



Hoval

Hoval PowerBloc EGC

Power plants for heat and electricity.

Efficient | Variable | Reliable



Hoval | Responsibility for Energy and Environment

Electricity, essential for our life

Generate it yourself!

Electricity has become an integral part of our daily lives. Nowadays, electricity also powers bicycles and cars more and more often. Electricity is produced centrally in power plants, very often still with nuclear energy or from fossil fuels. Transmission losses occur on the way to the consumer. A changeover is underway, but it takes time. In Europe, renewable energies such as solar, wind, water and biomass are being increasingly promoted in order to significantly reduce greenhouse gas emissions.

Be part of this change and save money in the process. Do you heat your building? Use energy highly efficiently and generate your electricity at the same time instead of buying it at a high price. As decentralised units, a combined heat and power plant produces heat and electricity at the same time in your home. Away from large power stations with their high losses.

With a Hoval combined heat and power plant, you become your own energy supplier.





Hoval PowerBloc EGC

Heat and power with extra.

Combined heat and power (CHP) plants take advantage of cogeneration technology. From fossil fuels or biogenic gases, they simultaneously produce electrical and thermal energy directly where it is needed. In this way, a CHP plant utilises the energy involved particularly efficiently, and thus makes a valuable contribution to climate protection.

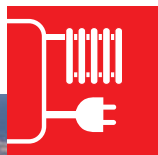
Added value for your benefit:

- Saves primary energy
- Utilisation of condensing technology integrated
- Reduces emissions
- Long service life
- Complete, ready-to-connect solution

Compact combined heat and power plant uses natural gas to generate heat and power, with condensing technology, output adaptation 60 - 100%.

Range of applications: blocks of flats, housing estates, hotels, restaurants, schools, swimming pools, health centres, commerce, industry – for new buildings and renovations.





Efficient

Combined heat and power (CHP) plants take advantage of cogeneration to generate both electricity and heat. The electricity produced is used in the plant's own building or fed into the public utility grid. This waste heat is used for heating water, for instance, or as process heat for industrial operations. This means that a CHP plant is significantly more efficient than systems without heat extraction.

By making better use of resources, the Hoval PowerBloc achieves a very high degree of primary energy utilisation, up to 95%, depending on the size of the plant, thus saving energy. Using resources wisely also means significantly reducing pollutants and carbon dioxide emissions.

A natural gas-operated PowerBloc produces almost 60% less CO₂ than would be the case with separate power and heat generation using hard coal and EL heating oil. Conventional power plants which generate electricity, such as large-scale gas-fired power stations, only achieve a primary energy efficiency of 30 to 50% compared to this. With them, a large part of the energy is lost as waste heat.

Variable

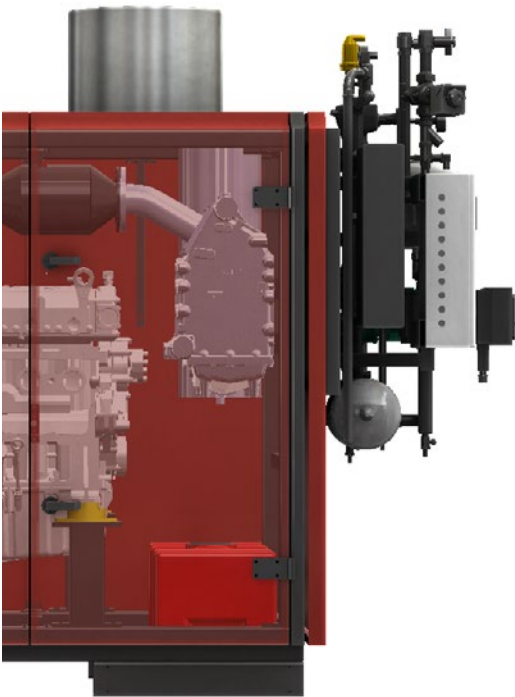
Depending on the requirements with regard to NO_x and CO emissions, three different variants of 3-way catalytic converters are already available for selection when ordering the PowerBloc EGC. The selected catalytic converter is already installed and fully insulated in the CHP plant supplied.

For the reduction of sound emissions, Hoval offers further suitable silencers as accessories in addition to the built-in exhaust gas silencer.

Reliable

The PowerBloc is crammed full of proven technology. The central component is a robust, durable industrial gas-powered engine from MAN, but all the other parts are also designed to provide a long service life and stable operation.

Depending on the demand profile and with a good design, the owner of the system produces most of its electricity itself and thus achieves independence from the electricity grid.



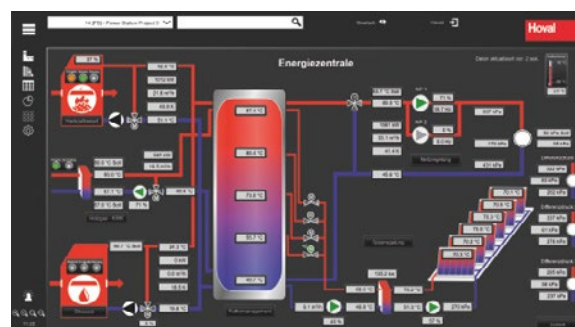
Condensing technology for extra efficiency

With return temperatures below approx. 50 °C, it is often sensible both in terms of cost effectiveness and energy use also to use the residual heat contained in the exhaust gas. For this purpose, a condensing heat exchanger is integrated in the return of the CHP plant which cools the exhaust gas below the dew point and transfers the resulting heat of condensation to the heating water.

Exclusively from Hoval

HovalSupervisor

Hoval offers software for visualising, monitoring and recording data and for optimising energy production systems and district heating networks in real time: HovalSupervisor. Ask your Hoval consultant!



Unit control system

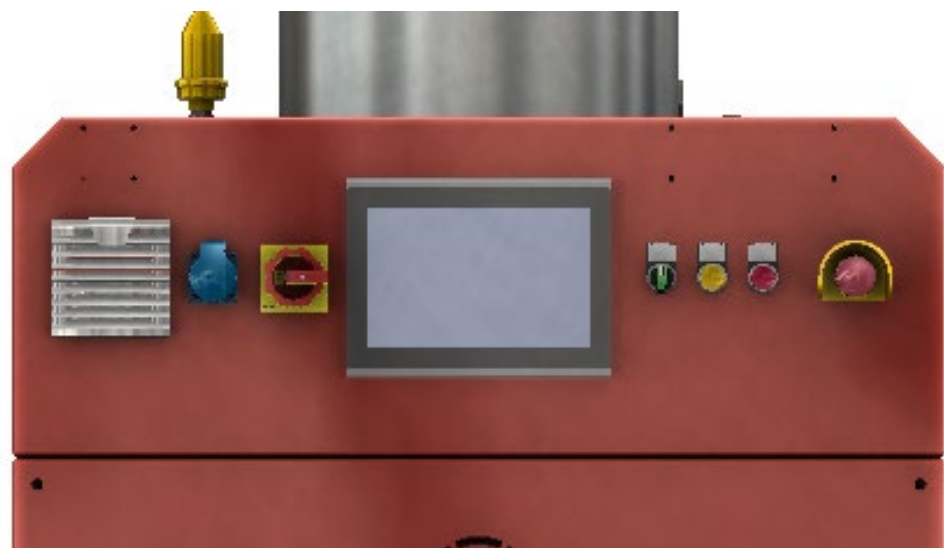
The module control system is designed to allow fully automatic operation without supervision. It performs all control, regulation and monitoring functions.

Its basic functions are:

- Engine control
- Engine monitoring
- Mains and generator monitoring
- Control of the exhaust purification system
- Fault message / remote data transmission
- Emergency shutdown

The control panel is located horizontally above the generator and opens via hinged doors. The cable introduction is from above.

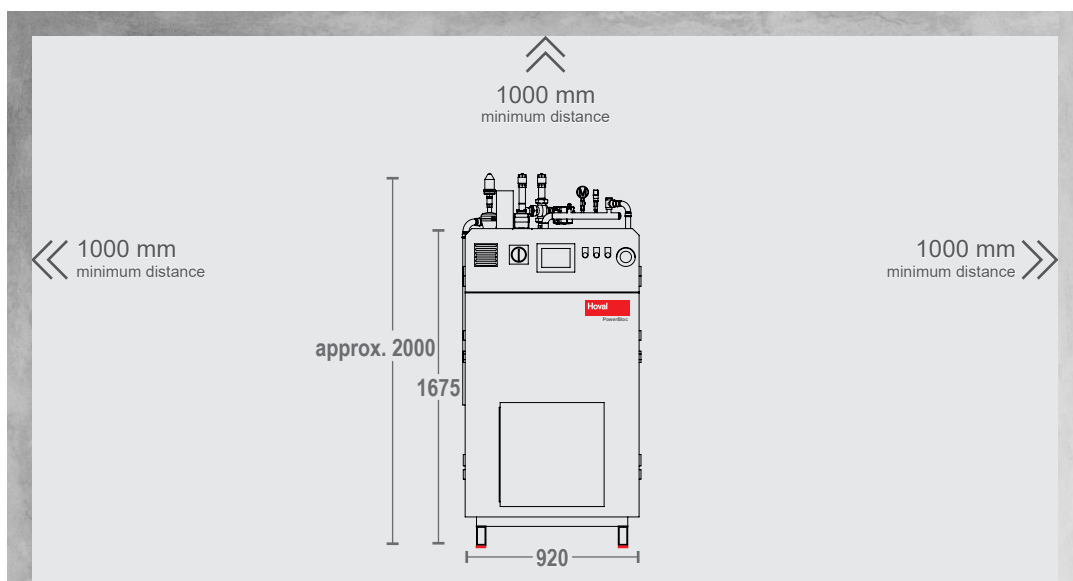
The CHP plant unit control system with generator coupling field (power section) consists of a complete modular system of acquisition and control modules, as well as a computer module for the control and regulation of the CHP system. The central processor assembly is a user-programmable PLC. The CHP plant control system realises full potential separation between the grid-generator unit and the PLC processing level. There are special signal processing assemblies for grid and generator signals upstream of the control processor for this purpose. Here, faults are filtered out, phase condition and amplitude of current and voltage signals from the grid and generator evaluated and prepared for further processing in the processor assembly.



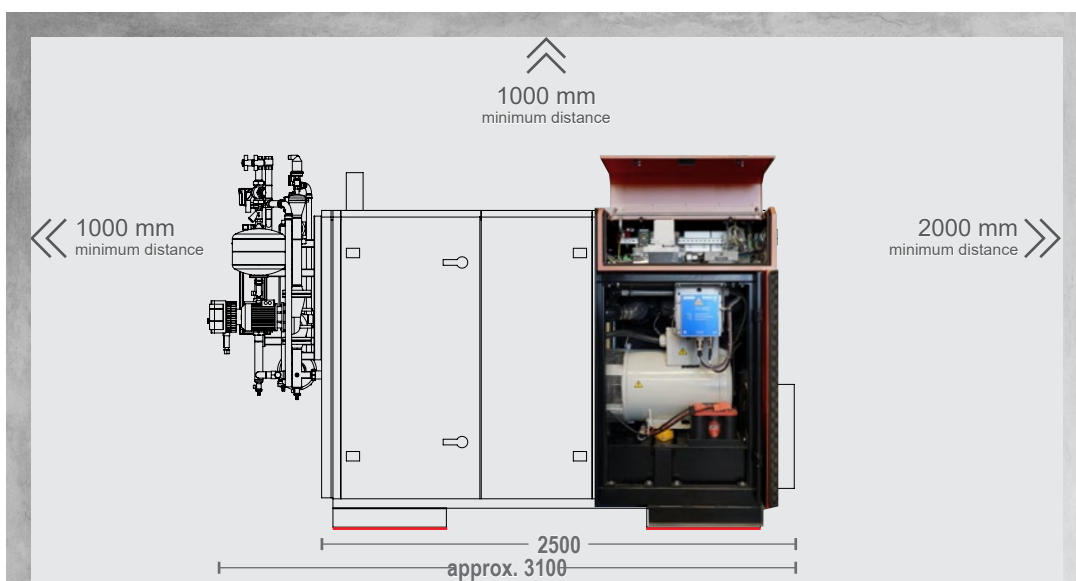
Hoval PowerBloc EGC

Technical data.

Front view



View from the left



Load		100 %	80 %	60 %
Electrical output	kW	50	40	30
Thermal output at 35 °C RT	kW	91	75	64
Fuel input	kW	146	121	97
Electrical efficiency Hi	%	34.3	33.0	30.9
Thermal efficiency Hi at 35 °C RT	%	62.3	62.0	66.0
Total efficiency Hi at 35 °C RT	%	96.6	95.0	96.9
Current coefficient		0.55	0.53	0.47

Exhaust gas emissions (at 5% O₂) mg/Nm³ CO < 300 / NO_x < 250 / HCHO < 5



Set-up and foundation

In the standard case, the Sylomer strips supplied provide vibration and structure-borne sound decoupling from the installation site. For increased requirements for structure-borne sound decoupling, vibration dampers can be used, which are to be secured against slipping under the supporting frame. In sound-sensitive locations, the CHP plant must be installed on a foundation that is decoupled from the building.

Fuel requirement instead of heat demand

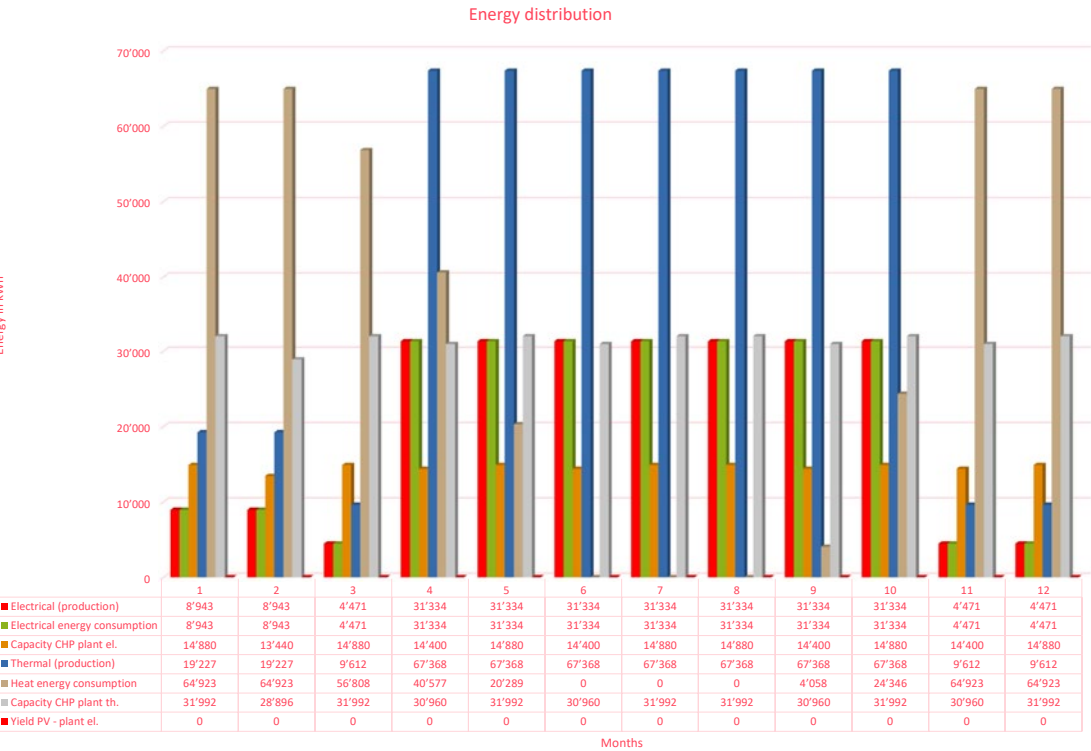
If the maximum heat demand is not available, the maximum fuel demand can be used. However, this must be multiplied by the degree of utilisation of the heat provided, in order to arrive at the maximum heat demand.

Operating time and structure

Apart from the size of a planned CHP plant, its operating time and thus the amount of heat and electricity supplied is also of interest. Only then can an economic efficiency forecast be

made. Once the operating time of the CHP plant has been determined, the structure of the electric power consumption has to be compared with the electricity production of the CHP plant. Only then can the energy balance for heat and electricity be established.

For the profitability analysis, the annual shares of substituted and fed-in CHP electricity and the remaining electricity consumption must be determined. It is therefore important to know how much electricity is purchased at what times.



Conclusion

A CHP is plant is "a heating system that earns its money". It generates heat while at the same time supplying electricity that can be used by the producer itself or fed into the public grid, so it makes doubly effective use of the fuel used.

However, whether a CHP plant pays off in the long term is strongly determined by whether the selected CHP plant fits as closely as

possible to the energy needs of a building and its use. How quickly a CHP plant pays for itself largely depends on how well it is dimensioned to meet demand. On the one hand, a CHP plant should of course cover a significant part of the energy demand, but on the other hand it should not be oversized so as not to require unnecessarily high acquisition costs and to avoid unproductive downtimes.



Hoval SystemCalculator

The decision on a major investment is usually based on reliable data. Which energy source should be used? What are the requirements in everyday operation?

Enter your consumption data in the Hoval SystemCalculator software and put together your desired plant. The result you receive is an economic statement about the plant and an ecological assessment.

The cost effectiveness of various system combinations can be compared by means of variant

management. Both the system price and an economic assessment over the system's service life are taken into account. Direct energy and cost comparisons of different energy systems.

Added value for your benefit:

- Cost effectiveness reliably calculated
- Profit and loss calculation
- Unique variant management
- Ecological evaluation

Hoval quality.
You can count on us.

Hoval

As a specialist in heating and climate technology, Hoval is your experienced partner for system solutions. For example, you can heat water with the sun's energy and your rooms with oil, gas, wood or a heat pump. Hoval ties together the various technologies and also integrates room ventilation into the system. So you can save energy while looking after the environment and your costs – and still enjoy the same level of comfort.

Hoval is one of the leading international companies for indoor climate solutions. More than 75 years of experience continuously motivate us to design innovative system solutions. We manufacture complete systems for heating, cooling and ventilation to more than 50 countries.

We take our responsibility for the environment seriously. Energy efficiency is at the heart of the heating and ventilation systems we design and develop.

Responsibility for energy and environment

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Your Hoval partner