



Industrial Process
Spectroscopy

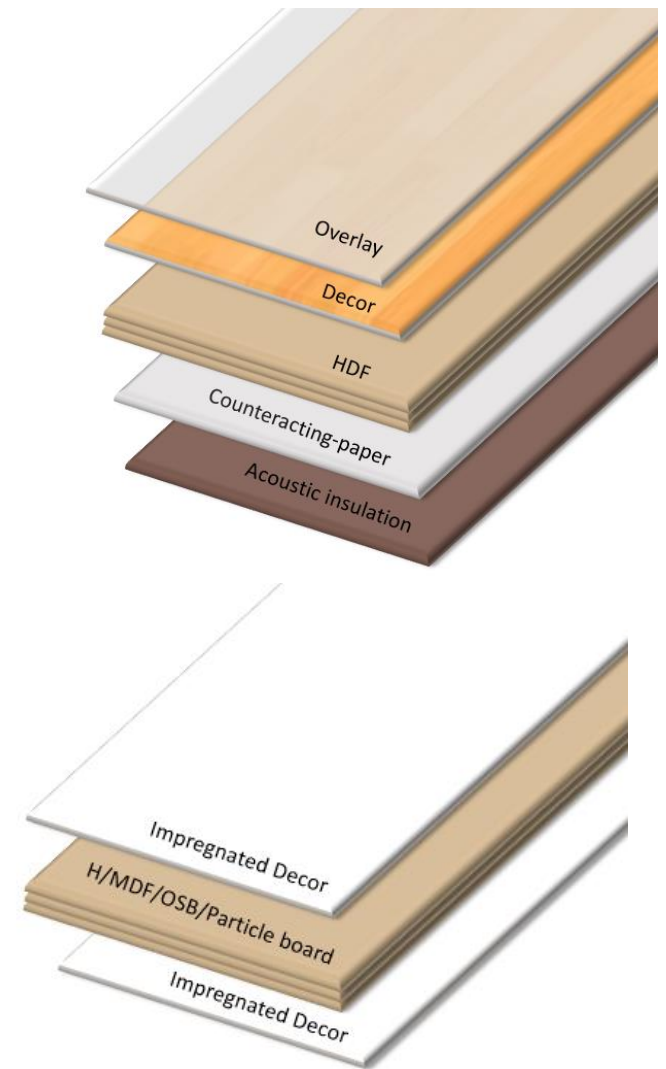
APOS CureKT - NIR measurement of curing degree after short cycle (,KT') press

Wedel, Mar 5, 2021

PAST: Acid Test to determine curing degree

Background:

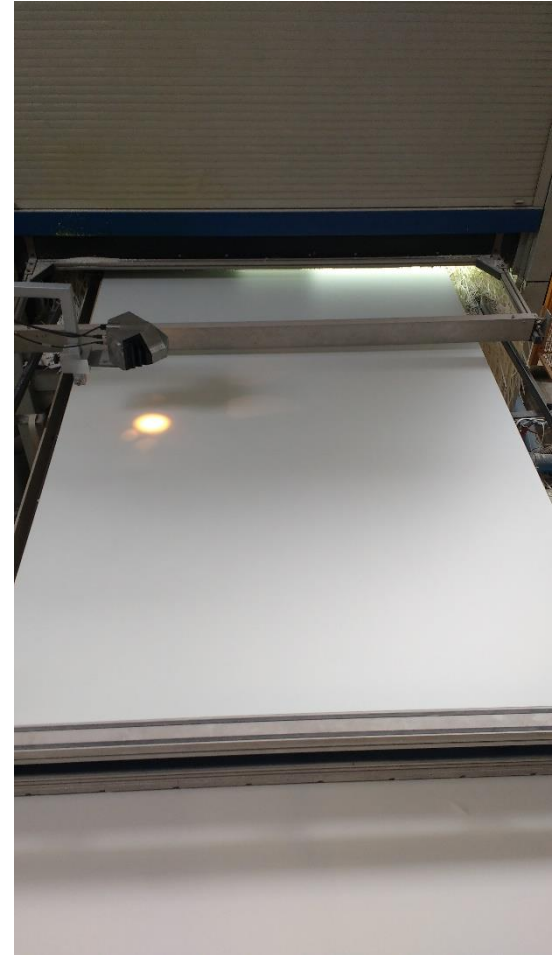
- In production of floor or wall panels, the pressing (short cycle press) of (several) resin-impregnated papers is carried out on (wood-based) panels
- Curing degree is routinely determined on a production line using a so-called acid test
- The curing degree of the hardened resin determines the surface quality
- The laboratory analysis time and material consuming
- The laboratory analysis can be replaced by an online spectroscopic measurement



NOW: CureKT online measurement of curing degree

Online measurement has many advantages:

- Permanent online control of production process and ad-hoc reaction to changes – **reduce mis production**
- **Production speed** can be increased – get closer to the max by online monitoring of quality
- Time-consuming laboratory procedures are replaced by online measurements
 - **No chemicals**
 - **Continuous monitoring**
- Product quality is improved
- Material waste can be reduced
- Based on following reference method: allow hydrochloric acid (4N HCl) to take effect on the cooled board for 25 minutes. Wipe off with water and assess the degree of shine of the surface.



Savings with APOS CureKT

Sample calculation for savings potential:

- Savings potential of > EUR 200,000 per year possible
 - If the laboratory analysis is not required and no material is destroyed, up to EUR 75,000 per year can be saved
 - Reduced lab costs
 - No sample boards destroyed/devalued
 - Reduced customer complains and superior quality. Less complains can easily lead to >EUR 40,000 per year in savings
- Increase in sales by increasing the number of presses per hour

Product	coated surfaces, furniture ...	
Applikation	Degree of curing according to KT, as a replacement for acid test	
Assumptions, system specification	KT Presse	180 Pressings/h
	Working width	2,07 m
	Working length	5,2 m
	Production days	290 /yr
	Price coated plate	3 EUR/m ²
	Production volume m ² / year	13.485.139 m ² /yr
	Testing curing every	1,5 h
	Curing test (example: 180 plates every hour. When testing every 1.5 hours, one of 270 plates (180 * 1.5) is tested, corresponding to 100 / (180 * 1.5) = 0.37%)	0,37 %
	Inspection rejects (plate with inspection marks may be delivered, but at a different price)	50 % of one board
	Rejects by examination	24.972 m ² /yr
Savings (avoided rejects)		74.917 EUR/yr
Increase in number of presses / yr		5 Presses / yr
Sales		40.455.418 EUR/yr
Margin 8%		3.236.433 EUR/yr
Increase margin through capacity increase		89.901 EUR/yr
Further savings potential		
Material / complaint	Percentage of production volume	0,1 %
	Complained quantity of material	13.485 m ² /a
	Complaint damage	40.455 EUR/a
Personal		
Saving per year (7000h)		40.455 EUR/a
Total savings and capacity increase / yr		205.274 EUR/a
Note		
Quantity of material produced between an examination (e.g. curing degree). In the event of incorrect production, this quantity may have to be disposed of.		2906,28 m ² per test
		8718,84 €

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