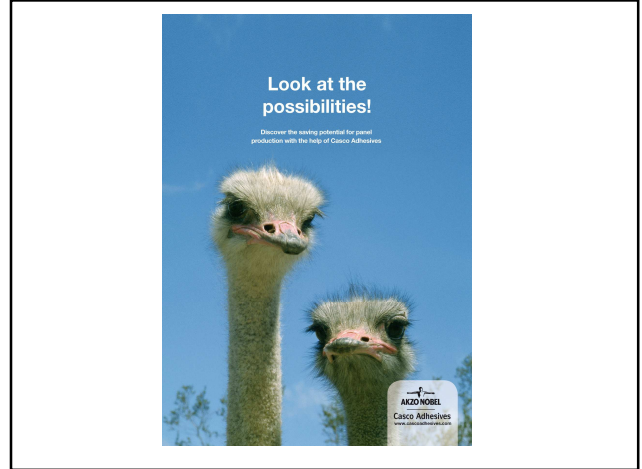




Target

Reach F**-quality**

Emissions according to JIS A 1460

Average < 0,3 mg/l

Max value < 0,4 mg/l

Production trial

Lowemission glue + catcher

UMF 0839 + Kenocatch 4315

Test system

Longer testrun	72 hours
Several thicknesses	12-28 mm
	density 580-650 kg/m ³
	P1-demand

Understand the standard deviation

Asses suitable catcheramount

Low emission glue + catcher Parameters

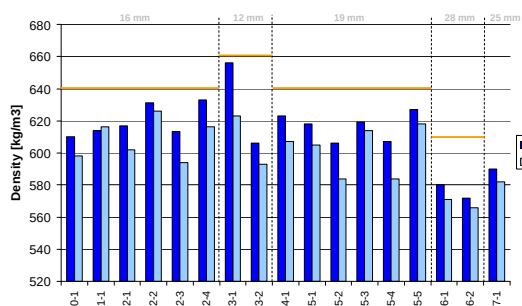
	Trial 0 ref 0840 surface /core	Trial 1 surface /core	Trial 2 surface /core	Trial 3 surface /core	Trial 4 surface /core	Trial 5 surface /core	Trial 6 surface /glue	Trial 7 surface /glue
thickness	[mm] 16	16	16	12	19	19	28	25
glue	0840	0839	0839	0839	0839	0839	0839	0839
gluedosing	[gld] 11.8/7.95	11.8/7.95	11.8/7.95	11.42/7.94	11.42/7.94	11.42/7.94	11.47/8.13	11.47/8.13
woodchips	[dld glue] 1.39/3.65	1.39/3.65	1.39/3.65	1.39/3.65	1.39/3.65	1.39/3.65	1.39/3.65	1.39/3.65
Hardener	[dld glue] 1.39/3.65	1.39/3.65	1.39/3.65	1.39/3.65	1.39/3.65	1.39/3.65	1.39/3.65	1.39/3.65
Water in surface	19,8	19,8	17,7	17,7	17,7	17,7	17,7	17,7
[blmisch]								
Urea	[dld harts] 0.89/2.34	0.89/2.34	0.89/2.34	0.89/2.34	0.89/2.34	0.89/2.34	0.89/2.34	0.89/2.34
Kenocatch	[%dld glue] 0	0	5,6	5,9	0*	5,7	5,7	5,7
Kenocatchdosing	[kg dm3 board] 0	0	3,1	3,3	0*	3,1	3,1	3,1
Kenocatchsplit	[%]	0	0	57/43	57/43	0*	57/43	58/42
Presstime [s]	108	110	110	82	142	142	204	-

Low emission glue + catcher Parameters for test run

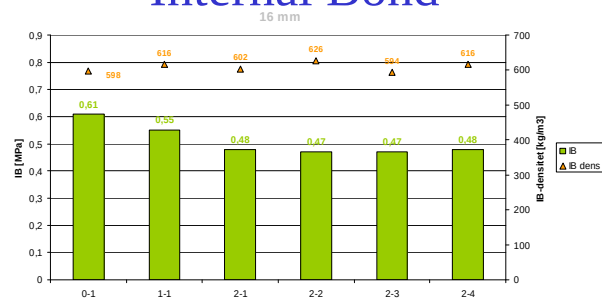
Testrun was conducted at normal presstime

Trial	thickness [mm]	Production speed [m ³ /h]
reference	16	11.9
2	16	11.9
3	12	11.1
4	19	11.7
5	19	11.7
6	28	11.9
7	25	11.9

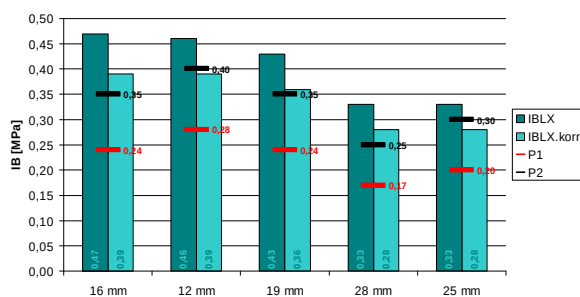
Testrun continued... Density



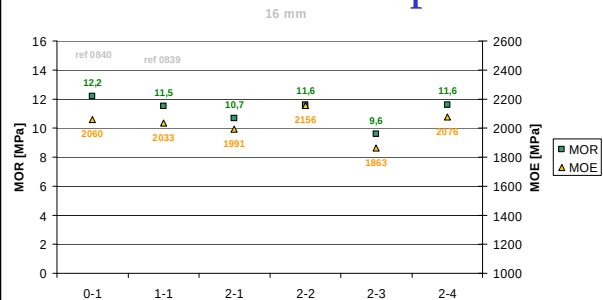
Testrun Continued... Internal Bond



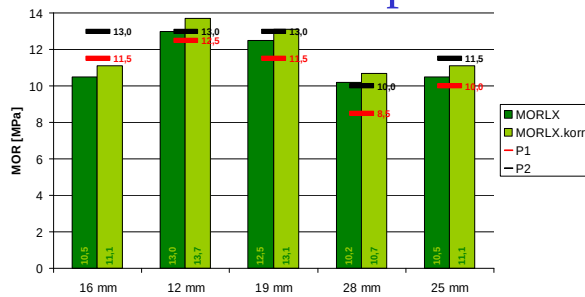
Testrun Continued... Internal Bond



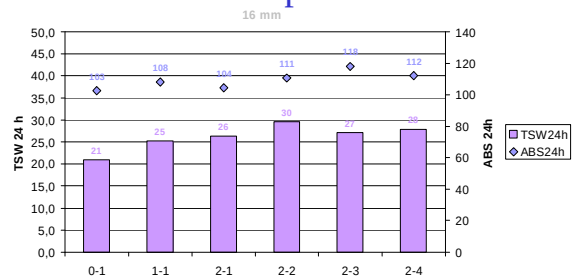
Testrun cont... Modulus of rupture



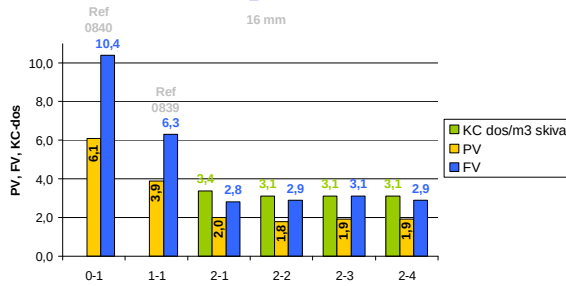
Testrun cont... Modulus of rupture



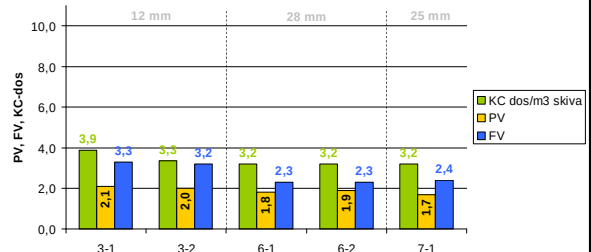
Testrun cont... Thickness swelling and absorption



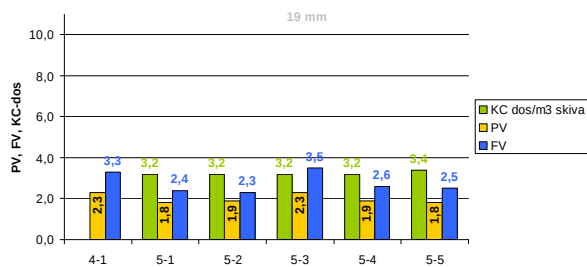
Testrun cont... Flask- and perforatorvalue



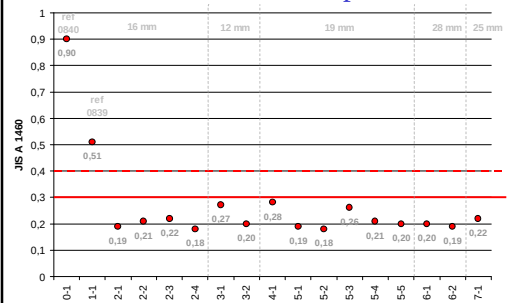
Testrun Cont... Flask- and perforatorvalue



Testrun cont... Flask- and perforatorvalue



Testrun Cont... JIS A 1460 Japanese dessicator

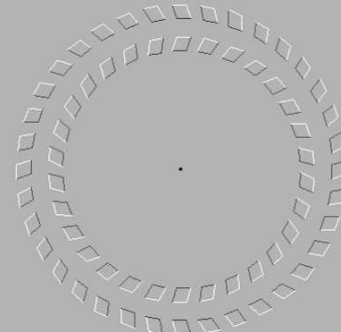


Conclusion

0839 + KC 4315

Good production speed
Good catchereffect
IB slightly lower
MOR good or slightly lower
Thickness swell slightly higher
Absorption somewhat higher

F**** OK!



FOCUS ON THE DOT IN THE CENTRE AND MOVE YOU HEAD BACKWARDS AND FORWARDS.
WEIRD HEY...

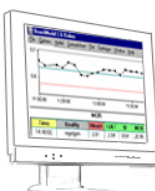


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Process Applications

Real Time Determination of Formaldehyde Emission from Particleboards Using NIR-Spectroscopy





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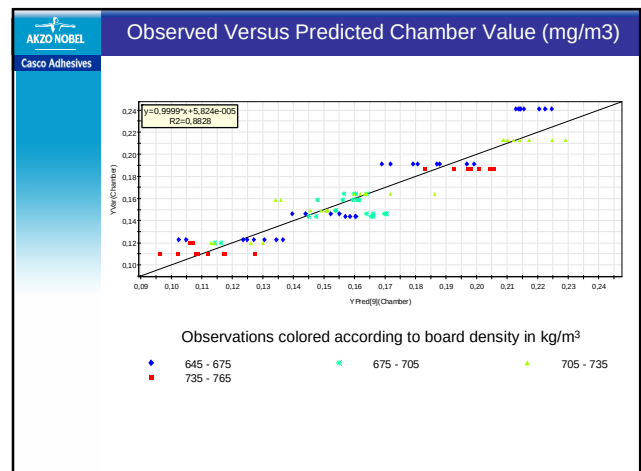
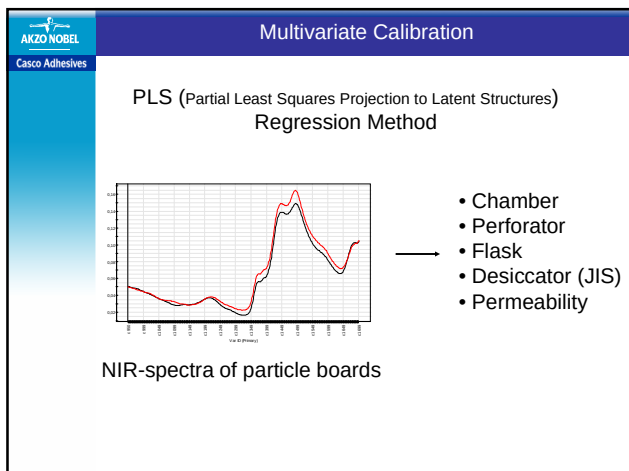
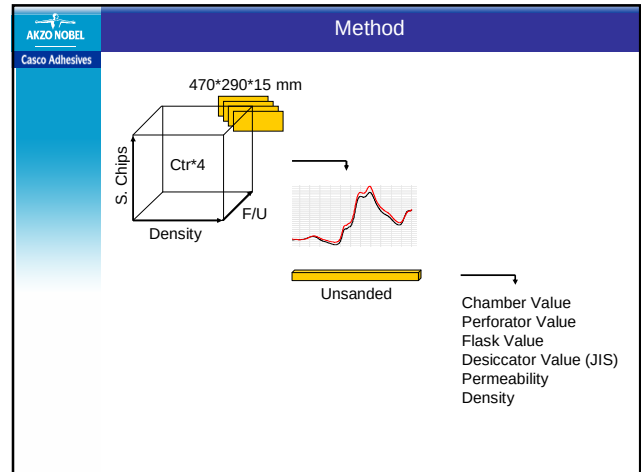
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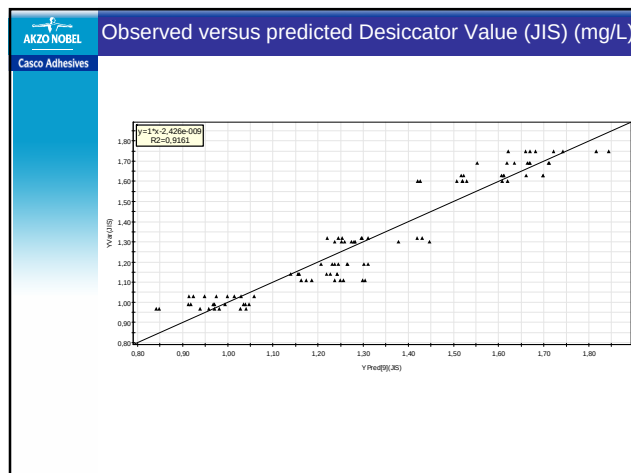
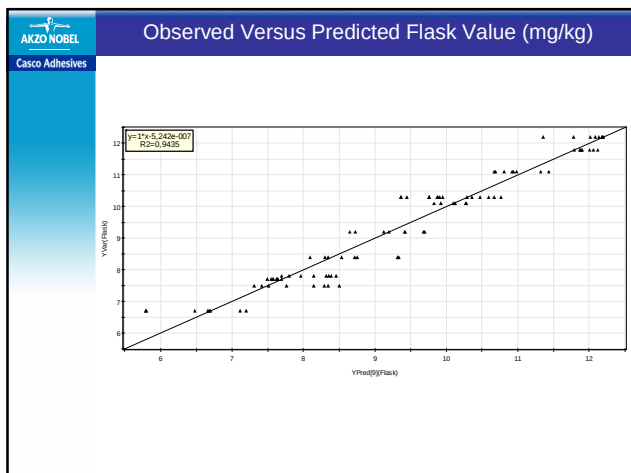
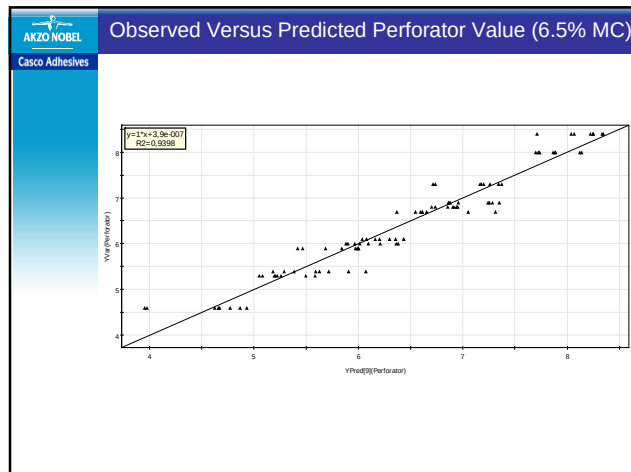
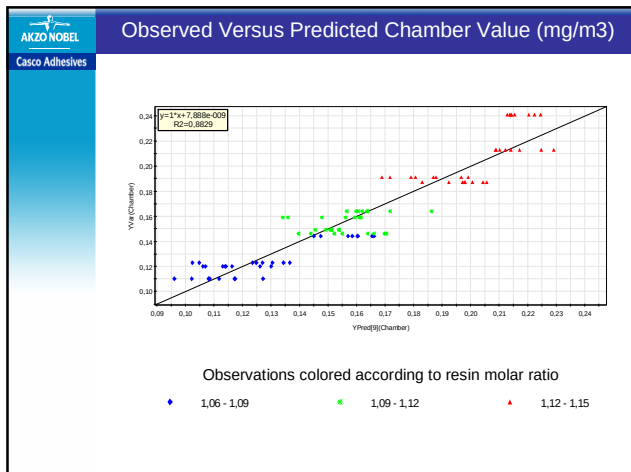
Laboratory Trial

Three layer particleboards:

• FU- Ratio	• 1.05-1.15
• Density	• 600-700 kg/m ³
• Surface chips	• 30-50%
• Sanding of boards	• Sanded/Not Sanded

Factors and Settings	
Casco Adhesives	
Factor	Setting
Resin Dosage (Dry/Dry) Surface- and Core chips	10%
Hardener Dosage (Dry/Dry) Surface-/Core chips	1% / 2.7%
Press Temperature	185°C
Press Time	10.8s/mm





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Full-scale Real-time Analysis

- Short-term test for equipment validation
- NIR Instrument placed between press and cooling wheel
- Six board samples
- Board thickness: 16 and 22 mm
- Density variation from 630-690 kg/m3
- Varying Catcher Dosages in core- and surface layer
- Formaldehyde emission measured with:
 - Flask-, Perforator-, Desiccator- and Chamber method.

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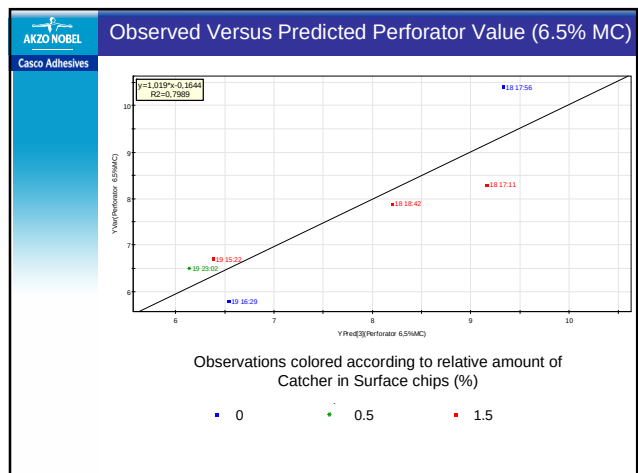
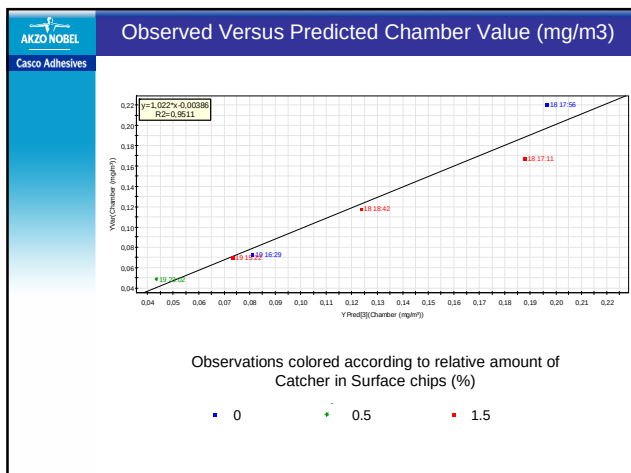
Casco Adhesives

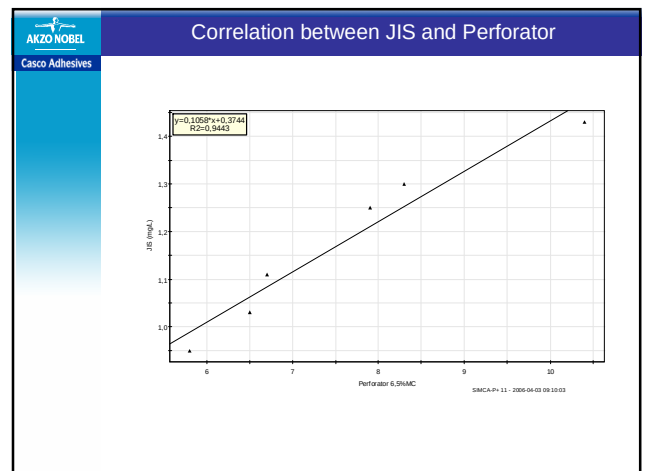
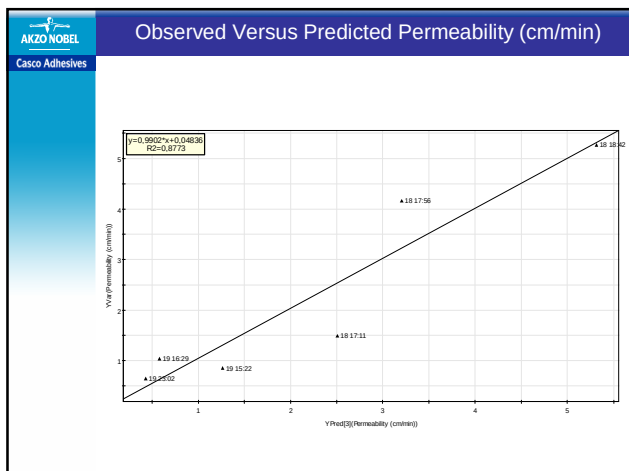
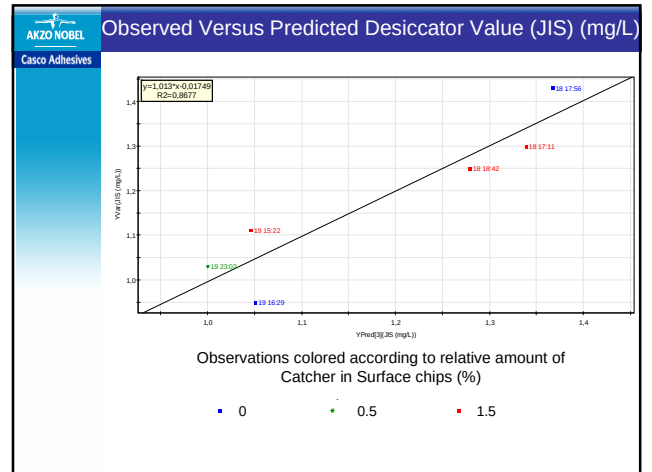
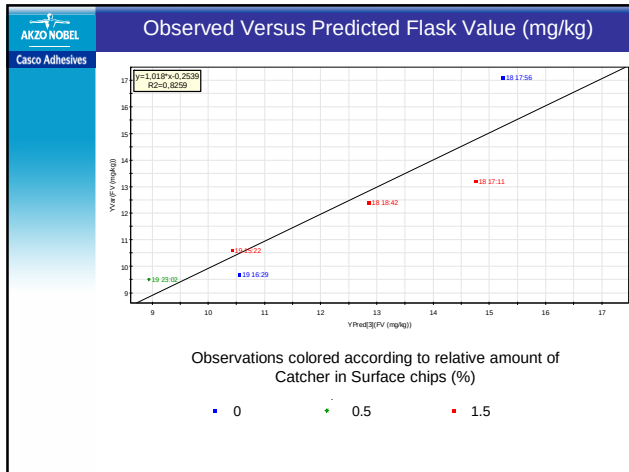
Manufacturing Settings

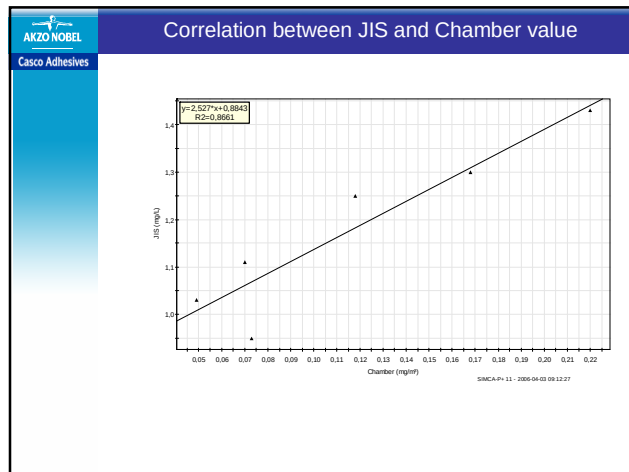
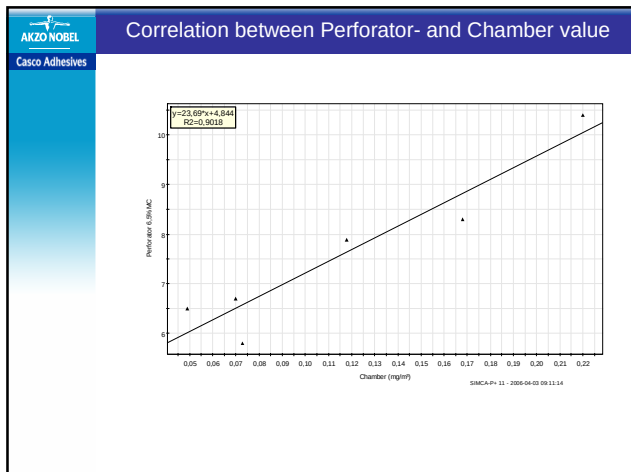
Obs.	Glue C. (%)	Glue S. (%)	Catcher C. (%)	Catcher S. (%)	Hardener C. (%)	Hardener S. (%)	Dens. (kg/m3)	Thick. (mm)
18 17:11	11.5	11.5	0	1.5	3.5	1.5	644	17.9
18 17:56	11.5	11.5	0	0	3.5	1.5	631	17.8
18 18:42	11.5	11.5	3.5	1.5	3.5	1.5	634	17.7
19 16:29	16	14.5	0	0	3	1.5	691	23.2
19 15:22	16	14.5	3.5	1.5	3	1.5	690	23.2
19 23:02	11.5	11.5	2.5	0.5	2.5	0.5	684	23.3

Glue type 1

Glue type 2







Conclusions

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- Formaldehyde emission from particle boards can be measured with NIR spectroscopy and multivariate calibration.
- The correlation between observed chamber value and prediction from NIR-spectra is better than the correlation between perforator value and chamber value.
- Calibrations can be made for prediction of Chamber-, flask-, JIS-, and perforator value.
- More information on full scale trials will be available by the end of -06.

Let's get down to business!

Discover the working potential for panel production with the help of Casco Adhesives, our innovative and specialised team offers.

- BoardModel™ on-line prediction of board properties
- On-line measurement systems for formaldehyde measurements
- On-line systems for FIP tunnels
- Licensing of resin technology

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