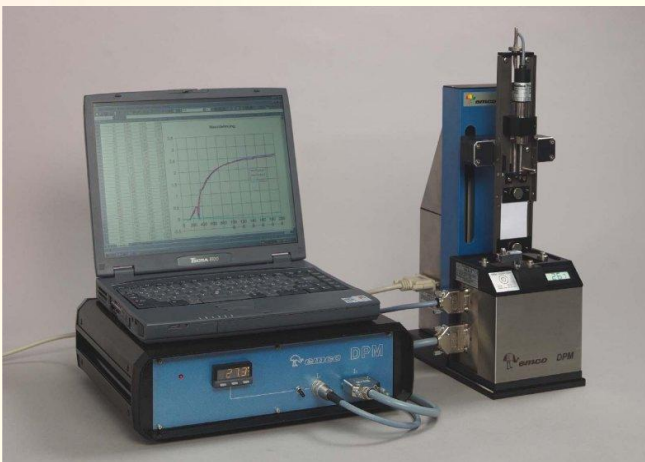


Measuring system and methods for the examination of wet expansion of paper

emco DDPM - Dynamic Expansion Module

The *emco* DDPM - expansion module as a integral part of the DPM system solution for the determination of dynamic of the wet expansion of paper

Measuring system and methods



emco DPM - Dynamic Penetration Measurement

Only the *emco* DPM offers the ability of simultaneous measuring of wet expansion and ultrasound transmission as a complex assessment of paper.

- ⇒ Method *emco* DPMprint for the determination of the printability and runnability
- ⇒ Method for the determination of the dynamic of dimension changes of paper (long-term stability, labels)
- ⇒ Replacement of the classical Fenchel-method

Technical parameter

Measuring range:	-5 % to +15 %
Sample size:	50 mm x 50 mm
Resolution:	ca. ± 0.024 %
Test liquid:	distilled water *)
Measuring duration:	unlimited
Calibration:	cal. standard
Null balance:	automatic
Initial load:	variable 0...0.5 N

*) Standard test liquid, with the cell insert other liquids, solvents, printing inks, coating colours etc. are applicable

The dynamic expansion module *emco* DDPM is a modular accessory of the *emco* DPM. Already in used equipment is upgradeable without problems.

Performance parameters:

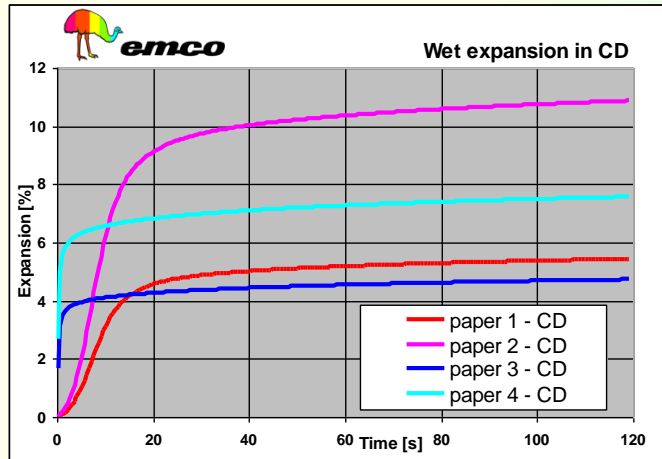
- Measuring of the dynamic of the wet expansion in %
- Measuring without effect of an initial load
- Measuring with double-sided contact to the medium
- Measuring of a paper in machine direction (MD) and cross direction (CD) is possible
- Utilisation of *emco* DPM - accessories (cell insert for special liquids, tempering)
- Measuring of the dynamic of expansion and shrinking in the climate
- Software package *emco* DPR - Viewer for the examination of the measuring data

Dimension changes for examination of the long-term stability

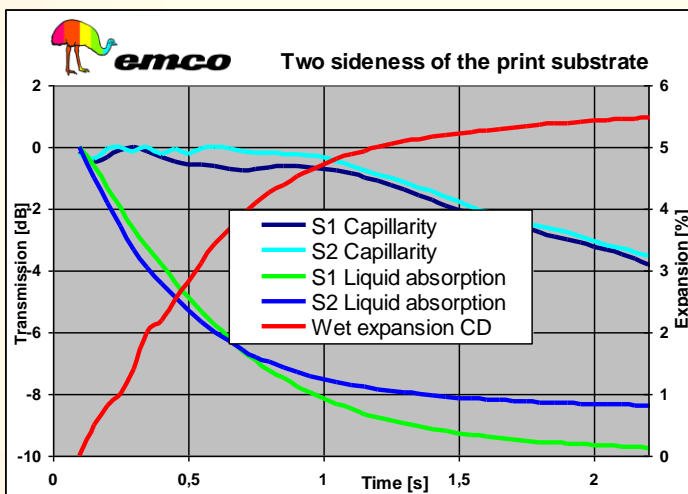
Measuring of the dynamic of expansion and shrinking in the climate (temperature and moisture variations).

Determination of the dynamic of E-modulus changing at water absorption regarding to web tensions-settings.

- Long-term stability of ink layer films and varnish layer films
- Evaluation of plane position, waviness, stretch and overhang
- Compatibility of different papers in a printed product



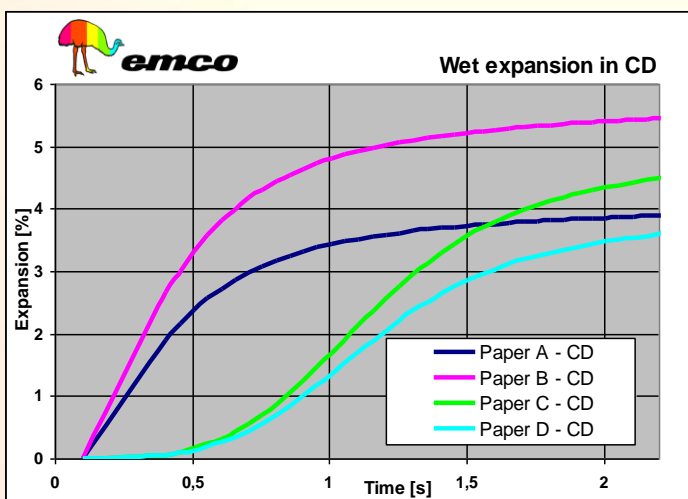
Evaluation of printability and runnability



Printability

The measuring of wet expansion (cross direction) is carried out in the printing process relevant time domain.

- Evaluation of the fan-out-potential
- Comparison of capillarity and water penetration of the printing substrate



Runnability

- Fan-out-potential
- Dimension changes of paper in print and post press
- Dynamics of tension - expansion - changes at water absorption in printing process regarding to web tension settings