PUTTING IDEAS INTO ACTION IN DRYING SYSTEMS

More speed and productivity Can we help you on the way?

As a printer, supplying quality alone is no longer adequate for remaining conspicuous amongst your competitors. Speed, reliability and productivity are the decisive factors for success in the printing industry of today.
An additional drying system in the print shop can help increase production considerably.
But which system do you choose?
What will combine best with the existing and available machinery?
And how do you retain control over the process?

The printing machine format and the available space determine the size of the infrared dryer. Dimensions in accordance with customer specifications is also possible.

All aspects of drying are discussed in this brochure. In addition to infrared installations, hot-air drying and exhausts are also covered. But let us begin with the core of our speciality: the drying process itself.

More about drying.

Dryers are the answer to a contradictory situation. Ink is required for printing that does not dry on the inkers or printing plates, but once it has been applied to the printed medium, it has to dry - and dry quickly.

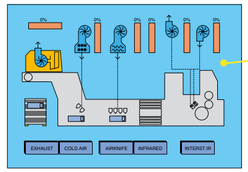
There are two main factors in the drying process. Firstly the evaporation and removal of the thinning agents, and secondly a chemical reaction in the form of oxidation, or rather polymerisation, in which the homogeneous molecules combine together to form an additive compound.

The selection of the most suitable drying method is determined by the composition of the inks and coatings to be dried.
Ink that does not contain water can be dried using our infrared drying system; water-based inks and coatings are best dried using our hot-air driers.

INFRARED DRYING

The application of infrared drying has led to considerable improvement in the results obtained with sheet fed offset and web offset machines.
Following many years of development, infrared power can now be optimally controlled and applied.
The infrared installations can be quickly adapted to the category and scope of every printing process, and applied as both final and intermediate drying. Simple, integrated controls provide the finishing touch to a quality system.

Extra attention for controls.
Working with peripheral equipment does not make printing any simpler. This requires extra attention when combining all the control functions. A touch-screen offers the best facilities for operational reliability and signalling breakdowns.



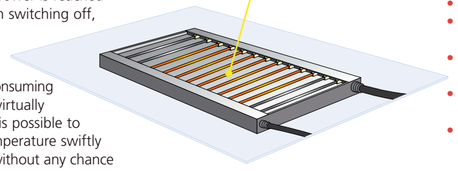
Infrared drying has a significant influence on evaporation and chemical reaction. As a result of being heated by infrared radiation, water and thinning agents evaporate faster. Elimination, or physical drying, is accelerated as a result. The oxidation process then begins earlier and continues in the printed paper stack.

Shortwave infrared is easy to control.

The level of heat required can vary from case to case. The actual quantity needed is determined by factors that are not easily controlled by the printer. Consider the relative density and relative humidity of the printed matter, the color and viscosity of the ink, and the climate in the print shop. To obtain a good result the temperature in the printed paper stack serves as a reliable guideline. Ideally this should lie somewhere between 85°F and 105°F (32-42°C). Our infrared dryers are therefore supplied with a stack temperature gauge. The 'sword' probe connected to this gauge is inserted between the sheets of paper, and the temperature measured appears on a digital display. If the value is too high or too low the power of the infrared dryer can be adjusted by the machine operator. Adjustment is immediate and very accurate.
The fine and continuous calibration characteristics of infrared elements owe much to the nature of the **short**wave infrared spectrum. Infrared in the middle and long wavelength range is considerably less adjustable.
When switching on, full power is reached within 0.6 seconds. When switching off, in an emergency stop for instance, heat irradiation stops within 0.2 seconds.
The risk of fire and time consuming warming up is therefore virtually eliminated. In this way it is possible to bring the paper stack temperature swiftly up to the required level, without any chance of overheating.

Economical with energy.

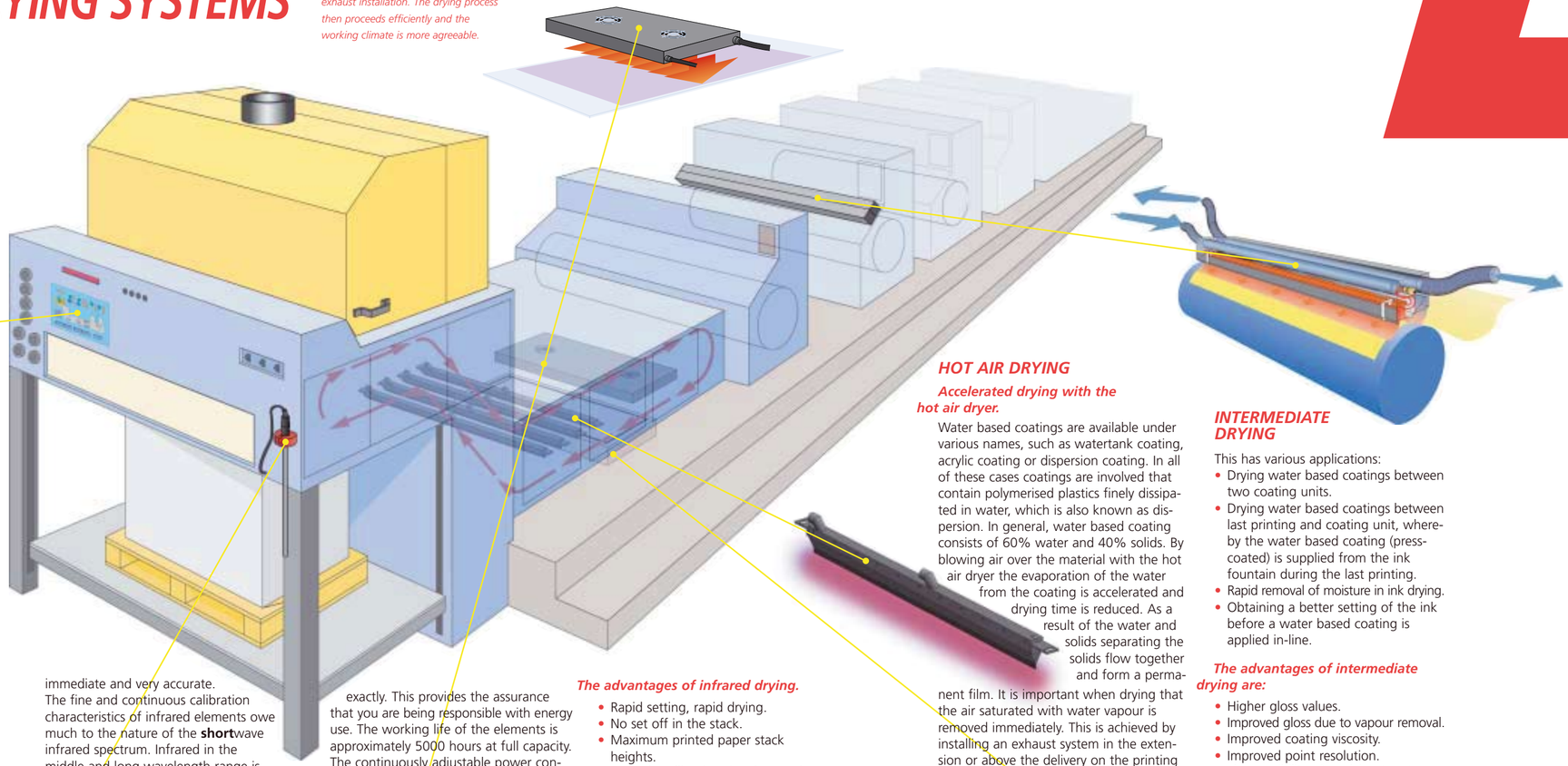
All our infrared elements are made with internal reflectors. Furthermore, the element housing is equipped with an additional reflector on the inside. The application of these double reflectors gives optimum use of the beam, which in turn leads to even intensity and high efficiency. An additional advantage is that the required beam width can be adjusted to fit the paper format exactly. This provides the assurance that you are being responsible with energy use. The working life of the elements is approximately 5000 hours at full capacity. The continuously adjustable power control increases working life even further. And should one of the lamps ever fail, only one small part of the dryer is affected, and work can continue as normal.



Paper guidingplates.

When a press supplier delivers the machine fitted with water chilled paper guidingplates or prescribes the same in a combination with IR drying, we can deliver the required chilling system and when needed the chillingplates. The chilling removes from the machine extra heat and prevents the plates from being deformed.

Air drying is always combined with an exhaust installation. The drying process then proceeds efficiently and the working climate is more agreeable.



The advantages of infrared drying.

- Rapid setting, rapid drying.
- No set off in the stack.
- Maximum printed paper stack heights.
- Faster handling in print shop and finishing areas.
- Powder savings of 60 to 100%
- Wet and dry measured density virtually equal.
- Higher gloss values than drying without infrared.
- Less point spread than drying without infrared.
- Overprinting or further finishing possible after no more than 30 minutes.
- More efficient use of floor area.
- Less cleaning and maintenance time due to reduced use of anti-offset spray powder.
- Cleaner working environment due to reduced use of anti-offset spray powder.

HOT AIR DRYING

Accelerated drying with the hot air dryer.

Water based coatings are available under various names, such as watertank coating, acrylic coating or dispersion coating. In all of these cases coatings are involved that contain polymerised plastics finely dissipated in water, which is also known as dispersion. In general, water based coating consists of 60% water and 40% solids. By blowing air over the material with the hot air dryer the evaporation of the water from the coating is accelerated and drying time is reduced. As a result of the water and solids separating the solids flow together and form a permanent film. It is important when drying that the air saturated with water vapour is removed immediately. This is achieved by installing an exhaust system in the extension or above the delivery on the printing machine. This then removes fumes, working conditions are unaffected and the drying process is boosted.

Airknives: optimally adjustable.

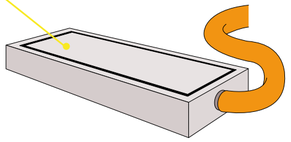
Air drying airknives are mounted into the extension or into the delivery of the printing machine. Just as in the infrared system the power, and the drying capacity, is adjustable both continuously and accurately. Adjustable air volume is particularly important for guaranteeing a stable air flow, and particularly in the case of lighter grades of paper. The temperature of the air blown out of the knives is measured and that temperature is then compared to the required temperature; a microprocessor controlled regulator then adjusts differences to an accuracy of 0.1°.
In this manner the process and use of energy always remains under control.
The importance of air drying is increasing, especially now that many more types of plastics are being printed and coated in-line.

INTERMEDIATE DRYING

This has various applications:
- Drying water based coatings between two coating units.
- Drying water based coatings between last printing and coating unit, whereby the water based coating (press-coated) is supplied from the ink fountain during the last printing.
- Rapid removal of moisture in ink drying.
- Obtaining a better setting of the ink before a water based coating is applied in-line.

The advantages of intermediate drying are:

- Higher gloss values.
- Improved gloss due to vapour removal.
- Improved coating viscosity.
- Improved point resolution.
- The possibility of applying two types of coating in-line, for example gold/silver coating and protective coating, or water based blister coating that has to be built up in two layers.



Faster removal of moist air can be achieved by an additional exhaust in the delivery.

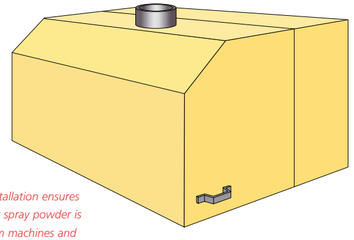
EXHAUST INSTALLATIONS

Higher productivity and a good working climate.

Combining infrared drying or air drying with an exhaust system offers the ideal solution. Anti-offset powder, hot air and thinning agents are then drawn away immediately.

An exhaust system can also play a significant role in areas where infrared drying or air drying is not used:

- Virtually no powdered substances or solvents are released into the working area;
- The machine and the surroundings become less contaminated with anti-offset spray powder, resulting in less wear.



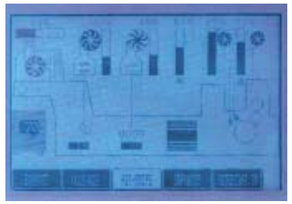
An exhaust installation ensures that anti-offset spray powder is kept away from machines and out of the surroundings as much as possible. Among other things this results in reduced cleaning times and less wear. The working climate also remains more agreeable.

In brief: productivity increases, and from a Labor Law perspective the working conditions in the print shop are improved.
Water saturated air and excess spray powder are best transported away from the press area. When a dust filter is used it is possible to recycle the exhausted clean air for factory heating.
Exhaust installations are manufactured to the dimensions of the machine and the various components are supplied in the same color as the printing machine.
To ensure that the printing machine delivery remains accessible for maintenance the installation can be mounted to tilt (using gas springs), or to move sideways (using linear guides).

Options and custom work.

Exhaust installations are available with various options:

- Increased capacity by means of increased speed.
- A central exhaust installation in case extraction hoods are fitted to multiple machines.
- Speed adjustment of the fan motor for continuous adjustment and problem-free paper transport.
- Dust filters (not available for in-line printing machines).
  These enable anti-offset spray powder to be captured in a filter. The filter is automatically cleaned and the powder returned into a collector.



OPERATION AND SAFETY

In the controls of all of our machines we have endeavoured to achieve maximum clarity and ease of operation.

Depending on the type of printing machine the operating display is either housed in the operating section of the printing machine itself, or in a small housing that is fitted onto the delivery of the machine.

If you are working with a so-called 'all-in-one installation' (infrared drying, hot air drying and exhaust), more stringent demands are made on signalling and operation.
For all-in-one installations we supply a digital solution in the form of a touch-screen (monochrome; color optional).

This provides the printing machine operator with information regarding the various components and their status. Breakdown information is provided by optical and acoustic signalling.
The touch-screen offers the best means of taking advantage of digital technology, not only for safety and the ease of operation, but also for resolving breakdowns or operating problems efficiently.

All electronic control and safety components, such as power regulators, mains interference filter (EMC Guideline) and the necessary protection systems are integrated into the control panel.

The control panels and dryers are suitable for 3 x 400/230 V, 50 Hz as standard.
Other power supply voltages are available on request.

A great deal of attention has been paid to the safety of our machines.
When the printing machine is not in operation it is therefore not possible to switch the installation on.
The equipment cannot be turned on while the printing press is not in operation.
In an emergency stop the infrared system is switched off immediately at the same time as all moving parts.

Standards and certification.

All of our equipment and relevant products comply with European standards and are provided with CE marking.

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