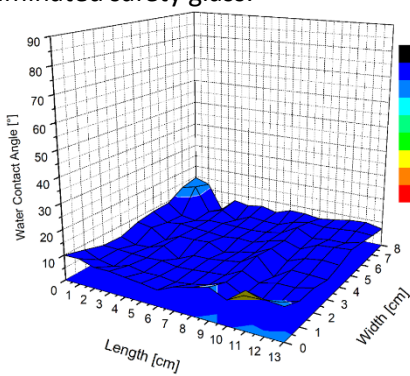


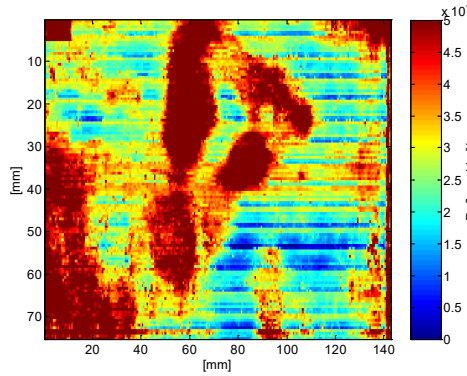
# Plasma treatment of sheet glasses for architectural applications – cleaning, pre-treatment & adhesion improvement

## Transfer offer

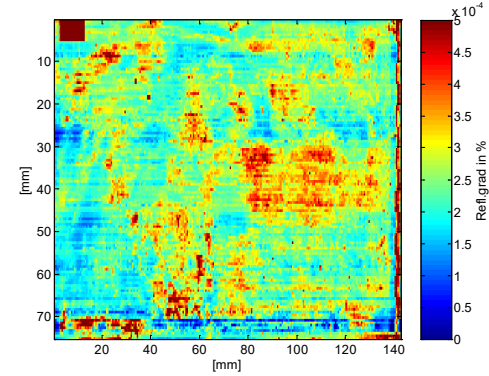
Glass cleaning or pre-treatment is an essential process step in manufacturing functional glasses. Plasmas offer the potential to reduce organic contaminations caused by release agents, oils / fats or natural deposits. Along with this, a homogeneous plasma activation enables improved bonding of subsequent coatings (painting, printing) or the glass-foil adhesion within laminated safety glass.



Investigation of water contact angle on plasma-treated glass sample (area: 130 x 80 mm<sup>2</sup>)

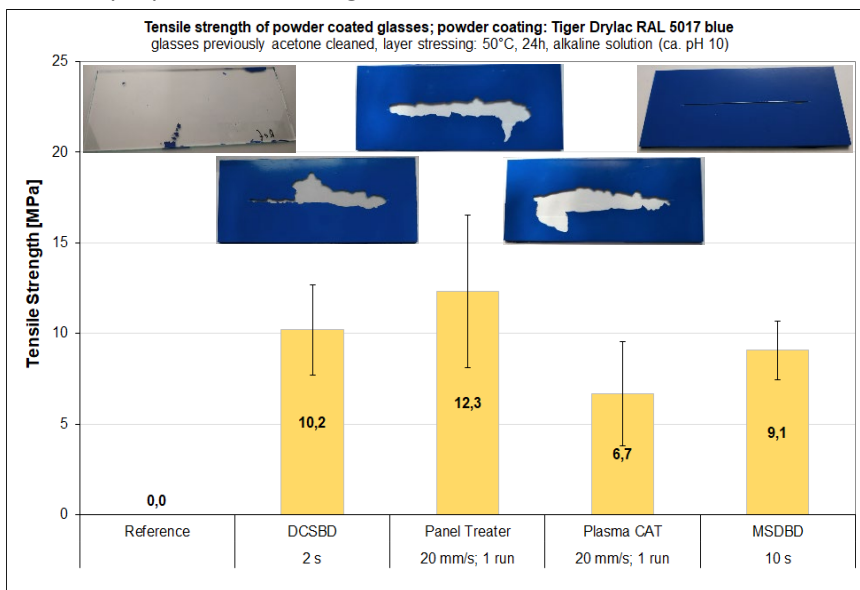


Laser measurement to determine the glass cleaning quality (area: 140 x 80 mm<sup>2</sup>); initial state (left), same measurement area after plasma treatment (right)

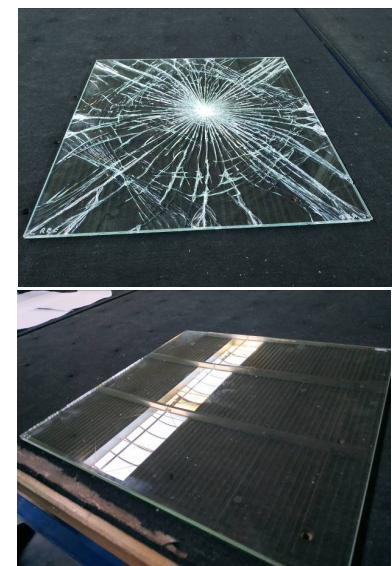


## Technical solution

INNOVENT offers a broad range of plasma systems for optimized cleaning and pre-treatment. This ranges from spot like plasma jets (power: a few watts to several kilowatts) to DBD systems up to 50 cm treatment width. The portfolio is completed by a variety of analytical methods for the determination of the cleaning quality (e.g. FTIR- & UV/Vis spectroscopy, laser / grey value measurement), the surface properties (e.g. AFM, profilometry, XPS, SEM, surface energy) or the resulting adhesion properties of coatings.



Tensile strength (DIN EN ISO 4624) of powder coated glasses after stressing procedure, comparison reference vs. plasma treated glass



Laminated safety-glass after hard body drop test (DIN 52338); reference (top), glass + PVB foil plasma treated (bottom)

## Advantages

- Homogeneous cleaning /activation of glasses over the entire plasma width
- Plasma treatment up to 50 cm glass width, further possibilities for upscaling are given
- Short term plasma-glass interactions are sufficient
- Improved adhesion properties

## Level of development

- Previous tests were carried out on a laboratory scale and partially under industrial conditions within a laminated safety glass production line
- Development of comprehensive competences in glass analytics
- Based on the plasma-glass developments, a transfer to further material classes is possible (e.g. ceramics or even temperature-sensitive surfaces)