

The decisive paper characteristics for the printability

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Daily the practice of printing provides a million times the evidence that printing press settings and inks must be adapted when changing the printing paper or when starting a new order. Known in the whole printing world is, despite of permanent adaptation, it comes to the problem and phenomena that the demanded printing quality is not achieved.

The paper making industry makes large-scale of experiments again and again to print so-called "same or comparable paper qualities" of different manufacturers on the same printing press with the same settings and inks. The results of these tests show **all** the same result: The printing quality, depending of ink and motive, is "very good" to "very bad".

The result is that there must be paper characteristics which cause the different printing results. Of course is this common knowledge.

What is the logical consequence?

1. There are others, till now not specified paper characteristics for printability.
2. The current, specified paper characteristics were insufficient or wrong measured till now.

Both seems us, applies to the current situation arisen historically.

What could be the dominant paper characteristics for printability?

We will start out from the following 7 paper characteristics:

1. Topography (ink transfer, -quantity, -impression, -construction)
2. Compressibility in the nip (ink transfer, ink holdout)
3. Capillary (ink absorption, -fixing, -drying and -holdout)
4. Absorbency (expansion-shrinking-swelling)
5. Dimension stability (shrinking-horning-expansion)
6. Dynamics of changing of elasticity of paper – moisture dynamics (E-module, web tension, break in fold)
7. Equilibrium moisture as **absolute** moisture determines the paper condition.

Some of these paper characteristics were introduced as **printing process relevant paper characteristics (DrE)** by R. Beltz on the IMPS.

In our knowledge all experiments to find out the mathematical correlation between printing paper characteristics, paper dispensing and printing problems or phenomena did not show a mono causal connection until now.

All mentioned 7 paper characteristics are reproducible and process relevant measurable with the required dynamics with new, innovative measuring methods. They are at the printer's disposal for problem analysis and printing process optimization.

Of course the problems and phenomena of printing are always result of a very complex interaction of printing technology, machine condition, paper and ink.

We assume that it is job and desire of every printing technology to learn to understand and to control of the appearing problems and phenomena.

The elementary requirement for this is the knowledge of the printing process relevant paper characteristics.

The most important characteristics are topography, the dynamics of the capillarity and the absorbency as shown at examples from the printing practice.