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Where does all the heat come from?

a) Ambient room temperatures

This can be summer-time temperatures or sound-proofing of the press without adequate ventilation, (inadequate or no extractor fans), as well as heat radiating, convecting and conducting from the oven.

b) Press mechanics

Frictional heat build-ups, come from any mechanical movement, but are exacerbated by many factors.

1. increasing press speeds
2. bad or faulty bearings
3. failure to "oil" effectively
4. old motors
5. roller misalignments
6. heavy roller settings
7. heavy impression cylinder/blanket pressures

Temperature affects on ink rheology

As the temperature of an ink increases, the viscosity decreases, causing it to penetrate more quickly into the paper, this results in dot deformation, dot-spread, and lowering of gloss. Secondary problems occur with poor trapping and slip-roll build-up.

With heatset inks, the tack will rise, and then as solvent is released it will lose its transfer properties causing partial drying on the roller edges and blanket-piling.

The sharpest printing is obtained when ink temperatures are kept low. As ink increases in temperature it will take up considerably more water, and can become water-logged, and dead on rollers or "steels" due to lack of transfer characteristics. This can be seen as bands of sluggish ink 5 cms. wide in line with the non-printing image areas at the edge of the "inking rollers" and "steels".

Temperature affects on fountain systems

Increases in temperature will decrease the viscosity of water, and its surface tension.

The water flow rate on a dampening system is dependant on the viscosity of the fountain solution. As the temperature is increased by 5.5°C, the water flow rate on a continuous dampening system is reduced by 13%.

On a brush dampening system, the same 5.5°C increase in temperature reduces the water flow rate by 7%.