



KORNFEL

Apex Bakery Equipment



WWW.APEX-EQUIP.COM 954-805-4874

EKO Blok

**MAKING USE OF THE WASTE HEAT
FROM BAKERY OVENS**

**ENERGY-SAVING TECHNOLOGY
FOR UP-TO-DATE BAKERIES**

The EKO Blok as a component of the power system of a bakery

The **EKO Blok** equipment is an ideal solution for complete utilization of the energy of waste gases and exhaust steam generated in gas-heated or oil-heated bakery ovens. In addition, the equipment eliminates harmful substances contained in the waste gases that are discharged from the individual ovens, thus contributing to environmental protection.

In particular, the chemical process and the waste-gas sprinklers used eliminate all substances based on sulphur monoxides and dioxides including those contained in the soot so as to protect the atmosphere against the formation of acid rain. The outlet temperature of air exiting the EKO Blok is reduced so as to be kept at the level of 50–60 °C. The use of the EKO Blok leads to the utilization of 97 % of inlet power without omitting any safety measure or standard applying to the operation of oil-heated and gas-heated ovens. The depression on the waste-gas outlet side is monitored and controlled by an operation control computer so that the burners of the individual ovens can work in ideal combustion conditions. The operating parameters of the EKO Blok are subject to the current operating modes of the individual ovens and boilers, especially with respect to the individual burner outputs and steam exhaust capacities. A bakery equipped with the EKO Blok does not require any chimneys and steam outlets for its operation since the design and the technical arrangement of the EKO Blok takes on the function of a complete boiler room.

The power gained from the waste gases and from the condensation heat of steam is transferred into hot water to be stored in separate reservoirs for further use.

The use of the EKO Blok

■ deck ovens ■ rotary ovens ■ continuous belt ovens ■ steam generators ■ heating boilers ■

The EKO Blok enables the regaining of 30 to 36 % of inlet power for further efficient use.

Attachments to the EKO Blok: ■ auxiliary heating boilers
■ cooling ABSORBER

Utilization of regained energy

Heating applications

- heating of process and service water
- heating of the bakery and office rooms
- operation of an air-conditioned proofer
- operation of a tray washer
- heating of a pool

Cooling applications

- operation of refrigerating boxes
- cooling of the despatch room of the bakery
- air conditioning in the working areas

The EKO Blok equipment should become the base for the power-control systems of modern bakeries to ensure maximum economy of their operation without any loss of power. The equipment has been developed with respect to the special requirements of bakeries. Nevertheless, it can also be used in other industrial fields where pressure burners working with natural gas or fuel oil are used.

For each bakery to be equipped with such a system, a preliminary power balance calculation must be carried out. It is necessary to determine the consumption of warm water for processing purposes as well as sanitary installations and to estimate the thermal loss in the buildings to be heated as well as the required cooling capacity. Subsequently, the most suitable size of the EKO Blok and the optimum capacities of the service and heating water storage reservoirs to be used can be designed according to the results of the balance calculation.

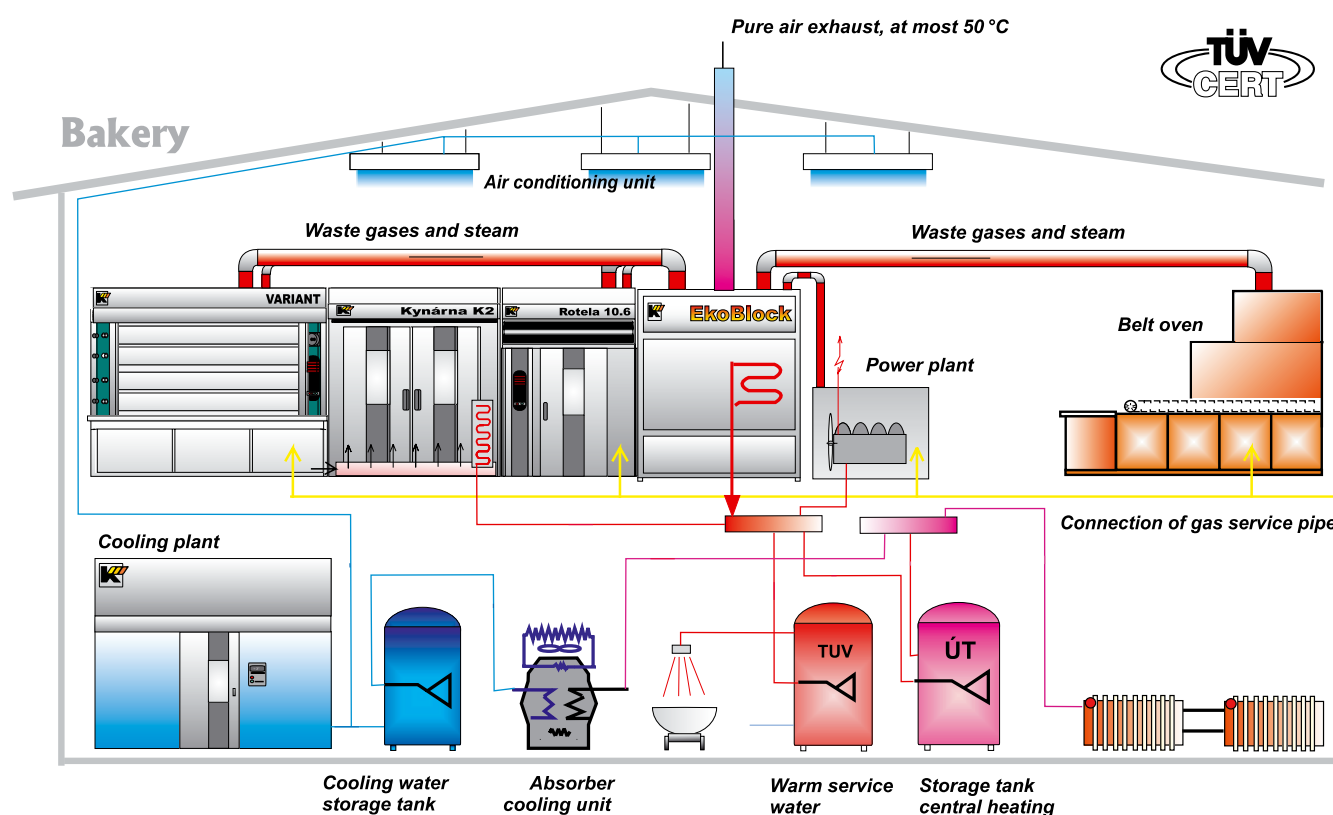
A reasonable attachment to the EKO Blok is a local power plant, which can generate electric power covering the needs of the bakery. The generators can be driven by reciprocating gas engines or by diesel engines installed in the powerhouse. The waste energy regained from the exhaust gas and from the cooling water of the engine is also led back to the EKO Blok to be utilized within the heating system of the bakery. Again, this concerns an efficient power generation process, the production costs being significantly lower than the prices charged by the distribution companies. Furthermore, the operation of the bakery is no longer open to outages of the public mains.

When an **OVEN - the EKO BLOK - and a GENERATOR** are interconnected, a **co-generation process** is involved
– common production of bakery products, heat and electric power.

When an **OVEN - the EKO BLOK - a GENERATOR - and an ABSORBER** are interconnected, a **tri-generation process** is involved – common production of bakery products, heat, coolness and electric power.

EKO Blok – Making use of the waste energy in up-to-date bakeries

Ideal co-generation and tri-generation

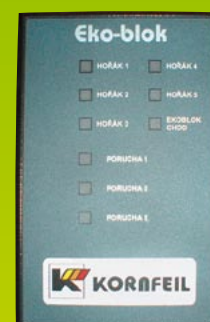


Maximum level of utilization of inlet power – up to 97 %
Efficient and economical operation
A bakery without chimneys
Environmentally friendly production

CONTROL PANELS



Programmable control panels

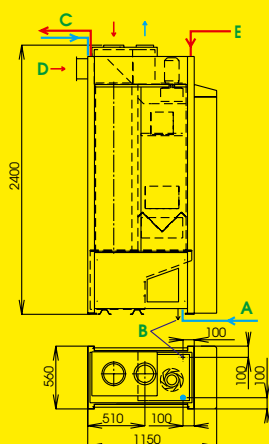


Standard control panel

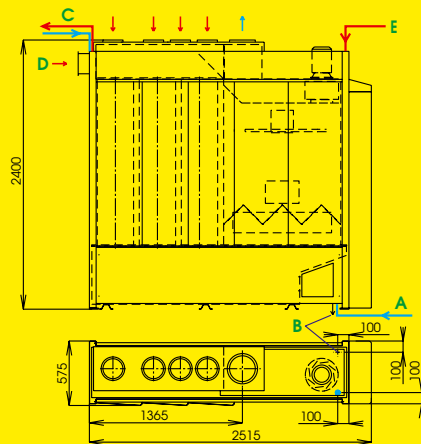
A programmable control system for the control and management of more complicated operations in bakeries with regard to priorities in supplying heat. Also, it provides the operator with an easier orientation in the energy system of a bakery. This allows us to offer customers the optimum solution for utilization of waste heat including implementation.

TECHNICAL DATA	EKO Blok I	EKO Blok II	EKO Blok III	EKO Blok IV	EKO Blok V	EKO Blok VI
Max. power of burner	120 kW	200 kW	300 kW	400 kW	500 kW	750 kW
Min. capacity of storage tank water	1500 l	3000 l	4000 l	5000 l	6000 l	8000 l
Temperature of output air	50–60 °C	50–60 °C	50–60 °C	50–60 °C	50–60 °C	50–60 °C
Allowed temperature of water	95 °C	95 °C	95 °C	95 °C	95 °C	95 °C
Overpressure of operation	3 Bar	3 Bar	3 Bar	3 Bar	3 Bar	3 Bar
Diameter of input pipe	180 mm	180 mm	180 mm	180 mm	100, 250, 350 mm	100, 250, 350 mm
Diameter of output pipe	155 mm	205 mm	230 mm	255 mm	350 mm	400 mm
Connection of water	A G 1/2" < 3 Bar	G 1/2" < 3 Bar	G 1/2" < 3 Bar	G 1/2" < 3 Bar	G 1/2" < 3 Bar	G 1/2" < 3 Bar
Waste water	B > DN 50	> DN 50	> DN 50	> DN 50	> DN 50	> DN 50
Connection of heating	C G 1"	G 1"	G 1 1/2"	G 1 1/2"	G 1 1/2"	G 2"
Connection of auxiliary furnace	D Ø 190 mm	Ø 190 mm	Ø 190 mm	Ø 190 mm	Ø 190 mm	Ø 190 mm
Electric supply mains	E 0,95 kW	0,95 kW	2,00 kW	2,00 kW	3,50 kW	3,50 kW
Safeguarding 3 x 400 V/50 Hz	C16A	C16A	C20A	C20A	C20A	C20A
Capacity of water	135 l	270 l	420 l	540 l	540 l	830 l
Weight without filling	380 kg	615 kg	865 kg	1027 kg	1050 kg	1600 kg

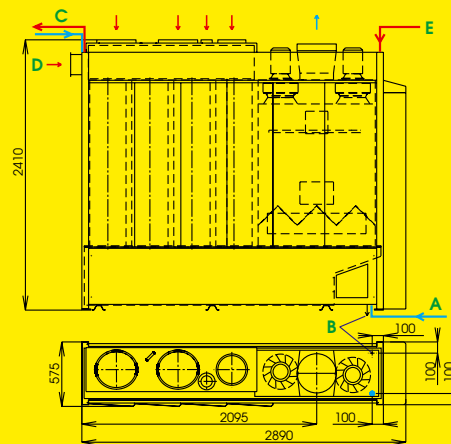
EKO Blok I



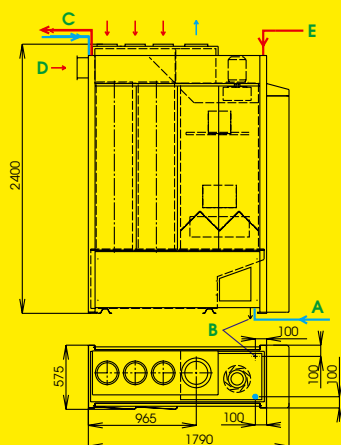
EKO Blok III



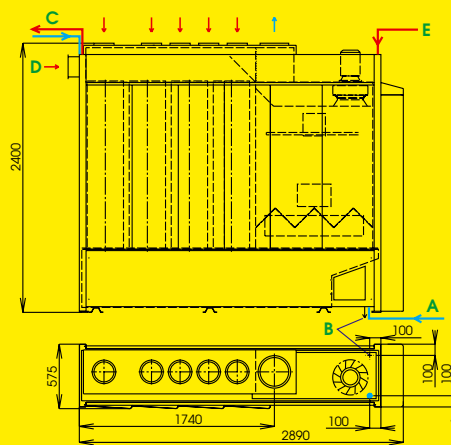
EKO Blok V



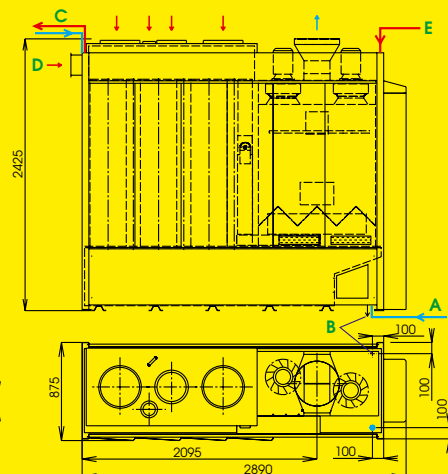
EKO Blok II



EKO Blok IV



EKO Blok VI



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