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15th International Invention and **Innovation Show**

New Solvent Quenching Pressure Sensitive Paints dedicated to model tests of wind resistance of building structures carried out in wind tunnels in order to prevent catastrophes and damage to buildings, as well as studies of environmental effects on elements of engineering solutions.

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SQ-PSP = Solvent Quenching Pressure Sensitive Paints

SQ-PSP are spectroscopic measurement systems for pressure mapping on buildings during aerodynamic tests for the design process, to check their wind resistance. They characterized by very high spatial are resolution and the ability to study complex solids.





Oxygen guenching Solvent quenching 0, solids solids Eu(TTA)₃(TBPO)₂ liquids liquids Fig.2. Structure of the gases gases pressure sensor used. Fig.1. The mechanism of operation of PSP systems. 30000 Ρ 1_{max}/1₀ 1,1 2,60 [kPa] [-] 30 [kPa] 25000 -1,0 0.77 2.55 ш ш 20000 **D**2,50 Intensity [a.u.] 0,9 **nax 1ref** 0,53 15000 -2,45 100 300 400 200 0,53 P[kPa] 10000 -0,7 5000 -0,6 630 0,5 610 6<u>2</u>0 640 600 100 150 200 0 50 250 300 Wavelength [nm] B Α P [kPa]

Fig.3. Calibration of the PSP system based on an acrylate matrix labeled with the europium complex Eu(TTA)₃(TBPO)₂: emission spectrum of the sample (A) and the dependence of the sensor luminescence intensity on the pressure and thickness of the sample (B).

Fig.4. SQ-PSP compositions based on organic-inorganic complexes.

Information on the change in the light emission characteristics from the surface of the coating

Mathematical analysis

> Information on the pressure distribution on the surface of the coatings



Fig.5. Comparison of PSP systems (left) with classic systems (right).

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