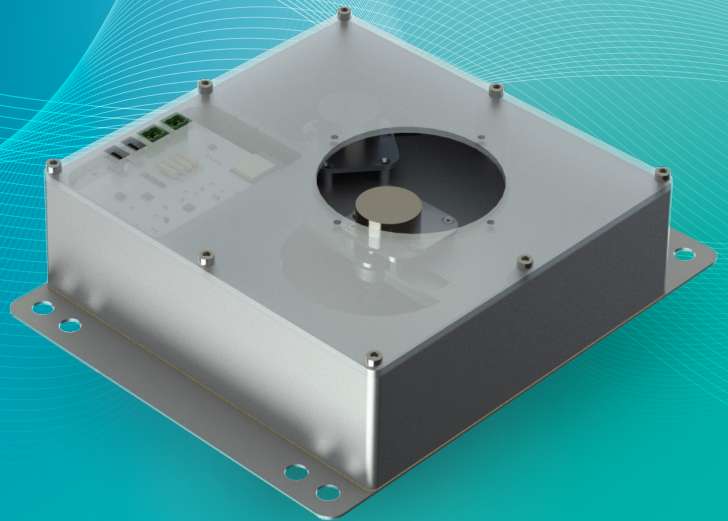


## Combustion control

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# UniController



The Uni Controller, an innovative combustion control system based on the patented innovative energy balance method, is designed to regulate the combustion process in various types of manually-fed wood-burning stoves appliances (including free-standing room stoves, fireplace inserts, wood-fired ovens, storage heaters and masonry heaters) with a thermal output of up to 35 kW and has been successfully tested over a representative operating period.

With a unique air distribution system made of aluminum, three air flows (grate or primary air, glass flushing or secondary air and tertiary air) are regulated by motorized air flaps to ensure a low-emission, efficient, and safe combustion process. The dimensions of the air distribution system (system housing) vary depending on the design of the wood-burning stove concerned. Thanks to the choice of material (aluminum), the total weight is less than four kilograms.

Purpose-built and carefully tested motors with specially designed adapters are used as actuators. Featuring low power consumption (significantly less than 10 watts), high torque and low noise emissions, the motors allow the air flaps to be moved and adjusted freely in a precise manner.

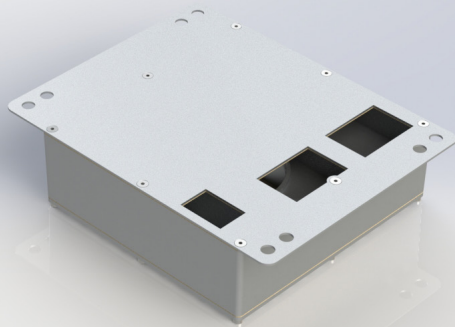
The start of the combustion process is automatically registered by the software. This dispenses with the need for a door contact switch or manual intervention by the user, even in the event of a power failure. Immediately after the start is detected, the Uni Controller regulates the combustion air to achieve a specific set temperature and sufficient oxygen content in the combustion chamber, thus maximizing combustion efficiency. Only one temperature sensor (Type K, max. measuring temp. 1,250°C) is required to control the combustion process.

The oxygen requirement is determined using intelligent and patented algorithms, and the necessary air volume flow is adjusted via the secondary or tertiary air flap. An expensive and technically complex lambda sensor is not required.

The state of combustion or operation (ignition/start-up, rated load operation, refueling, overload, burnout) is indicated by an RGB LED. This lights up in freely variable colors, depending on the combustion state as defined by the manufacturer (e.g. white: standby operation, green: control operation, green flashing: refueling time).

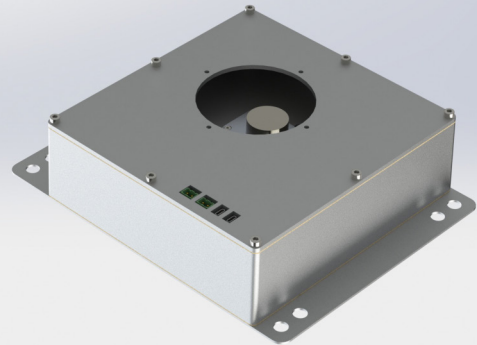
The Uni Controller has WLAN and display interfaces for visualizing operating data. The combustion control is designed so that the air flaps are set to ensure safe combustion and prevent the accumulation of combustible gases in the wood-fired heating appliance in the event of a power failure.

The electrical and electronic components, as well as the air distribution system of the Uni Controller, have been carefully selected and designed so as to meet with ease the respective requirements of DIN/TS 18843 for the approval of heating appliances with combustion air systems. The requirements of the Machinery Directive 2006/42/EC, the Low Voltage Directive 2014/35/EU, the Electromagnetic Compatibility Directive 2014/30/EU, and the Radio Equipment Directive were also taken into account in the product design.



System casing with openings for primary air, secondary air, and tertiary air.

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Electronic and sensor connections with the opening for the supply air.

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## Features

- **Universally applicable** software and hardware.
- **Automatic detection** and adjustment of optimal temperature and oxygen setpoints for efficient combustion.
- **Universally applicable** air distribution system, enabling individual regulation of three air volume flows (grate air, glass flushing air and tertiary air).
- **Only one temperature sensor** (Type K, max. measuring temp. 1,250°C) needed to control combustion process.
- **Suitable for all types** of wood-burning heating appliances, no software modifications or adjustments to specific software parameters required.
- **Demand-based heat generation** and ensures efficient and low-emission combustion when using different wood types.
- **Significant reduction** in fuel consumption through improved combustion efficiency.
- **Prevents overheating** of the wood-burning stove, especially in the event of overfilling the combustion chamber, thus minimizing wear and aging of the appliance and its integrated systems.
- **Glass door** of stove stays clean throughout operation, providing glass flushing air system is appropriately designed and suitable and approved wood types are used.
- **Eliminates need for a door contact switch** to operate the stove or to detect start of operation or refueling with logs.
- **Allows safe operation** of the wood-burning heating appliance in the event of a power failure.
- **Ensures safe start of combustion process** both during cold start and refueling, even when embers are burning low and regardless of the type or quality of wood.
- **No manual intervention necessary** to adjust process parameters or air distribution system.
- Ensures **good burnout without cooling** the combustion chamber when turned off.

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