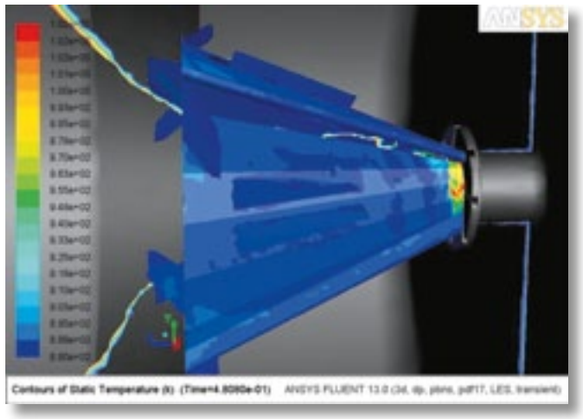
HighEcon drying oven

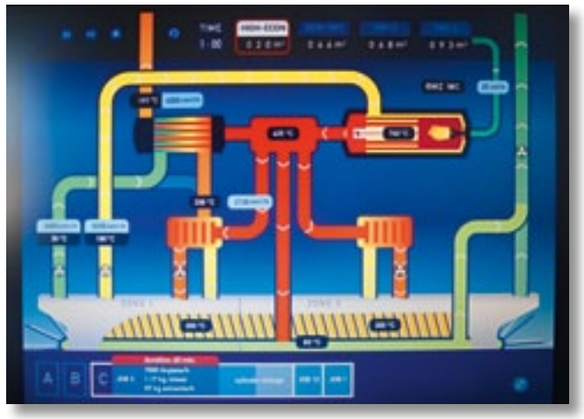
New design meets high tech

KBA-MetalPrint has developed a new generation of drying ovens which guarantees even greater energy savings and efficiency. Key features of the new HighEcon drying oven concept are the automatically controlled exhaust air volume, a reduction of approx. 70% in gas consumption compared to an oven without air purification, modified air flows within the oven, and the use of frequency controllers for all fans. Together, these features enable the handling of extremely thin metal sheets down to a thickness of just 0.100 mm.



KXB – the new burner generation

The new developed burner type KXB (in cooperation with Karlsruher Institute for Technology KIT) provides sufficient cooling due to its flow-optimised design, resulting in longer lifetime and achieves emission limits at lower combustion temperatures.

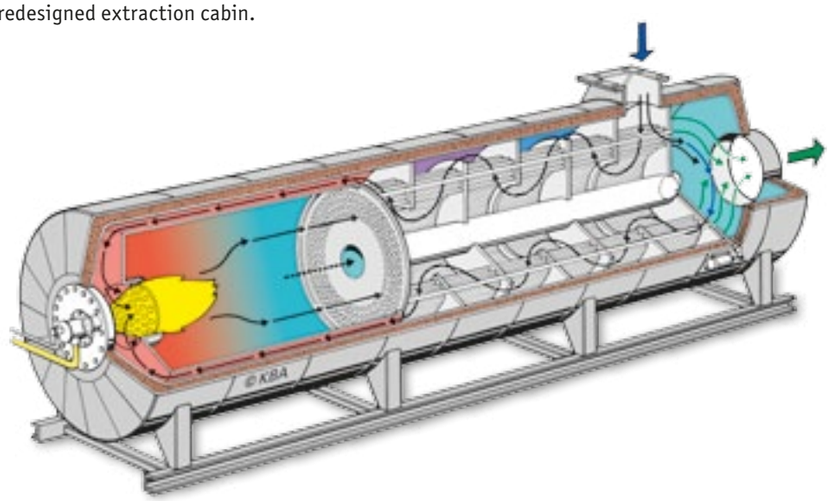


HighEcon flow diagramm

Simulation program visualising the gas savings depending on different jobs and changeover sequences.

Cabin front display

All system-relevant settings and consumption data are presented to the customer at a glance on the display of the redesigned extraction cabin.



Scheme of the HighEcon TNV with enlarged main heat exchanger, the centerpiece of the HighEcon drying oven

Drying technology

Thermal drying

Optimised air circulation and temperature control

Quick and consistent heating of the metal sheets in the oven is achieved by a special injection nozzle system (illustration 1).

Once the drying temperature is reached, the metal sheets are consistently baked at the temperature within +/- 1.5 % (illustration 2).

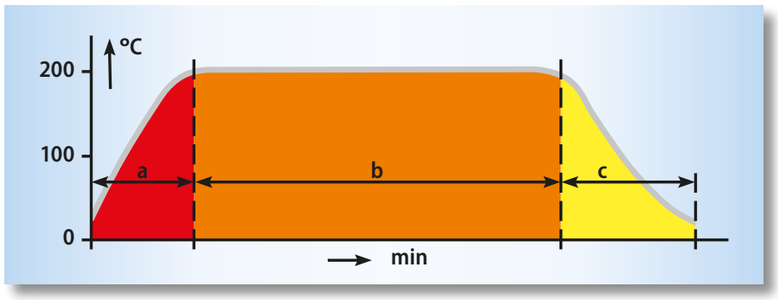


Illustration 2: Metal temperature curve

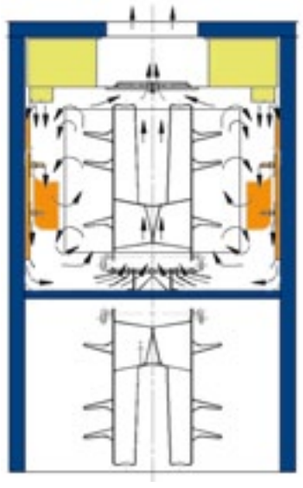


Illustration 1: Air circulation within the oven

Total curing times

Speed	Tunnel length									
	18 m	21 m	24 m	27 m	30 m	33 m	36 m	39 m	42 m	
5 000 sheets/hour	8,6	10,0	11,5	13,0	14,4	15,8	17,3	18,7	20,1	[min.]
6 000 sheets/hour	7,2	8,4	9,6	10,8	12,0	13,2	14,4	15,6	16,8	[min.]
7 000 sheets/hour	6,1	7,2	8,2	9,2	10,2	11,3	12,3	13,3	14,4	[min.]
8 000 sheets/hour	5,3	6,2	7,1	8,0	8,8	9,7	10,6	11,5	12,4	[min.]

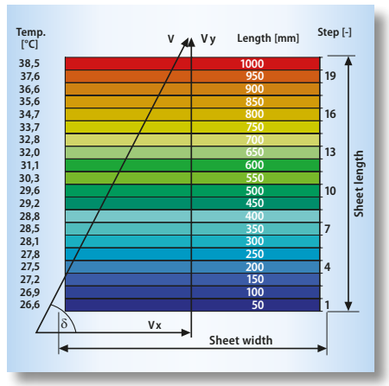
Cooling / Control

Cooling

Effective cooling by means of high cooling air volume

The effectiveness of the cooling zone depends on different parameters such as length of the cooling zone, direction of air flow, specific air volume, temperature of the cooling air, sheet gauge and size, speed etc.
KBA-MetalPrint uses specially developed simulation software based on a large range of gathered data to obtain the most effective possible cooling in real production situations.

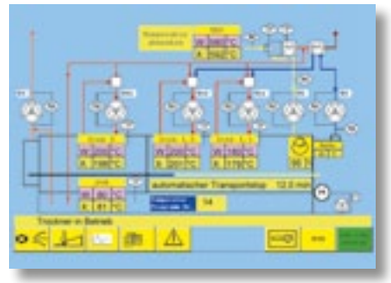
Surface temperature curve along the sheet after leaving cooling zone



Temperature distribution on the sheet

Optional extras for cooling

- Frequency controlled fans
- Outside temperature controlled cooling capacity performance
- Louver damper system
- Active cooling (air conditioning supported)
- Silencers



Touch panel view of the oven process

DigiVent S7 Control

The DigiVent Control System provides many additional features to improve efficiency, maintenance and quality by means of:

- Total visualisation of drying process
- PLC temperature control and monitoring
- Fault logging and archiving function
- Capture and recall of product coating programmes
- Digital temperature recording
- Automatic start and shutdown sequences
- Remote service via VPN router through internet