TECNADIS SELFCLEAN PV

Nanotechnology-based treatment to increase the energy efficiency of solar panels

Description of the TECNADIS SELFCLEAN PV application procedure:

SURFACE PREPARATION

In case of application during the assembly of installation, it is recommended to remove dust or dirt with a soft cloth before application.

Preparation of the surface to be protected.

- The surface must be clean before application. Pay particular attention that there is no dust or solid particles of any kind on the surface.
- For cleaning, follow the recommendations of the module manufacturer.
- Once the modules have been cleaned, let them dry and remove the water from the areas where it can be retained (lower edges of the module). ***It is very important that the module is completely dry before applying TECNADIS SELFCLEAN PV.***
- It is not necessary to protect enclosures, or metal structural elements, glass or plastic (skylights or windows), or the envelope itself. The product is non filmogenic and therefore does not leave marks.

APPLICATION PROCESS:

It is recommended to apply the product during the assembly of the installation, in order to have better access to the photovoltaic modules.
The product can be applied by spray gun or manually. The container should be shaken vigorously before use.

SPRAY GUN

The product is applied directly over the surface to be treated with electric turbine spray guns (HVLP), air-driven paint spray gun (compressor or compressed air line required) or with an airless system. These systems are the most economically and productively efficient as they achieve a correct distribution, as well as a quick application on large surfaces.

In any case, systems that do not achieve a good atomisation of the product should be avoided as this may result in an uneven finish, such as manual atomisers and backpack sprayers; in these cases, and to ensure a correct finish, it is necessary to spread the product with a window cleaning equipment or a cloth until a homogeneous finish is achieved.

In case of using equipment that is not shown in this document, contact TECNAN to evaluate its use and regulation in order to guarantee a correct and homogeneous application.

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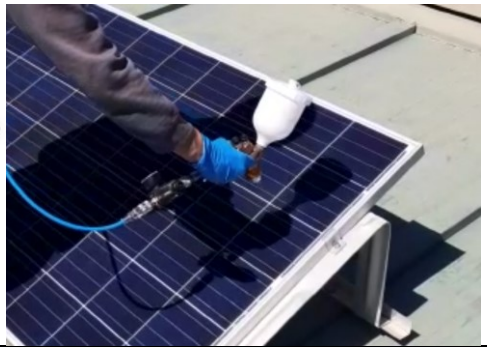
Electric Turbine Spray Gun (HVLP)	
	 
Minimum requirements	- 0.5 L tank. - Maximum nozzle size 1.8mm, preferably 1mm.

Airbrush application gun (with compressed air)	
	  
Minimum requirements	- Regulation of spray fan, inlet pressure and flow rate. - Line pressure: minimum 3-4 bar with gun open. - 0.5 L tank. - Flat spray fan. - Place a pressure gauge at the gun inlet to check the working pressure and a water filter upstream of the gun to reduce the amount of water in the compressed air as much as possible. - If portable compressors are used, a minimum flow rate of 200-300 l/min at a pressure of 4 bar is recommended. - Use of extension pole for flat and hard-to-reach surfaces. - Nozzle size 1.2mm or smaller.

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AIRLESS spray gun	
  	
Minimum requirements	- Working pressure of 150 - 200 bar. - Nozzle with the narrowest possible gap, e.g. Graco 308. - Flat spray fan. - Use of extension pole for flat and hard-to-reach surfaces.

Ensure that the application does not cause dripping on the substrate as this would imply a product overspray; it is not necessary to completely saturate the surface, it is preferable to apply a thinner coat rather than a thicker one (saturation).

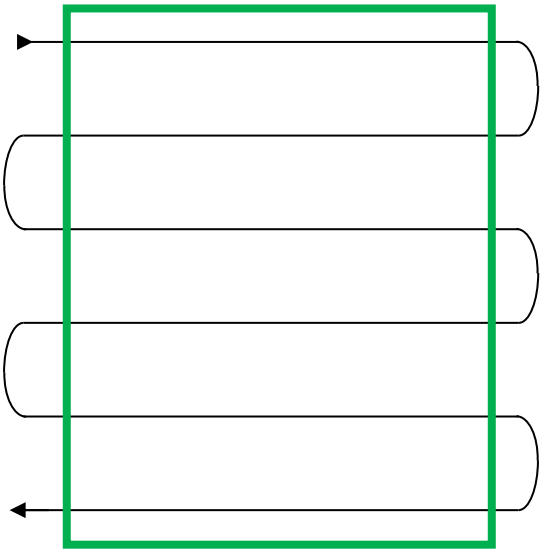

Figure 1

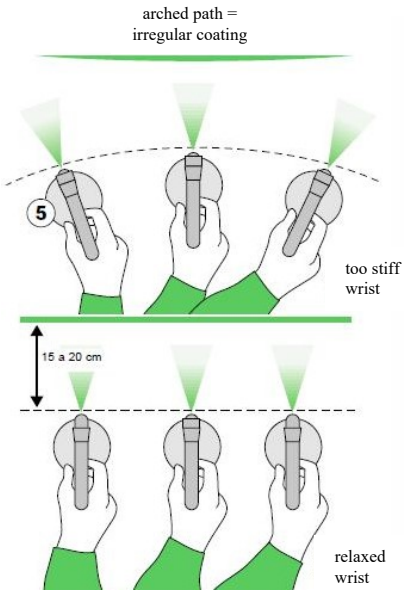

Figure 2

Carry out the application as shown in **Figure 1** in the case of single panels. For installations with adjoining panels (the most common), avoid, as far as possible, spraying the adjoining panel, as this could lead to product overspray.

It is important to follow the indications in **Figure 2**: always apply the product at the same distance. It is advisable to carry out a preliminary test to adjust the speed and number of applications necessary to cover

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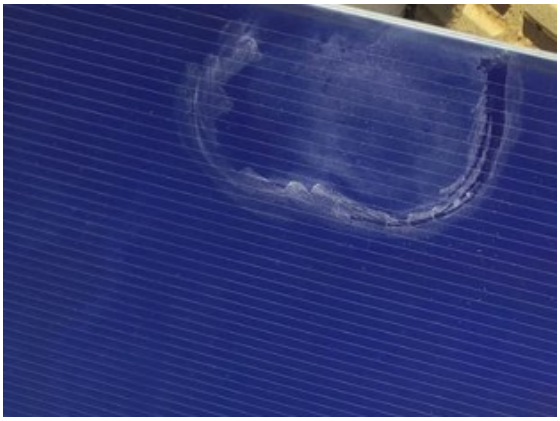
the entire surface. For this it is recommended to mark a test area of approximately 1m^2 (not necessarily on a panel, it can be on cardboard or another substrate) and simulate the application until the correct dosage is achieved (33-40 ml/m^2).

It is recommended to apply the product over the module one at a time to ensure the correct dosage. In the same way, after application of the first module, check that the dosage is correct (multiplying the treated surface by the TECNAN recommended yield).

In case of wind, consider whether to continue with the application or wait, as the nozzle tends to get closer to the substrate, which can cause overspray or unevenness, making more applications than normal necessary to cover the entire surface, with the consequent extra product expense.

Product overspray can be easily identified, it shows up as a white powder when drying, as can be seen in the following image.



Example of product overspray

Product overspray can be removed without affecting the functionality of the coating. On the one hand, it can be removed by wiping with a soft cloth when the product is cured, or it will self-clean with rainwater as the days pass after application.

MANUALLY:

In the case of a small installation or few modules to be treated, the product can be applied manually, without the need to use special spraying equipment.

The product is applied directly over the surface (with the sprayer supplied by TECNAN or one similar to the one in the following image) and then spread over with the help of a window cleaning equipment ("T") covered with microfibre to ensure a homogeneous finish.

It is recommended not to overlap applications with the microfibre window cleaning equipment.

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Sprayer and microfibre window cleaning equipment

SAFETY ADVICE

Keep the application area well ventilated but without draughts, thus avoiding a high concentration of gases coming from the evaporation of the organic vehicle of the product (solvent).

As protective measures, the same as with any paint are recommended: work clothes, gloves, safety glasses and a simple gas mask. (For further information refer to the Safety Data Sheet).

CONSIDERATIONS TO TAKE INTO ACCOUNT

- Shake container before its use.
- Dilution: none
- Amount per application (dosage): 33-40 ml/m^2. Approximate average yield for guidance: 25-30 m^2/l.
- Drying time: Dry to touch in 10-30 minutes (depending on the ambient temperature).
- Optimum effect: 24 hours after application.
- Application conditions: between 5 and 30 °C, with dry weather, avoid wetting of the applied modules within 1-2 hours after application.
- Storage conditions: between 5 and 30°C; protect from direct sunlight; store in original packaging.
- Cleaning solvent: Ethanol.

It is important to keep the equipment in a correct state of maintenance, avoiding that the nozzles become saturated or clogged (always clean after application).

Ask TECNAN for more information and videos with examples of real applications.

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