



Hot Gas Generators





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Hot Gas Generator

UNITHERM CEMCON Hot Gas Generators (HGG) are designed to be used for drying applications for:

- **Coal grinding plants**
- **Cement mills**
- **Raw mills**
- **Mineral drying plants**

Hot Gas generators in different designs are available. On the one hand HGG's for low outlet temperatures, fabricated of heat resistant steel, with the advantage to save refractory costs.

When high outlet temperatures are demanded we also provides HGG's designed with combustion chamber, totally lined with refractory.

All HGG's can either be installed horizontally (most common) or vertically. Coal fired HGG's are exclusively horizontally executed.

Fuels in use are:

Heavy fuel oil, Light fuel oil, Diesel, Waste oil,
LPG, Natural gas,
Landfill gas, Corex gas, Several Low Caloric Gases,
Pulverized Coal, Petcoke, Solid alternative fuels





Hot Gas Generator Type **HR**

Hot gas generators of "type HR" consists of a burner muffle and a chamber of several air layers, mainly fabricated of heat resistant steel. The burner muffle, used only for flame forming and stabilizing, is lined with compacted refractory or with bricks.

Gaseous or liquid fuels are used as combustible. Commonly horizontal HGG designs are installed, but vertical designs are also possible.

The flame is generated by a standard monoblock burner when standard fuels are in use, or by a tailor made Unitherm burner for special gases.

The prevailing temperature in the burner muffle is about 1000°C. The dilution air is introduced by the encasing housing of the HGG. Right at the end of the burner muffle the cold dilution air is mixed with the hot combustion gases. This mixing is performed two (or three) times. The dilution air flow depends on the desired outlet temperature (direct mixing) of the HGG.

DESIGN FEATURES:

- High efficiency
- Quick start and stop
- Low cost design (less refractory)
- Low weight
- Preheated process air can be used as dilution air

TECHNICAL DATA:

Dilution air:

Process air:

HGG outlet temperature:

Performance:

Hot air back pressure:

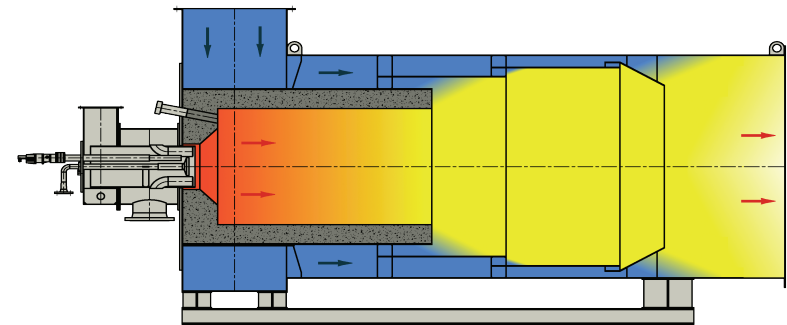
Fresh air -15/+45°C

Up to +100°C

Up to +400°C

0,5-20 MW

-10mbar / +15mbar





Hot Gas Generator Type HG-Standard

Hot gas generators of "type HG-standard" are basically designed as combustion chambers with an encasing cooling air channel. This construction is mainly fabricated of carbon steel. The combustion chamber is generally lined with compacted refractory and partly with bricks.

Gaseous or liquid fuels are used as combustible. Commonly horizontal HGG designs are installed, but vertical designs are also possible.

The flame is generated by a standard monoblock burner when standard fuels are in use, or by a tailor made Unitherm burner for special gases.

To limit the furnace temperature to about 1000°C a part of the dilution air is added to the combustion air to provide a high air excess. This air is introduced by a separate chamber on the HGG, which is equipped with several nozzles located around the circumference of the combustion chamber for air intake.

The other part of the dilution air is primarily used for cooling of the combustion chamber surface and thereafter mixed with the combustion gases at the exit socket of the HGG in dependence of the desired outlet temperature (direct mixing).

DESIGN FEATURES:

- High efficiency
- Large heat storage capacity
- High outlet temperature possible
- Preheated process air can be used as dilution air

TECHNICAL DATA:

Dilution air:

Process air:

HGG outlet temperature:

Performance:

Hot air back pressure:

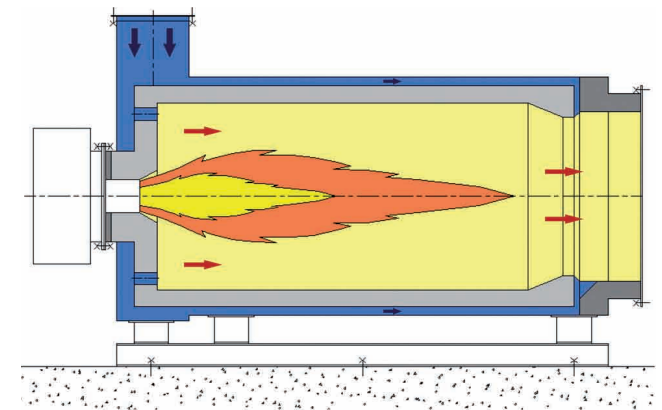
Fresh air -15/+45°C

Up to +300°C

Up to 1000°C

0,5-40 MW

-10mbar / +15mbar





Hot Gas Generator Type HG

Hot gas generators of "type HG" are designed as combustion chambers, mainly fabricated of carbon steel. The combustion chamber is generally lined with bricks in different layers and partly with compacted refractory.

When fired with solid fuels like coal, the HGG is strictly executed in vertical design to enable ash removal. When fired with gaseous or liquid fuels only, a horizontal design is commonly used.

The flame is generated by a standard monoblock burner when standard fuels are in use, or by a tailor made Unitherm burner for coal or special gases.

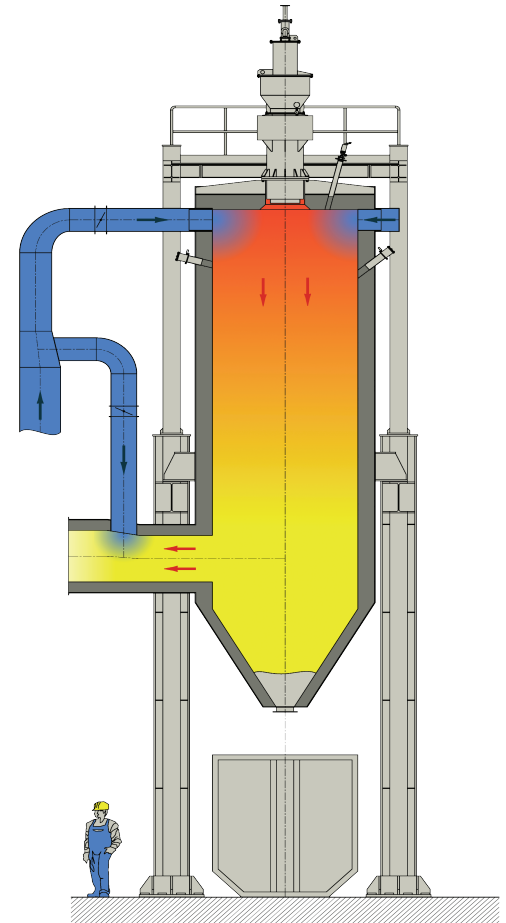
To limit the furnace temperature to about 1000°C a part of the dilution air is added to the combustion air to provide a high air excess. This air is introduced by a ring chamber (on top of the HGG) which is equipped with several nozzles located around the circumference of the combustion chamber for air intake. The other part of the dilution air is mixed with the combustion gases at the exit socket of the HGG in dependence of the desired outlet temperature (direct mixing).

DESIGN FEATURES:

- High efficiency
- Large heat storage capacity
- High control range
- Use of solid fuels
- High outlet temperature possible
- Preheated process air can be used as dilution air

TECHNICAL DATA:

Dilution air:	Fresh air -15/+45°C
Process air:	Up to +300°C
HGG outlet temperature:	Up to 1000°C
Performance:	4-80 MW
Hot air back pressure:	-10mbar / +15mbar





Burners for Hot Gas Generators

UNITHERM burners for special fuels

UNIGAS burner particularly designed for low calorific gases (picture below).

UNIGRESS burners are operated with non-standard fuel oils.

UNIGO burners are for dual fuel-firing



UNITHERM burners for coal

UNIKO burners are in use to fire pulverized coal and petcoke, in combination with natural gas or fuel oil for heating up.

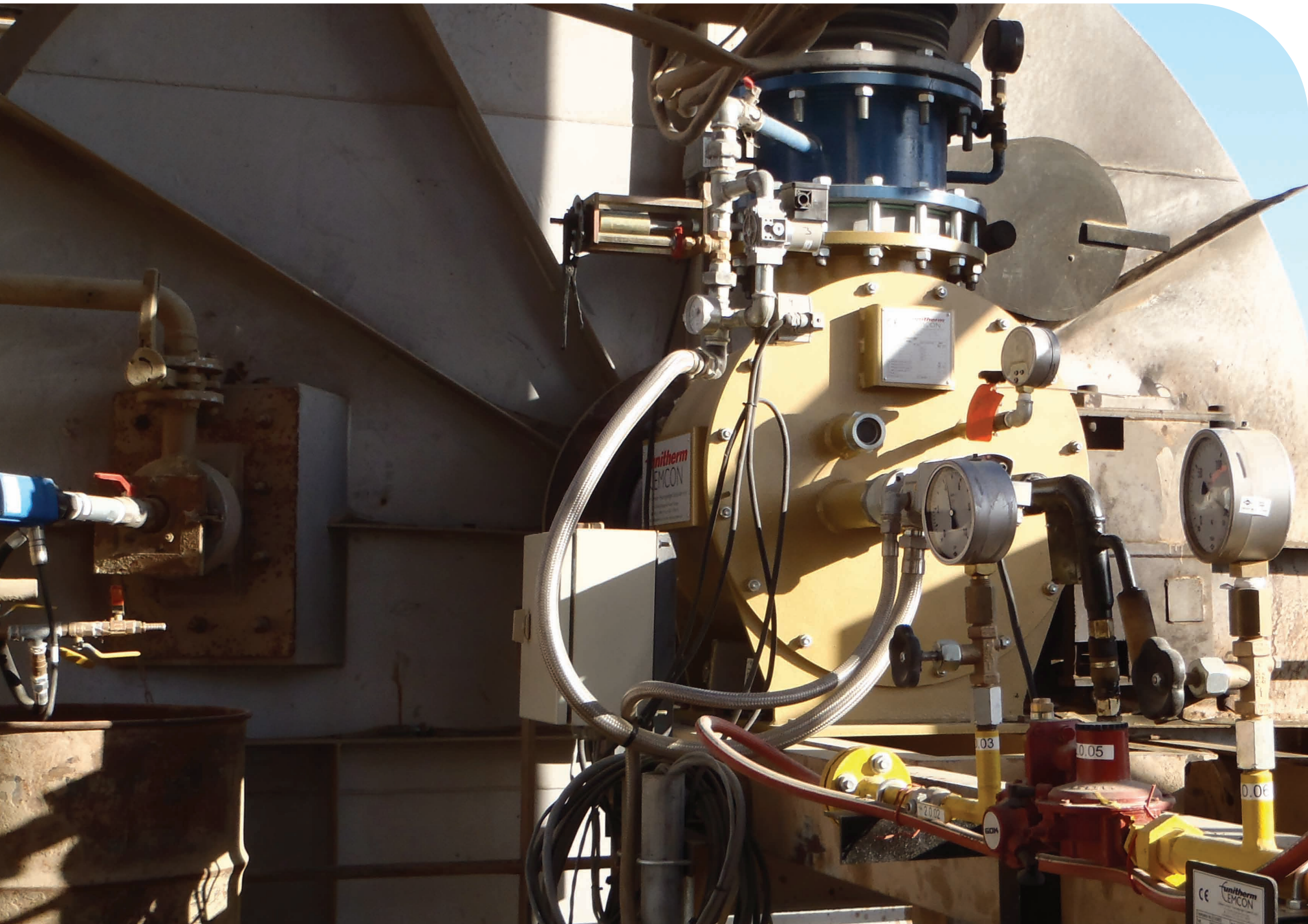


UNITHERM valve trains and control systems

For liquid and gaseous fuels UNITHERM provides operation valve trains and fuel supply units.

The control system is of the brand SIEMENS, Allen Brandy, Schneider or Lamtec.





Auxiliary Burners

Auxiliary burners are used to heat up tertiary air to start up the calciner unit of a rotary kiln line. With these burners it must be possible to heat up air from the cooler with almost ambient temperature up to about 800°C.

Later, only a support heat input is necessary to compensate possible heat fluctuations. The flame must be very compact to deal with limited space and the strong suck of the tertiary air pipe.

Typical performance: 5 – 25 Gcal/h (-29 MW)

Auxiliary burners are available for below listed designs and fuels:

UNIGAS Natural gas

UNIGRESS Diesel
Heavy Fuel Oil
Crude Oil
Waste Oils

UNIGO Combined Gas and Oil operation





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