

Corona treatment in the printing and converting industry

Corona technology has become widely accepted as the best process for the surface treatment of paper, plastics, and metal foils to improve the adhesion of inks, paints, bonding agents and coatings. The reasons for this can be found in the good effects, controllability and easy handling. The efficiency and functionality of the equipment in particular have been increased step by step in order to keep pace with the constantly developing, high-capacity conversion machines

Printing machines

For printing flexible material webs like plastic films, for instance, corona treatment is essential. Normally materials are used which have already been corona treated on manufacture. Long storage time means that the surface tension is no longer sufficient in most cases to guarantee satisfactory adhesion of the ink. This is the case in particular when the films contain a high proportion of lubricants. Inline corona treatment before printing refreshes the treatment and produces good adhesion properties between the film and the printing ink.

For reasons of air pollution control water-soluble inks are being increasingly used instead of solvent-based inks. For these products significantly higher surface tensions must be created to ensure adequate adhesion.

Apart from the treatment of plastic films there is an increase in the treatment of aluminium foils. In most of these cases the usual primer is no longer necessary.

Laminating machines

For laminating flexible webs of material the same conditions apply as in printing. It is recommended to subject both the fibrous web to be coated as well as the laminating web being fed in, because it is very important for both laminate elements to have good adhesive properties.

The corona stations should be as close as possible to the coating machine or the laminating machine to keep contamination of the treated surface by guide rolls to a minimum. For hazardous areas explosion-protected corona stations are available.

Extrusion coating and laminating machines

In the manufacture of flexible packaging or photographic paper it is essential to subject materials such as paper, cardboard, plastic films or aluminium foils to corona treatment prior to plastic coating or laminating. The treatment results in an improvement in the adhesive properties of these materials, an increase in production rates and better product quality.

Corona technology is also used inline for the subsequent treatment of plastic-coated web materials if these have to be subjected to further processing such as printing, laminating or another form of conversion.

Cup printing machines

Today yoghurt cups, drinking cups, etc. are mainly made of polypropylene by injection moulding or deep drawing. Without the corresponding corona treatment of the surface before printing, sufficient adhesion of the printing ink cannot be achieved. It is irrelevant whether printing is done with conventional or with UV inks. The corona electrodes are mounted inline directly in front of the printing machine.

Defect control in cup printing machines

Leaking cups bring complaints, particularly after they have been filled and packed. SOFTAL has continued to develop the successful corona system to cope with such problems. An additional hole detector module detects and indicates holes in the cup wall. A time-delay signal sorts out the defective cup at the printing machine outlet.

UV coating machines

The application of these special drying varnishes offers several advantages with regard to energy saving, space saving and environmental protection. On the other hand it also raises problems especially in the further processing of printed materials with regard to the wettability of the printing inks. What is known as the „orange peel effect“ appears on the top coat, in other words the surface appears to be rough. Corona treatment with specially designed stations for the treatment of sheet material ensures perfect wetting of the surface and thus a smooth and shiny surface on the varnish.

Cable printing

When identifying cables it is necessary to print them with the corresponding marks. Printing is usually done inline directly after the plastic sleeve is applied to the wires by means of an extruder. The corona equipment is normally installed immediately in front of the printing machine. By matching the electrode inserts it is possible to process different cable sizes and speeds.

Folding box machines

Plastic coated or UV coated folding boxes have poor adhesive properties with regard to bonding with cold-setting adhesives.

A specially designed corona station can easily be installed inline in the folding machine before the adhesive applicator.

Plastic films

The manufacture of plastic films is done mainly in blown film extruders or cast film extruders or in mono- or biaxial stretching machines. If subsequent conversion in the form of printing, laminating or coating is intended, the films are already corona treated in these machines. The corona equipment is dimensioned in such a way as to achieve high surface tension to ensure that the surface has good adhesive properties for problem-free processing even after a long storage period.



◀ *Figure 1*
Corona station
for cables
CEE 44-0 4MD

▼ *Figure 2*
Corona station
CSND-300-4SMM-WA

