DESCRIPTION

CONTENTS

2. OVEN DESCRIPTION

2.1. GENERAL

The heating system in the Aermoflex oven is based on an indirect warming system. By means of a specially designed heat exchanger, consisting of a fire channel and linked parallel channels, heat introduced by the burner is transferred to the process air.

The oven can be used for a number of processes such as baking, heating, drying etc.
The oven has a special air heating system and the interaction between the heating, adjustability, adaptability and belt speed etc. results in the desired processing of the product.

2.2. COMPONENTS

The oven is basically constructed of a number of modules and components (see figure 2.1):

Standard module	200	Belt support rollers	060
Basic module	303	Entrance module	027
Heating module, incl. Steam	400	Exit module	028
Heating module	401	Inspection port	008
Head module (entrance)	503	Wire mesh belt	001
Head module (exit)	603	Brush unit	033

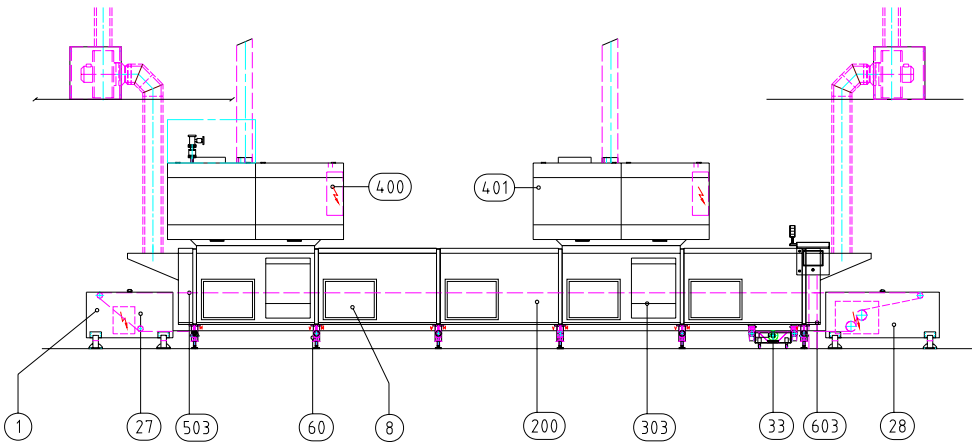

Figure 2.1 Modules and components

Heating module (400)

This consists of a burner with a heat exchanger in combination with two parallel fans. The burner output is 300 kW.
A valvesection ensures distribution of the amount of heat above and below. The regulation of moisture economy of the process air is controlled by electrically coupled valves in the delivery and discharge channels.
The heating module is in principle on top of the basic module, but can also be separated, e.g. placed on a level or in a technical area.

A steam supply with accompanying control equipment is built-in.

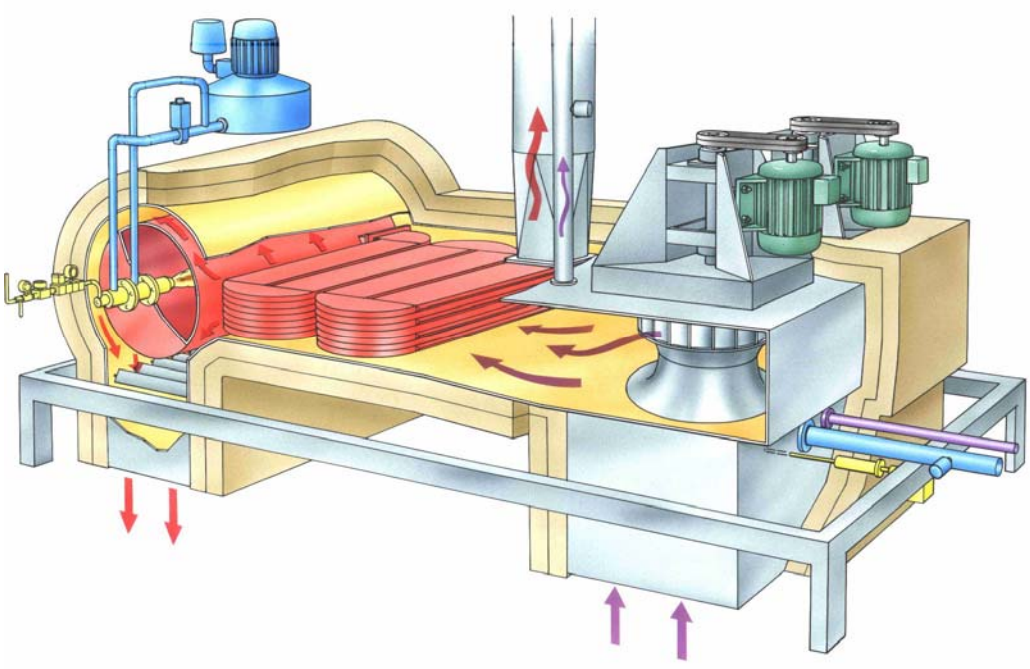

Figure 2.2 Heating module

Basic module (300)

The basic module is under the heating module. It ensures correct distribution of the heated air to front and rear, top and bottom of the specially constructed plenums. Control is by means of valves and air-conditioning.
The plenums are flat channels which are provided with special openings (nozzles) on the product side.
The plenums of the coupled modules link together to produce a leak-free through-flow.
Passage of (used) return air is controlled by means of slides along the top plenum.
It is provided with a special inspection port.

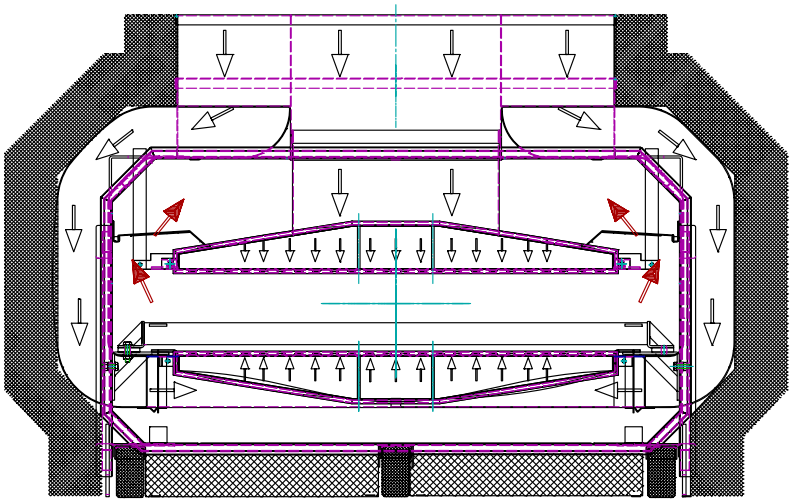

Figure 2.3 Basic module

Standard module (200)

The standard module contains a lower plenum and (adjustable) upper plenum.
The plenums of the coupled modules link together to produce a leak-free through-flow.
Passage of (used) return air is allowed by means of slides along the upper plenum.
If this module forms the end of a section, the through-flow of return air to any following section is shut off.
The modules inter-connect with a spring seal.

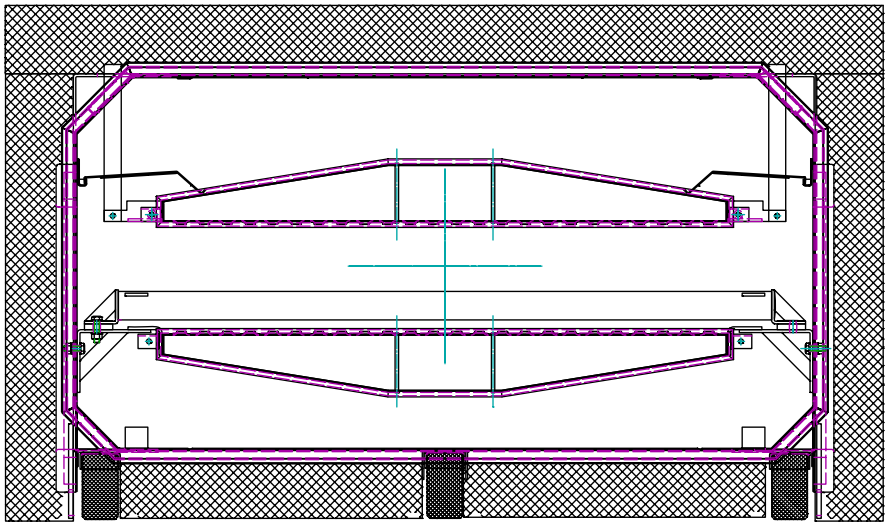

Figure 2.5 Standard module

Figure 2.6 Plenum with connection strip (for possible future use)

Entrance module (027)

The module is at the beginning of the oven. The belt is led into the oven.
A belt circulation signal and (adjustment) control is fitted.

Exit module (028)

The module is at the end of the oven.
The drive with reducer and the emergency motor are contained in this module. The belt runs through a tensioning mechanism.
A belt circulation signal is fitted.

Head entrance module (503)

This module forms the start of the oven part.
It contains a height-adjustable door to more or less close the oven.

Head exit module (603)

This module forms the closure of the oven part.
It contains a height-adjustable door to more or less close the oven.
The vapour discharge is fitted to this head exit module.

Vapour discharge

This vapour cap, has a stainless steel labyrinth grease filter.
The discharge is provided by a two-step radial fan.

Wire mesh belt (1)

Transport through the oven is on a wire mesh belt.
The belt is kept up to tension by a pneumatically operated tensioning unit.
Independently of the temperature and therefore the length of the belt, the tension is kept constant.

Operator Touch screen

The Operator Touch screen shows all the necessary menus, switches, buttons, text displays, warnings and can be used to operate and control the oven.

Inspection port (008)

In the basic module, there are inspection ports. Depending on the version, these may also be in one or more of the standard modules. These are of a special construction, so that they swing open parallel to the oven wall. The product and the interior of the oven can thus be observed.
The setting of certain return air slides can also be achieved. On the basic module it offers the possibility of changing the position of the so-called airconus.

Sight hatch
Sight hatches may be present in the inspection port and/or in the side of a standard module.
In an inspection port is a forward swinging version of the hatch.
There is an unscrewable hatch in the standard module.

Moisture control

For an even development and a stable nature of the product, it is necessary that there is a balance between the evaporation of moisture on the surface and the moisture transport from the core of the product.
The drying time may be adjusted. The drying time can be controlled by the temperature, air speed and/or moisture content of the process air.
Colouring, crispness and the ultimate moisture content can be easily controlled, guaranteeing a constant product quality.

In addition to the re-circulation system of the process air, it is possible to discharge moist air via a vapour discharge channel.

Moisture control by steam supply

Besides the above mentioned moisture control, steam supply is also possible. The moisture content will be extra influenced by a steam supply in the (first) burner unit.

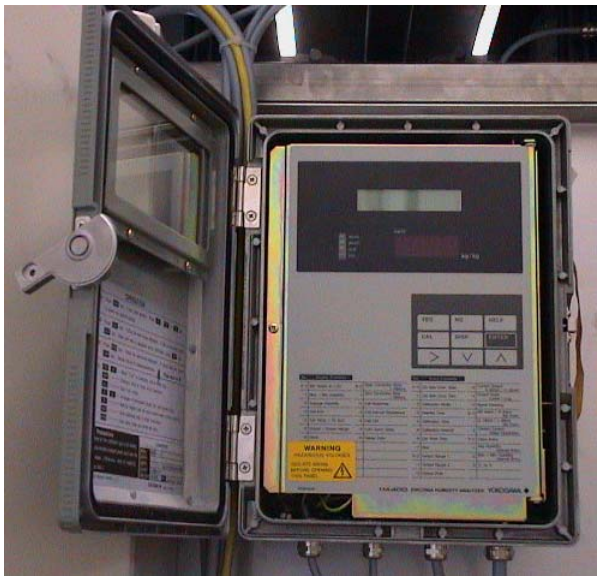

Figure 2.9 Moisture control unit

2.3. TECHNICAL DATA

2.3.1. GENERAL

Subject		Value	Unit
Dimensions	Length	2125	cm
	width (max)	326(353)	cm
	Height (max)	343	cm
Capacity	Heating module (2x)	300	kW
Speed	Maximum	13,55	m/min
	Minimum	2,69	m/min
	Emergency	8,04	m/min
Temperature	Maximum	approx 240	ºC
	Minimum	approx 40	ºC
	Safety	300	ºC

2.3.2. MATERIALS USED

Oven part	Type name/code
Product transportation means	Stainless steel 304
Oven interior	Stainless steel 304 / Steel 12-03 kgw
Oven exterior	Stainless steel 304

2.4. PROCESS

Schematic reproduction of the operation and control of the oven

Explanation of the numbers:

1	Moisture analysis unit	6	Heat exchanger
2	Moistening unit	7	Top Plenum/ Bottom Plenum
3	Fresh air supply	8	Baking Aria
4	Circulation fans	9	Return air regulating dampers
5	Vapour exhaust		

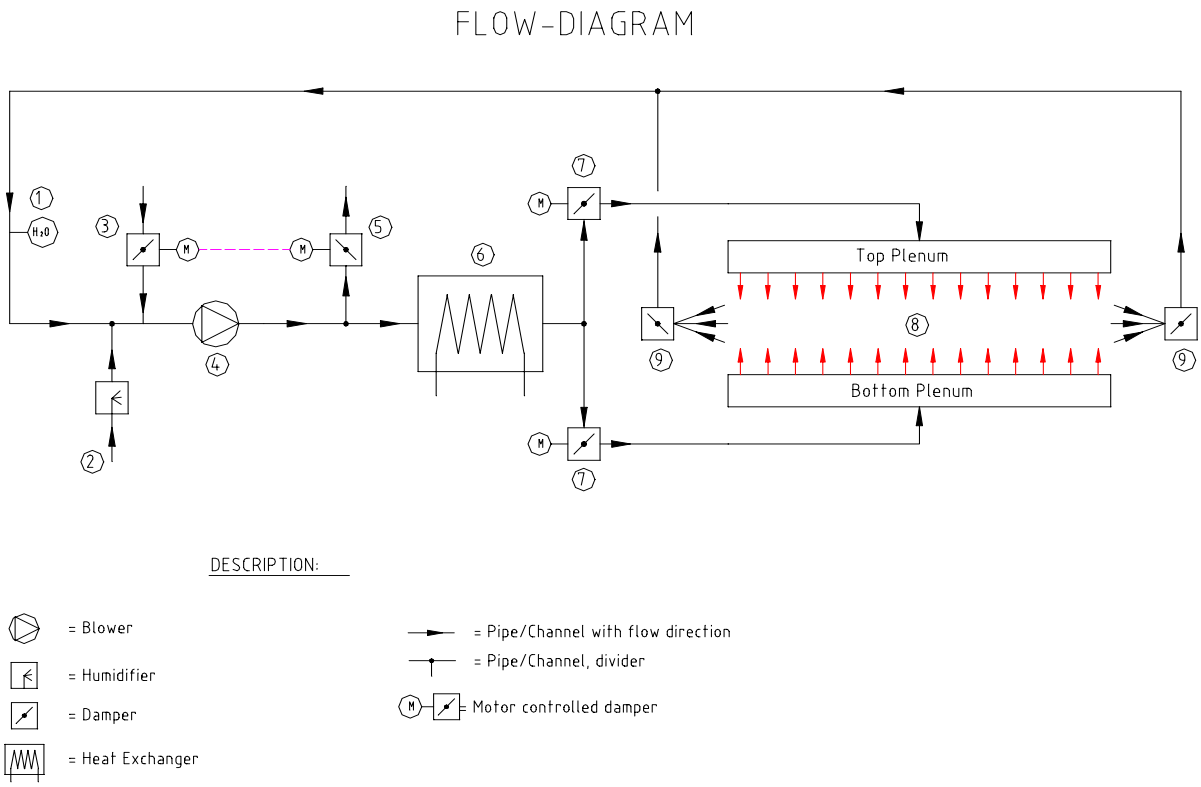

Figure 2.10 Flow diagram

2.5. SAFETY PRECAUTIONS

There are safety precautions both for the operating personnel and the installation itself.
The installation contains rotating parts and parts working at high temperatures. These can be dangerous when operating the installation.
Emergency stops are fitted at the oven entrance and exit.
On and in the installation, provisions have been made for the safety of the belt, gas pressure, temperature etc.

Take note of all necessary precautions when working with gas and high-pressure air and water etc.!