army-Knife for building your Digital Factory



CARBOLITE®
IGERO 30-3000°C

COLDMETAL
FUSION

A high temperature metallic sinter furnace optimized for ColdMetalFusion. Heating elements and chamber insulation are made of molybdenum. The furnace is surrounded by a water cooled vessel; thus classifying the CMF-SI 25 system as a cold wall furnace. The cooling water is guided through the double walled vessel.



25 Liter

Build Envelope Size 240mm x 240mm x 400mm

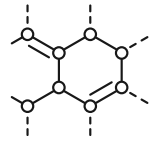


1600° Celsius

Maximum Operating Temperature



Ultra Precise Atmospheric Control



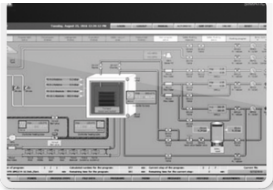
Highest possible purity of your CMF alloys

Enabled for 100% hydrogen processes

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Full Process Control



Touchpanel Control
Full process overview and easy process control



CMF - material sinter programs
Ships with pre-installed and locked sinter programs optimized by Headmade Materials for ColdMetalFusion. Possibility for updates for new materials & training to open system settings for custom parameters.



Powered by Siemens SSPS
for process monitoring incl over-temperature protection for standalone operation & data recording for quality management. Extra Safety-SPS Version S7-1500 for hydrogen management used.

Superior Industrial Furnace



100% hydrogen gas process enabled
for highest quality steels. Combined with the CMF binder system you can achieve superior part properties. Safety system certified by TÜV Süd.



Superior envelope to standard graphite
Full Molybdenum chamber insulation and retort provide superior process stability, highest possible purity of inert atmosphere. It is also much more resistant against degradation under high temperatures and will last longer.



Managing alloy chemistry & debinding thanks to special retort design
A special retort desing keeps the vaporizing binder system away from the rest of the part and walls allowing for super high quality alloys. State of the art gas flow controllers fine tuned by Carbolite Gero on installation, as well as the electronic pressure control systems allow you to manage the process precisely.

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Available Materials

For Live Production

316L Stainless

high ductility & corrosion resistance

Ti6Al4V - Grade 5

light, high strength & corrosion resistance
- requires Argon Option

17-4PH Stainless

high mech. properties & wear resistance

M2 Tool Steel

high hardness & toughness

For Application Development & Prototyping (Beta)

H13 Tool Steel

wear resistance at high temperature

Ti - Grade 1

high ductility & max. corrosion resistance
- requires Argon Option

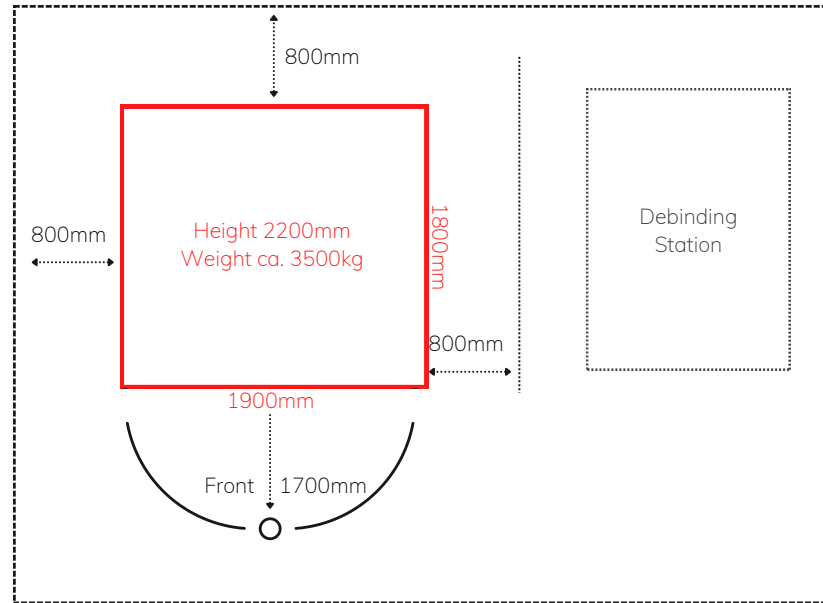
Inconel 625

heat & corrosion resistance

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Dimensions & Required Connections*



*Commissioning and mandatory training for safe use of hydrogen by Carbolite Gero after finished installation incl. connection to all gases and support systems

Supply connections for power & process gases



Power	83kW
Voltage	3x 400V Star (230V to N)
Current	3x 120A
Pre fuse	3x 125A



Nitrogen gas supply, 6mm compr. fitting with >11 Bar pressure; 100-1000 L/h flow

Argon gas supply, 6mm compr. fitting with >7 Bar pressure; 100-1000 L/h flow

Hydrogen gas supply, 6mm compr. fitting with >7 Bar pressure; 100-1000 L/h flow

Supply connections for support systems & gases



Cooled Water with 3-4 Bar pressure at 23°C and 60 L/min flow; PH 7-9; 12-14°dH hardness



Compressed air supply with >6 Bar pressure



Excess gas burner system with >100m³/h air extraction



Fuel-gas supply with >50 mBar pressure
Propane (C₃H₈) ca. 130 L/h flow

or
Methane (CH₄) ca. 390 L/h flow



Room air extraction with >200 m³/h

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Technical Specifications

Tmax atmosphere pressure (°C)	1600
-Delta-T between 500 and 1500°C (K) according to DIN 17052	+/- 5
Max. heat-up rate (K/min)	10
Cooling time (h)	6
Leakage rate - clean, cold and empty (mbar l/s)	5x10 ⁻³
Vacuum range	process at atmospheric pressure, rough or fine vacuum
Insulation material	Molybdenum
Volume (litres)	25
Dimensions: External H x W x D (mm)	2200 x 1900 x 1800
H x W x D for retort (mm)	250 x 250 x 410
Weight (kg)	ca. 3500
Power supply Configuration	3 phases with a voltage of 400V in between and a neutral cable with 230V in between the phases and N
Controller Unit	Siemens SSPSS S7-1500

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