

**IF MORE  
THAN THE  
NOSE RUNS**



EFFICIENT • POWERFUL • SAFE  
**DRYING BY DUO-TECHNIK**

**WE CREATE SOLUTIONS**

**DUO-TECHNIK**

PRODUCTS FOR PRINT

# What is the right system for you?

Ever since 1990, Duo-Technik has been producing drying systems for the corrugated direct printing market.

Today Duo-Technik is the only supplier in the market who is able to supply a **full range of drying systems** for all types of printing machines in the **corrugated** and the **digital printing markets**.

## // Our product range

Infrared	Hot-Air	High-speed
Infrared lamps with Ventilator	Ventilator with heat exchanger	Compressor (Patented)
- For both <b>stationary</b> and <b>mobile</b> printing machines	- Various energy sources (steam, gas, electrical) - Mainly for <b>stationary</b> printing machines	- Mainly for <b>mobile</b> printing machines - Only for retrofit

## // The following benefits of a dryer have always been important:

- ➔ elevated production speeds combined with high-energy efficient technology
- ➔ higher safety standards for operators, machines and the company
- ➔ low cost of maintenance over the lifecycle, including service and spare part expenses

## // What is the right system for you?

It is important to know the principles and how each of the different systems work:

Infrared Drying	Air Drying
<ul style="list-style-type: none"><li>- Drying with infrared radiators <b>the water is evaporated</b> using the radiated heat.</li><li>- For most infrared dryers temperatures of 480–575°F are used. That is higher than the flash-point of paper.</li><li>- The ideal absorption of the energy takes place with a IR wave length of 3 µm</li></ul>	<ul style="list-style-type: none"><li>- The water in the ink is evaporated by the air flowing over the board and is evacuated from the printing area.</li><li>- Heating the air is used only to accelerate this process</li><li>- With 250°F air temperature, the maximum drying efficiency is achieved; higher temperatures do not accelerate the process very significantly.</li><li>- The air dryer process is more efficient. It requires lower temperatures so a lower energy consumption than an IR dryer.</li></ul>

# Why accelerated drying?

// A significant increase in productivity as much as 300%, is possible!

// Printing on coated paper at higher speeds without trapping and ghosting is possible

// Varnishing on coated paper eliminating scratches caused by subsequent processes

// "Process" printing with real colour fastness

// High gloss, protection &-anti-slip varnishing jobs are possible



Full-coated paper; 4 colours + water-based varnish;  
7500 sheets/h on Masterflex 160



Full-coated paper; 4 colours + UV varnish;  
6500 sheets/h inline die-cutting on DRO 1628 NT HBL



Full-coated paper; 5 colours + water-based varnish;  
9000 sheets/h on Masterflex 160



Full-coated paper; 4 colours + water based varnish;  
5500 sheets/h inline die-cutting on DRO 1628 NT

# AIR DRYING

## // The standard dryer design

The air is warmed up as it blown through a heating register by a ventilator pump. It is then conveyed through central piping to the individual dryer units. The hot air is blown onto the board with special nozzles and then is exhausted, creating a closed loop cycle.

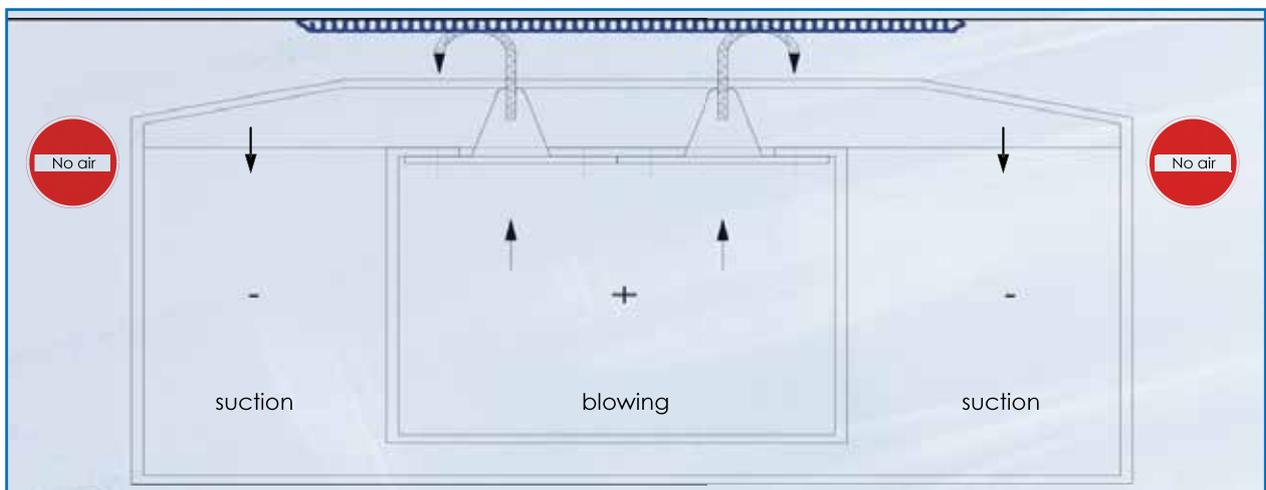
The importance of the air temperature is to increase the water absorption ability of the air. Our recommendation is a hot air temperature of 140 - 175° F to dry inks, and an air temperature of 195 – 230 ° F to dry varnishes and topcoats. Experience has proven that higher hot-air temperatures than those mentioned do not increase the drying efficiency very much at all.

A central touch screen HMI allows the operator to easily control each individual dryer unit.



Principle design of the system

## // The importance of a drying unit, with no air around the unit



The principle of a drying unit

Heated air is blown onto the sheets at high volume and high speed. It is then exhausted ensuring that the air doesn't affect (heat) the printing plates or aniloxes.

As the extracted air is recycled it continually warms through the cycle, requiring the use of maximum power of the heating exchanger only at start-up. On average only 50-60% of the maximum power is required after start-up.

## // Our modern Air Drying Systems have some special and unique characteristics:

- (1) Heating the air with different heat sources is now possible (steam, gas, hot-water, thermal oil, or electrical).
- (2) The air volume of each interim dryer can be regulated from 0-100% by an electronic control flap.
- (3) The operator can control the power consumption by adjusting the temperature set point.
- (4) Our use of frequency-converter controlled ventilators based on air volume needs reduces power consumption
- (5) Our unique widths adjustment feature allows the operator to adjust the drying widths required delivers (25 % energy savings)
- (6) The Intelligent air volume management using only the required air volume results in an average 30% energy savings
- (7) The Intelligent control of the dryers ensures the wait-time for warm-up is reduced to a minimum

These unique features designed in our Air-dryer system compares favourably to the results using an IR dryer

## // The drying widths are adjustable.



**// A big advantage: heating sources other than electrical can be used to heat the air like steam, gas, hot-water and thermal oil**

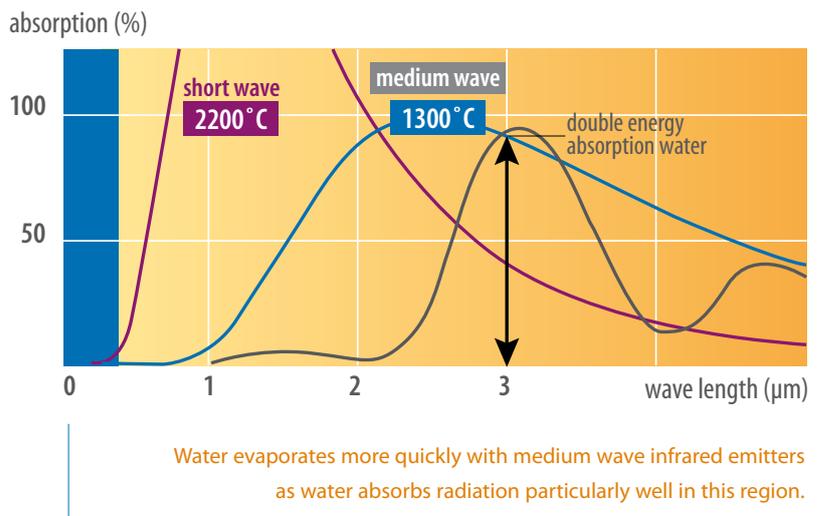
**// Ask us for an integrated concept for energy with a remote combined heating and power station**

**// The Duo-Technik engineering department will adapt the design of our equipment to meet our customer's needs.**

**Contact us and we will create a solution to meet your individual requirements.**

# INFRARED DRYING

When considering an Infrared dryer the most important element that you need to know is what type of Infrared emitter system is being used?



// It is Duo-Technik's firm conviction that incorporating IR medium wave emitters is the right engineering decision. Why?

- ➔ Medium wave emitters will evaporate water more quickly since water naturally absorbs IR energy most efficiently in this range.
- ➔ Combining IR radiation and airflow vastly improves the system efficiency.

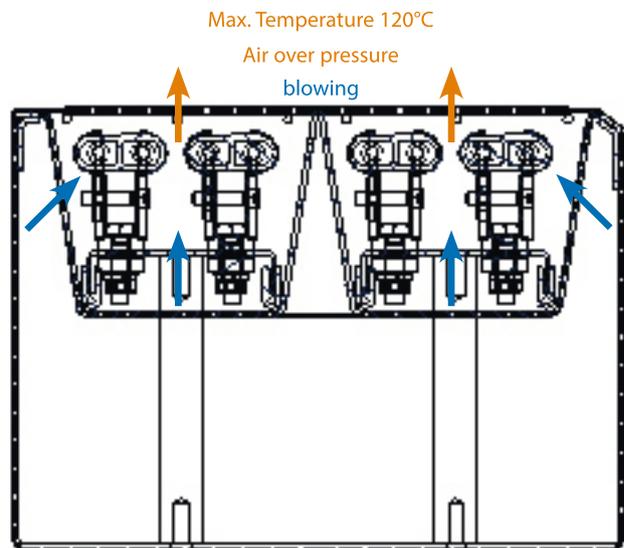
These important facts lead to our unique IR dryer design. Our Infrared hybrid dryer is the most effective and safest IR drying system ever built. Some key features:

- (1) Because of the very low core temperature of the medium wave emitter and an efficient air flow design, the maximum temperature above the dryer is 250° F, well below the flashpoint of paper.
- (2) With a positively pressurised area above the IR lamps, the potential of dust or paper particles falling on the IR lamps is eliminated.

**As a result:**

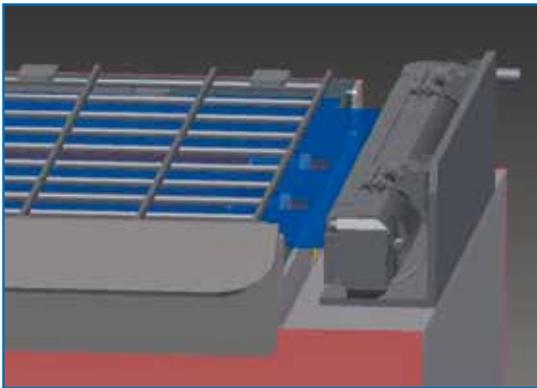
- (3) A power robbing quartz glass above the IR lamps is not necessary, so the full power of the IR lamps is available, delivering the best results using less power.

- (4) This design allows the dryer to be used for less complicated jobs when an ambient air temperature will suffice, another energy-saving feature.

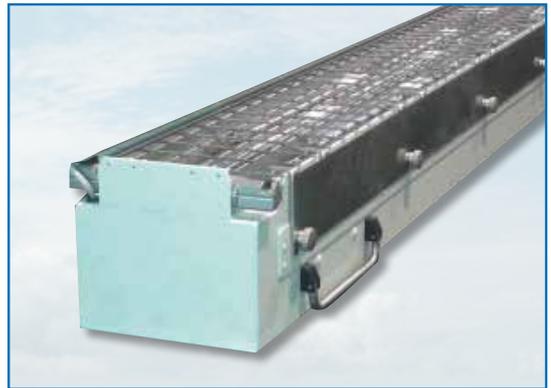


# INFRARED DRYING & CONCLUSION

Even though our IR hybrid drying system is designed to be extremely safe, to eliminate any possibility of a potential safety concern, we also incorporate a laser curtain to shut down the IR lamps immediately if and when a board or part of a board comes in close contact with the IR lamps.



Safety curtain



Installation in a mobile DRO

**// Are you interested?**

**// What is the right solution for you?**

**// Contact us, we will design a system to meet your specific needs and requirements.**

[www.duo-technik.com/sales](http://www.duo-technik.com/sales)

**NOW IS THE  
PICTURE  
CLEAR?**



EFFICIENT • POWERFUL • SAFE  
**DRYER BY DUO-TECHNIK**