

Dryer technology: Heatset vs. UV-Curing

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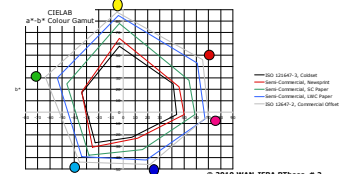
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Heatset-Dryer vs. UV-Curing

- Any dryer, i.e. UV or Heatset, installed on a newspaper press, gives the ability to produce semi-commercial print products.
- Dryer technology is a key feature to print on glossy or light-weight-coated paper (LWC), for high-quality -magazine style appearance of the printed product and to avoid the sole use of an expensive press for low-quality newspaper production.

- Technically speaking, a dryer allows to increase the colour gamut.



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Heatset-Dryer vs. UV-Curing

Technological aspects:

- Heatset = Hot-air drying
- UV – Dryertechnology:
 - Air curing with UV-radiation only
 - Inert curing, UV-radiation in a nitrogen environment

Economical and business aspects:

- How to integrate a dryer into the press?
- How to specify the costs of ownership and production?
- How to come to a business model?

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Heatset – Hot-air Drying

Suppliers (no claim to completeness):

- Goss Contiweb, www.gossinternational.com
- Megtec, www.megtec.com
- Vits, www.vits.com

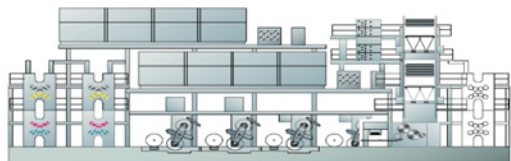


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Heatset – Integration into a Press

- Upgrading an existing machine with a dryer is a challenge
- Additional tower with space for dryer is a possible way
- New press which includes everything is recommended
- => However: Lots of space required, 1 m length per speed in sec.



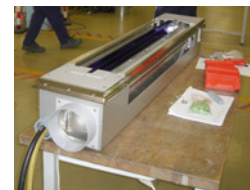
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UV-Dryer => Curing

Suppliers: (no claim to completeness)

- Eltex, www.eltex.com
- GEW, www.gewuv.com
- IST, www.ist-uv.com
- PRIME, www.primeuv.com

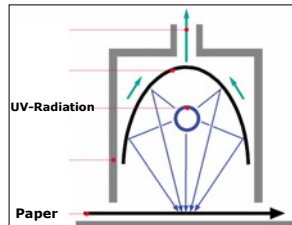


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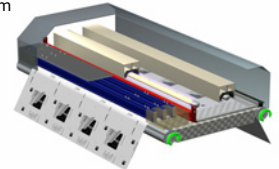
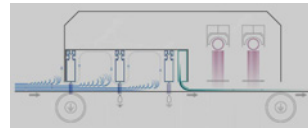
UV-Dryer, Air Curing System

- Curing with UV-radiation in air atmosphere
- Mostly air-cooled UV-radiators, chill-cooling is possible
- Ozone exhaust system required
- Threat of corrosion
- Production speed appr. 8 m/sec



UV-Dryer, Inert Curing System

- Inert Curing, UV-radiation in an inert atmosphere, nitrogen replaces oxygen, with the following benefits:
 - less energy consumption, production speed up to 12m/sec
 - reduced amount of photo initiators in ink, 1% instead of 10%
 - no ozone trailing, closed-loop system



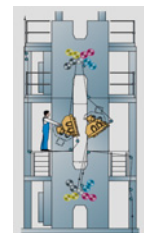
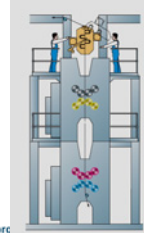
UV-Dryer, Inert Curing

- Curing in oxygen-free atmosphere allows unhindered UV-radiation on print product
- Highest production speed of all UV-Dryer systems
- Increased ink mileage
- Nitrogen tank required



UV-Dryer, Integration into a Press

- Minimized space and building requirements, appr. 1,5 m in height
- No web turning unit required in case of blanket-to-blanket
- => Blanket-to-blanket or blanket-to-steel



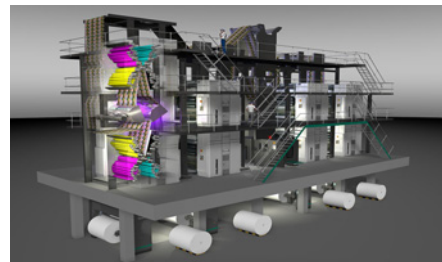
UV-Dryer, Integration into a Press

- Dryer and power control unit



UV-Dryer, Integration into a Press

- Dedicated tower as preferred solution



UV-Dryer technology => Curing

- Blankets and Plates have to work with UV inks
- Dedicated ink distribution and inking system required
- Light shield to protect ink fountain from external UV radiation

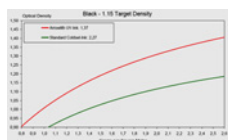


Heatset-Dryer vs. UV-Curing

- General remarks concerning heatset:
 - Easy change between coldset and heatset production
 - Inexpensive ink (compared with UV), but expensive investment
 - Web turning unit required, capable to deal with wet ink on paper
 - Building / space required
 - => Heatset might be best in case of:
 - High-volume printing
 - long operating hours
 - continuous use of dryer
 - few local editions

Heatset-Dryer vs. UV-Curing

- General remarks concerning UV-Dryer:
 - Investment much lower than in heatset
 - Refit / upgrade of existing machine possible
 - Dedicated inking system and inking supply required
 - Expensive ink costs, delivered by limited number of suppliers, but high densities and longer mileage (because of less solvent) per kg
 - => UV-Dryer might be best in case of:
 - mid-range amount of printing
 - normal operating hours
 - lots of local editions



Heatset-Dryer vs. UV-Curing

- Technically – there are some choices to make!
- Question as always: What is most beneficial?
- How to come to a conclusion?
- How to take a decision?
- After the preceding words, let's try to find a way based on figures and numbers how to calculate and to compare the individual investment as part of a comparative cost method.

Heatset-Dryer vs. UV, cost comparison

- The comparison sheet is a tool which combines the costs of investment with the costs of consumables.
- In combination with the depreciation period and the operating hours per day you'll be informed about the total costs per hour during the planned depreciation period.
- Capital costs are a very influencing factor.
- It helps, from a non-emotional point of view, to support the final decision for the kind of investment.

Required figures and numbers to calculate

- Investment-costs in total, until the press is able to print semi-commercial products
- Costs for consumables like ink can be calculated on the basis of the consumption in the past years
- Consumption of power should be mentioned by the manufacturer per operating hour, so calculation is possible with the local costs.
- Ideally, energy consumption per hour is part of the quote and the following contract to have reliable values
- Suppliers need to expect, that mentioning the power-consumption per hour will be obligatory in a lot of countries in the near future, for general comparison and to specify the carbon footprint

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Data entry sheet

- Investment costs

	Heatset	UV - Dryer
Investment Costs:		
Calculation based on:		
Dryer-Unit		
Installation		
Building, Substructure		
Chill stand		
Chill water system		
Silicone Applicator		
Web turn unit		
Exhaust system or stand alone afterburner if required		
Separate ink-distribution system		
Separate inking system		
Nitrogen Tank (appr. 50.000 litres) and delivery - optional -		
NN		

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Data entry sheet

- Ink-costs, consumables and power consumption

	Heatset	UV - Dryer
Ink costs per KG	costs per kg	costs per kg
Black Ink-costs per KG, appr.		
Coloured Ink-costs per KG, appr.		
Consumables (average costs)	costs per hour	costs per hour
Silicone / Additives costs per hour		
Natural gas costs per hour		
Electricity costs per hour		
Nitrogene cost per hour - optional:		

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Data entry sheet

- General financial and operating hours parameters

Cost comparison calculation	Heatset	UV - Dryer
Parameters:		
Operating hours per day:	7	7
Operating days in a year:	360	360
Operating hours per year	2.520	2.520
Rate of interest per year (Capital costs)	6,0	6,0
Capital depreciation period per year	7,0	7,0
Black ink usage per year in kg	15.000,0	13.500,0
Coloured ink usage per year in kg (under consideration of higher ink mileage in UV)	50.000,0	45.000,0
Average labour costs per hour:	60,00	60,00

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Comparison – possible results

Results:	ABC	XYZ
Investment costs in total:	1.615.000,00	560.000,00
Maintenance per year:	21.840,00	3.360,00
Depreciation costs per year:	230.714,29	80.000,00
Average capital costs per year (50% of Investment / Capital Costs)	48.450,00	16.800,00
Ink per hour:	91,27	167,86
Consumables + additives per hour:	26,50	38,00
Variable costs in total per hour:	119,77	205,86
Total costs per year:	602.824,29	618.920,00
Maintenance + Depreciation + Capital costs + (variable costs per hours * operating hours)		
Total costs per hour during depreciation period:	239,22	245,80

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Heatset-Dryer vs. UV-Curing

- Possible result, depending on the depreciation period:

- Same figures, but depending on yearly operation hours:

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Heatset-Dryer vs. UV-Curing

- => Let's do live a cost comparison between UV and Heatset now!

Investment Costs	Heatset	UV-Curing
Calculation based on:		
Dryer-Unit		
Installation		
Building, Substructure		
Chill stand		
Chill water system		
Silicone Applicator		
Web turn unit		
Exhaust system or stand alone afterburner if required		
Separate ink-distribution system		
Separate inking system		
Nitrogen Tank (appr. 50.000 litres) and delivery - optional -		
NN		
Parameters:		
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Ink costs per KG	costs per kg	costs per kg
Black Ink-costs per KG, appr.		
Coloured Ink-costs per KG, appr.		
Consumables (average costs)	costs per hour	costs per hour
Silicone / Additives costs per hour		
Natural gas costs per hour		
Electricity costs per hour		
Nitrogene cost per hour - optional:		
Cost comparison calculation		
Investment costs in total:		
Maintenance per year:		
Depreciation costs per year:		
Average capital costs per year (50% of Investment / Capital Costs)		
Ink per hour:		
Consumables + additives per hour:		
Variable costs in total per hour:		
Total costs per year:		
Maintenance + Depreciation + Capital costs + (variable costs per hours * operating hours)		
Total costs per hour during depreciation period:		

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**It's all about
Newspapers**



**and how to attract
the customer**

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