EBC is economical

After fixing the requests of the coating, the layer thickness (acceleration voltage) and the planned throughput of the material (electron flow) will be well suited to each other. The economical area for plants from roll to roll is, according to the increase in value of the converting process, between 5 and 20 Mio. m^2 per year.

Extensive cost analysis shows, that in consideration of the whole coating process, approx 80 - 90 % of the coating costs are caused due to the lacquer. The rest of 20 - 10 % is spreaded in energy, inert gas, service, articles of consumption like masking foils, and also capital and depreciation costs.

According to the lacquer costs, realistic m^2-costs, at a total weight of 20 g/m^2 are in the area of 0,30 - 0,40 DM/m^2.

Performance data for Electron Crosslinking AB Accelerators

- Acceleration voltage	80 - 300 kV
- Electron flow per cathode	max. 200 mA
- Working width	200 - 2000 mm
- Electron flow per cm window length	max: 3,2 mA/cm
- Speed of web at 10 kGy	up to 800 m/min
- Distribution of dosage over working width	better ± 5 %
- Productive penetration depth of electrons -also in pigments or metals-	max. 390 g/m^2

No gas cooling of the electron exit window necessary
The electron accelerator can be installed in all positions
No measurable radiation outside the x-ray shielding

Discussions of process or principle trials direct to the developer and manufacturer of electron radiation systems:

CROSSLINKING AB

EB_013_E

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CROSSLINKING AB

EBC for non-thermal curing of lacquers on paper, films and foils

Today the consumer is searching for surfaces with the resistance and the durability of synthetic materials, but he doesn't want to lose the warmth and the homeliness, which lacquers are transmitting at the same time.

For this the EBC (Electron-Beam-Curing) presents lacquered surfaces highly crosslinked, which can't be reached economical with any other lacquering technology.

Why EBC ?

Additional to the above important arguments for the EBC-drying there are some essential advantages of this economical curing method to the fore:

- Solvent free, 100 %-system, curing through polymerisation
- High scuff resistant coatings
- Controlled and calculable through-curing
- Immediately stacking or subsequent treatment of the materials
- High throughput, essential increasing of the production speed in comparison to the thermal drying method
- Constant product quality, precisely maintain of crosslinking and vulcanising process through dose precision over working width, in the depth of material and also in production time
- Essential modest extraction values in comparison to UV-curing, processing without sensitisers-
- Modest energy consumption, minimal temperature increase through radiation process
- No change of moisture level in the substrate

EBC is successful in the industrial practice of surface converting for a variety of substrates, e.g:

- Wood materials (floor coverings, doors, wall plates, all-around curing of lacquers on mouldings)
- Façade plates for outside application, direct coatings of paper and foils
- Paper and synthetic foil coatings (furniture foils, lacquered foils for laminated boards in application for high requests like floor coverings or table surfaces)
- Vulcanising of pressure sensitive adhesives

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Lacquer material

The EBC curable layers, consists of 100 % systems on acrylate base. With corresponding pigmentations of differently colours and with particularity considerations all matting levels and also structures in the surface can be reached.
All available systems like roller coating, curtain, vacuumat application, dip and drain coating, spray coating can be used as application technologies.
EB-lacquers have a very low steam pressure, therefore the application with increased temperatures of the coating material and / or the substrate is possible. Also there is no drying of the lacquers in the application systems. An ex-protection is inapplicable.
The cured layers gives the feeling o lacquers with its own warmth and homeliness. Also they are resistant to scratches, nicks, acetone, ethanol, water, acids, fat, coffee, wind and weather.

EBC units from roll to roll are easy in construction; for the operation there is no additional personnel necessary. The plants are running independent SPS-controlled and screen supervised. Because high voltage (penetration depth of electrons) and electron beam (dose / throughput of material) are measurable and calculable values, everytime and for every product a quality with EBC is possible.

1 Unwinder, masking foil (option) (high gloss, mat, structured)
2 Coating of the masking foil (option)
3 Laminating station (option)
4 Unwinding the furniture foil
5 Partly impregnation the furniture foil (option)
6 Coating of the furniture foil
7 EBC with roller frame / drum (option) for the stock guide
8 Delimitation of masking- and furniture foil (option)
9 Rewinding masking foil (option)
10 Rewinding furniture foil

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Drying process

The substrates, which will be coated are coming from the unwinder and than, according to the later applications, they will be

1. headfirst coated with surplus with a roller coater and dosed on a layer thickness of 5 - 15 g/m² with wire ductors.
2. coated with layers up to approx. 40 g/m² with a screen roll by the reverse process
3. coated high pigmented in a screen printing process
4. coated in the ductor roll process in contrarotating by coating roll and ductor roll and an adjustable scraper (both of them are ceramic coated for high abrasive lacquer materials up to 150 g/m²)
5. coated like 3. and 4., but covered though an additional laminating foil, which is coated at the inner side. The laminating foil is high gloss, mat or structured at the inner side.
6. one side impregnated and wet in wet coated.

The coatings or the laminations are running either over a roller frame or a drum, which is cooled or heated, in the irradiation zone, which is enough shielded against x-rays.
At „open" coating it will be inerted and at „covered" coating an inertisation is not necessary. The coating / impregnation will be cured within seconds. The material is running out of the irradiation zone over a cooling roll (exothermic reaction of the coating material) up to the rewinding station.
At „covered" coating and curing the carrier foil will be removed at first and than it will be rolled up for reuse.
The surface material can be processed immediately and it can be used for coating pieces of furnitures, for the producing of laminated boards, for applications in- and outside or for floors.