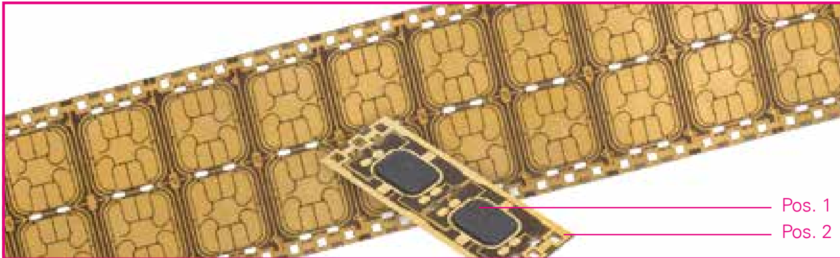
Application Note

PiNK®

Chipcard production

Plasma activation of chipcard modules



Surface activation in low-pressure plasma significantly improves the contact angle and surface energy (and hence the glue's adhesion) at two relevant points on the module.

The V80-G unit is suitable for the plasma activation of chipcards.

Application

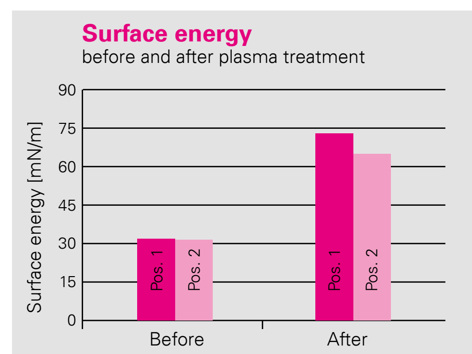
A chipcard's quality and service life depend essentially on the adhesion of the modules to the chipcard. If the adhesion is too weak, the module may detach itself from the chipcard, e.g. when strongly flexed, making the card unusable. To prevent this and to achieve optimal adhesion of the hotmelt bond, the modules are activated in plasma before bonding.

Systems engineering

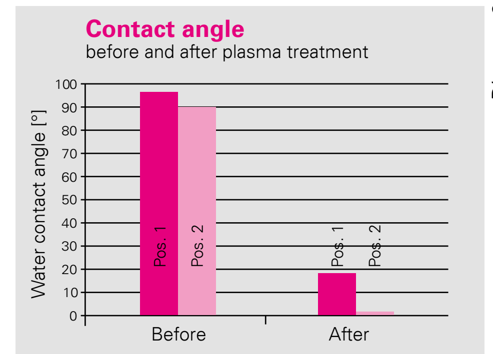
The gas employed is capable of penetrating via the tiniest gaps and reaching poorly accessible places. It is therefore also possible to process a fully wound coil without costly winding and unwinding. The process is not hampered by the presence of interleaves. The modules can also of course be treated in magazines. The process takes place fully automatically and without further treatment steps.

Plasma process

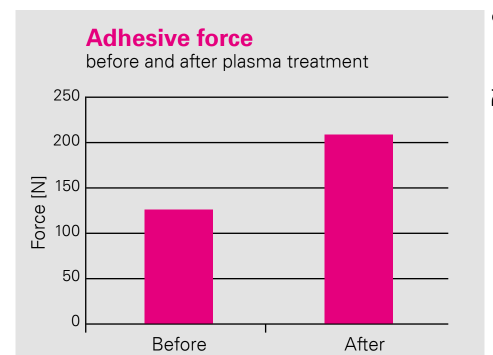
Treatment in oxygen plasma raises the surface's wettability by increasing its surface energy (Diagram 1).



Polar functional groups are formed on the polymer surface and metal surfaces are cleaned. This effect can be illustrated by the contact angle of water. After treatment, the water droplet spreads, i.e. the angle is reduced (Diagram 2).



The glue adheres better to the substrate (Diagram 3) as a result. The force that has to be applied to release the module thus increases considerably. The plasma process takes place at room temperature with non-toxic gases and without generation of any hazardous waste products.



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