

Instantaneous Drying and Photonic NIR-Curing - Abstract Submitted to the European Coating Symposium ECS2015

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The physical drying and if necessary the additional curing steps are mostly today driving and therefore limiting the coating processes.

The adphosNIR[®]-technology, a special near infrared emitting, high-density energy source in combination with the integrated high velocity impingement air ventilation to remove the drying/curing process inherent water/solvent vapor, has been developed recently to be applied for instantaneous (within milliseconds to only several tens of seconds), drying/photonic curing of thin coating films.

Based on an introduction of the physical working principles of the adphosNIR[®]-systems technology, the wide range applicability concerning:

- Coating types (water/ solvent thermal and/or water/solvent based UV-inks, coatings),
- coating layers (submicron up to $\geq 50 \mu\text{m}$),
- substrate types (paper, plastics, metallic, glass, ceramics),

is outlined. The major adphosNIR[®]-characteristic process defining parameters and boundary conditions are evaluated in comparison with traditional drying technics (e.g. hot air, InfraRed, hot drum, Xe-flash). Here for, typical, recently realized drying/curing examples are described and discussed.

Thanks to the adphosNIR[®]-drying/curing technology, now, an energy efficient, precise process defined and controlled as well as an extreme compact drying/curing step allows to overcome several prior limiting barriers, like speed limitations for

- high water/solvent containing coatings and/or
- on thermal sensitive substrates and/or
- for high drying/curing energy requiring process and/or
- for narrow space conditions.