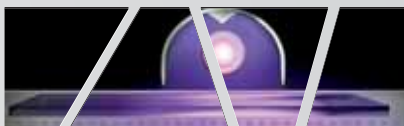


TOSH ●●●

modular combined oven

HOT AIR - IR - UV



the ideal drying system

Although the printed ink used in pad printing is ready to handle in a short time, accelerating the drying process is recommended in certain applications, for example with multicolour printing, in printing with two-component ink, in processing with high production rhythms or if further processing comes immediately after printing, for example packaging the product.

HOT AIR DRYING (DUE TO EVAPORATION)



For solvent-based inks, used in most cases in pad printing, the high temperature and poor ventilation which is generally found in ovens with radiant panels is not sufficient. In order to eliminate the solvent from the layer of ink quickly, an efficient oven must have a high volume of **hot air** with a direct flow to the material to be treated, with the possibility to regulate the temperature up to 200°C, evenly distributed throughout all areas of the baking chamber, in order to allow a correct drying process with low energy consumption.

I.R. INFRARED DRYING (DUE TO RETICULATION)



In order to obtain an article which is ready for other processing in a short time using two-component ink, which normally takes a few days to harden completely at room temperature, it is necessary to accelerate the reticulation between the ink and the catalyst. In this case, in addition to air, as solvent is also present in two-component ink, irradiation with **I.R. infrared rays** is ideal, above all on material such as glass, ceramics and metal. Infrared ray drying, with lamps with precise wavelengths, is the most effective and quickest system for transferring energy from a hot body to a cold one. By penetrating the layer of ink without overheating the article, the irradiated IR also allows quicker cooling.

U.V. ULTRAVIOLET DRYING (DUE TO POLYMERIZATION)



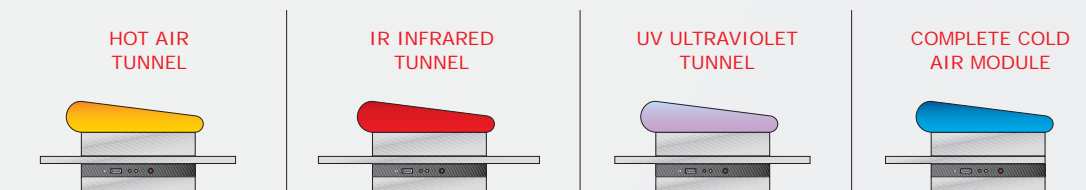
Drying using **U.V. ultraviolet rays** is based on the property of certain components to create internal reticulations and therefore harden if hit by this specific type of ray; the phenomenon is known as polymerization. UV inks contain groups of molecules (monomers + photoinitiators) which, if hit by the radiation emitted from UV lamps, trigger chain polymerisation. This drying system ensures that the ink film hardens in a fraction of a second.

Unlike screen printing ink, UV ink for pad printing also contains a minimal percentage of solvent, necessary for transfer from the pad; a UV oven for pad printing must therefore take this aspect into consideration. Before exposure to UV irradiation, certain inks require a stage with infrared, IR, radiation, in order to improve the dilation of the layer of ink.

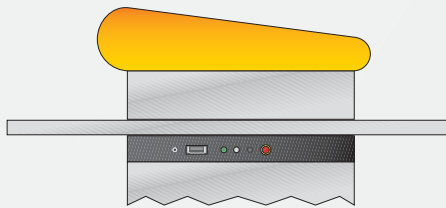
In order to compress the layer of ink again after it has been subjected to the various baking chambers (hot air - IR - UV), it is necessary to cool it with cold air in order to complete the correct drying process.

the modular oven

There are several variables which affect the drying process of an ink. Being able to make use of an oven which allows a combination of the various systems (hot air - IR - UV) to be used at different times and in any order allows the customer to optimise the whole process with a single solution, with a limited investment and above all with a considerable reduction in energy consumptions.

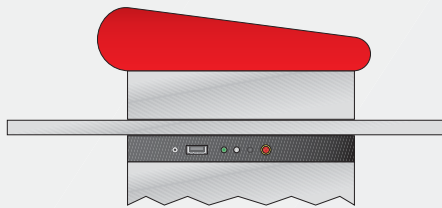


the basic modules



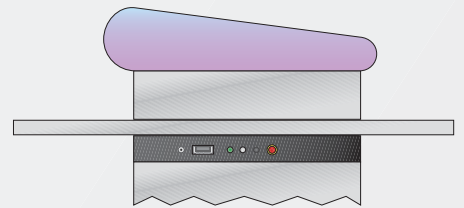
MOD. HA10
HOT AIR OVEN

High-performing and modular, built to create high levels of ventilation (650 m³/h) directed onto the material to be treated with crossed nozzles which allow a high-speed air flow which is essential for drying solvent-based inks. With two heating units of 4000W each, which can be activated separately, it is possible to obtain a temperature which can be regulated up to 200°C and is extremely even in all areas of the baking chamber ($\pm 2^\circ\text{C}$). The oven is designed to house an infrared kit or various types of cold air tunnel. Designed to be inserted in series with other types of drying (UV or IR) in order to create the most suitable configuration for specific requirements.



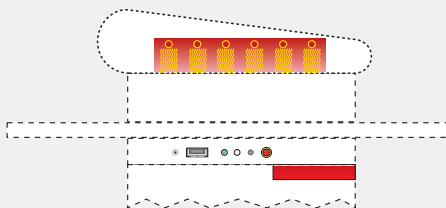
MOD. IR10
INFRARED OVEN

Built with medium wave infrared irradiators which are extremely long-lasting and versatile. The six irradiators with 400 mm light are controlled electronically and the power level (3600 W) can be regulated from 0 to 100% in 1% stages. The high volume of air (650 m³/h) directed at the article with high-speed nozzles, combined with the possibility to obtain a temperature which can be regulated up to 200°C through infrared emitters, creates an extremely controlled baking chamber with an even temperature in all areas ($\pm 2^\circ\text{C}$). Designed and built ready to work in combination with various types of cold air tunnel and to be inserted in line with other drying systems (hot air or UV), in order to create the most suitable configuration for specific requirements.



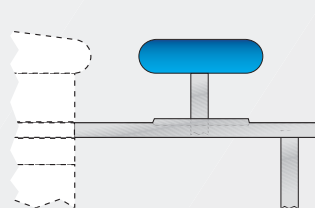
MOD. UV10
UV OVEN

Built with a 120 W/cm single lamp unit with high UV yield and 400 mm useful light with heat dissipation system (patented). In addition to the effective polymerization ability, the system also allows considerable energy saving and is extremely compact. Ready to work in combination with various types of cold air tunnel and to be inserted in line with other drying systems (hot air or UV), in order to create the most suitable configuration for specific requirements.



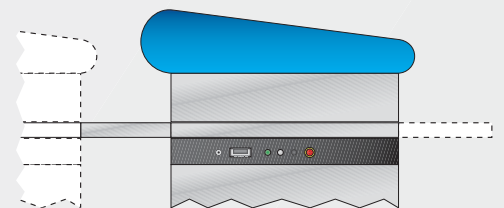
MOD. KIR10
INFRARED KIT

Composed of 6 medium wave infrared irradiators with 500 mm light. Extremely long-lasting and versatile. The system is controlled electronically and the power level (3600W) can be set from 0 to 100% in 1% stages. The kit has been designed to be inserted, even at a later date, in the HA10 model hot air drying oven.



MOD. CA10
COLD AIR TUNNEL

Ambient air cooling module to be inserted on the extension of the exit of the individual HA10 – IR10 – UV10 model ovens.



MOD. CA20
COMPLETE COLD AIR MODULE

Cooling module, built with the same features as the hot air oven, (HA10 model), without the 2 heating units. It therefore maintains the high volume of air (650 m³/h) directed onto the material to be treated, through a series of crossed nozzles. In addition to having a larger treatment area compared to cold air tunnel mod. CA10. It can be inserted on the extension at the exit from the individual hot air – IR – UV ovens (HA10 -IR10-UV10 models).

some combinations



Hot air oven (**HA10 model**) with cold air tunnel (**CA10 model**) or with complete cold air module (**CA20 model**)



Infrared oven (**IR10 model**) with cold air tunnel (**CA10 model**) or with complete cold air module (**CA20 model**)



Ultraviolet oven (**UV10 model**) with cold air tunnel (**CA10 model**) or with complete cold air module (**CA20 model**)



Hot air oven (**HA10 model**) with infrared kit (**KIR10 model**) and with cold air tunnel (**CA10 model**) or with complete cold air module (**CA20 model**)



Infrared oven (**IR10 model**) in line with hot air oven (**HA10 model**) and with complete cold air module (**CA20 model**)



Two hot air ovens (**HA10 model**) in line with complete cold air module (**CA20 model**)



Hot air oven (**HA10 model**) with infrared kit (**KIR10 model**) in line with ultraviolet oven (**UV10 model**) and with complete cold air module (**CA20 model**)



Infrared oven (**IR10 model**) in line with ultraviolet oven (**UV10 model**) and with complete cold air module (**CA20 model**)

the features

Designed to solve drying and polymerization problems with pad printing and screen printing inks.

Modular construction, allowing the insertion of other drying or cooling modules even at a later date, in order to create the most suitable system configuration for individual requirements.

Perfect thermal insulation, in order to avoid unnecessary heat dispersion, leading to a reduction in running costs and greater safety for operators.

All the individual modules are equipped with a system which develops a volume of high-pressure air (650 m³/h) directed onto the material to be treated through a series of nozzles.

Possibility to take advantage of the quick solvent extraction capacity from the layer of ink, deriving from the high air flow in order to use the minimum temperature necessary with a consequent further reduction in costs.

Ready for suction of processing fumes.

The structure is adjustable in height and assembled on swivel wheels for easier movement.

Conveyor belt made with a thick network of Kevlar coated glass cloth which can be regulated from 0 to 8 metres/minute.

Perfectly even temperature in all areas of the baking chamber ($\pm 2^{\circ}\text{C}$) for HA10 and IR10 model ovens.

Suction work surface.

Control panel positioned to allow easy access and quick maintenance and designed to accept subsequent modules (e.g. infrared kits...).

Designed to reduce energy costs to a minimum with low operating noise level.

In the case of the UV drying module, the irradiation system, whilst still involving direct radiation, reduces the IR component by over 80% without using coolers (patent).

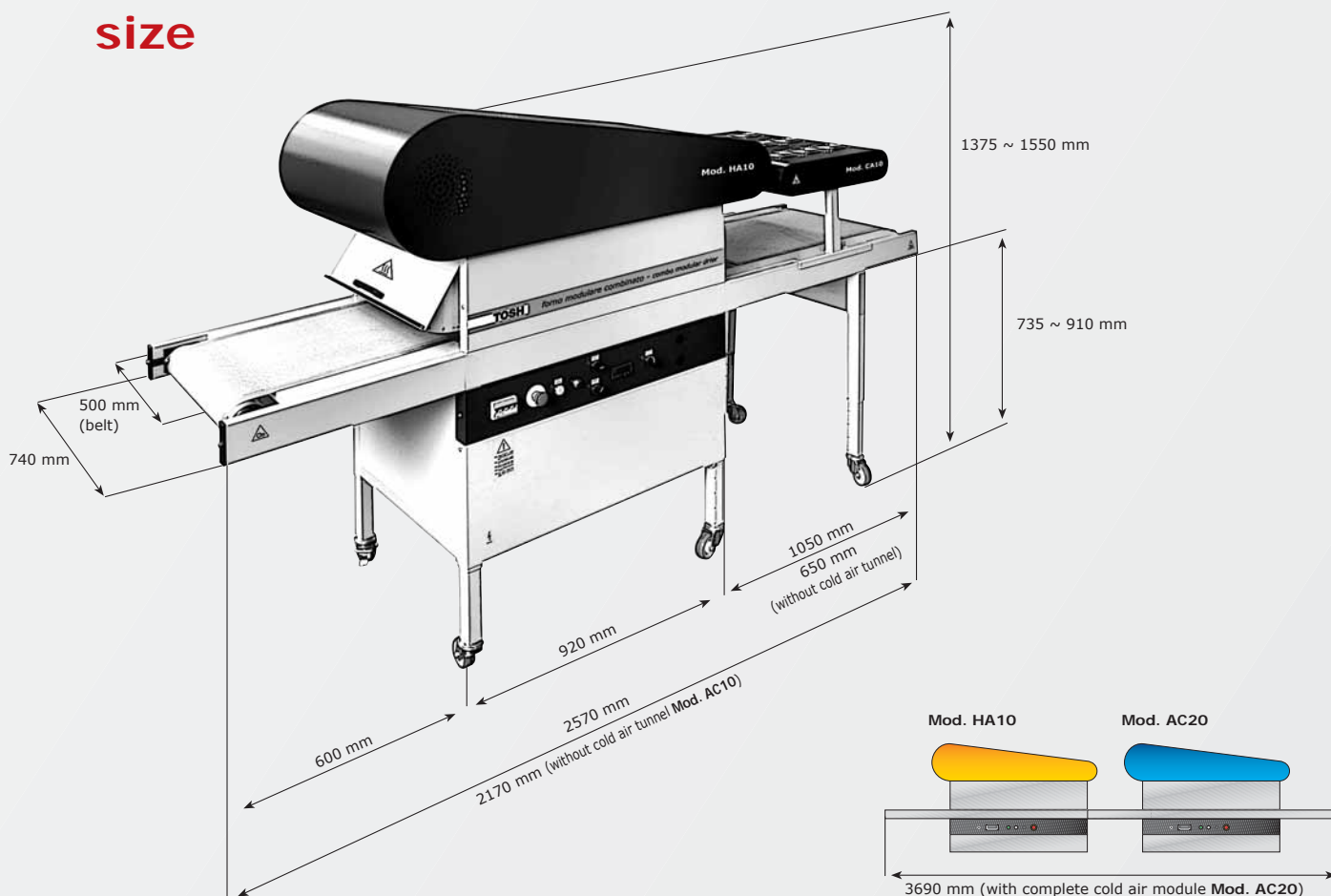
Entry height for material to be treated can be regulated up to 230 mm.



technical data

	Mod. HA10	Mod. IR10	Mod. UV10	Mod. KIR10	Mod. CA10	Mod. CA20
Power supply (V)	400 triple phase + N 50/60 Hz	400 triple phase + N 50/60 Hz	400 triple phase + N 50/60 Hz	400 triple phase + N 50/60 Hz	230 single phase 50/60 Hz	400 triple phase 50/60 Hz
Consumption (Kw)	4+4	5	6	4	0,5	1
Air volume (m3/h)	650	650	650	-	135	650
Temperature on belt (°C)	200	300	Δt 25	300	-	-
Height of pieces on entry (mm)	230	230	230	230	230	230
Belt speed (mt/min)	0-8	0-8	0-8	-	-	-
Tunnel length (mm)	920	920	920	920	610	920
Weight (kg)	~ 240	~ 240	~ 240	~ 15	~ 35	~ 150

size



modular combined oven

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