

# Case Study - Tower Protection Film



## The Challenge

A German utility company was seeking reliable protection for its wind turbines in Eastern Germany. Trouble-free installation was essential, along with a durable custom colour that would blend with the turbines' surroundings. Paint was initially being considered as an option, but the company was also looking at alternatives.

## The solution

Avery Dennison Tower Protection Film was quickly chosen as the best installation option. It offered easy application in outdoor conditions, no risk of pollution from solvents, and extremely durable performance in challenging conditions. An exact colour match was also available. With immediate drying and no paint spills or solvent fumes, both the application team and the turbine location benefited from the choice of film rather than

paint. The many challenges of an outdoor-environment application were easily overcome: Tower Protection Film's high-tack adhesive formulation allowed an extremely quick application and zero drying time. High initial adhesion meant that even under difficult conditions the film adhered to the tower base, and installation was completed on schedule.

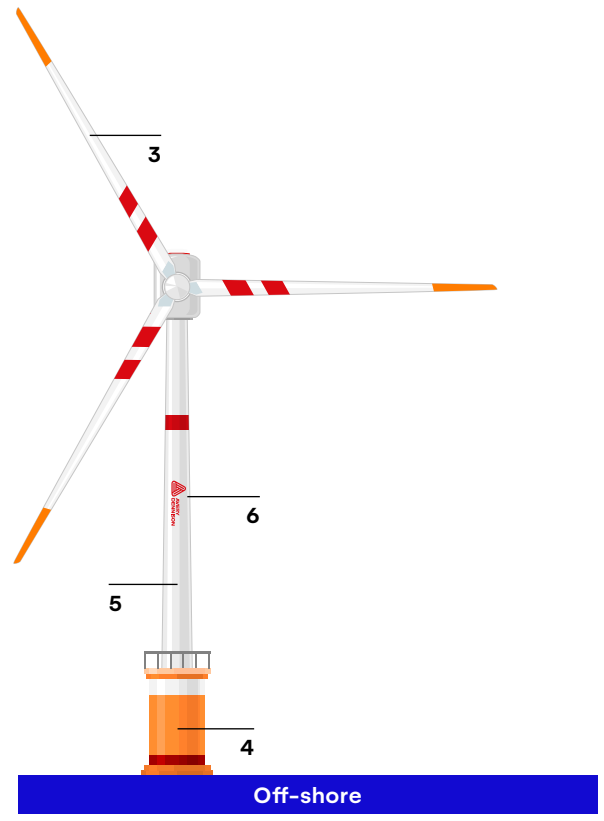
The specific colour tone for the wind turbine base was directed by local environmental authorities. A unique colour match by Avery Dennison was approved - a light grey tone 'RAL 7035' in a matte finish. Production of low-volumes colour matching is a standard option, and the installation company was provided with the right amount of material for the particular project.

## The product

Tower Protection Film is a cast quality vinyl designed for on- and off-shore wind turbines. It is coated with a durable, high-tack, acrylic-based pressure-sensitive adhesive, allowing fast application. The combination of a cast face film and a high-tack adhesive provides a long lifespan, along with good conformability on rough and slightly porous surfaces. Corrosion inhibition is 15 years in a C5-M environment (ISO 12944). Virtually any colour can be supplied via colour matching.

## The installer

WindPower Folientechnik GmbH specializes in using self-adhesive films for the wind power industry. The company focuses on installation, processes, and maintenance services.



### 1. TOWER ANTI-GRAFFITI

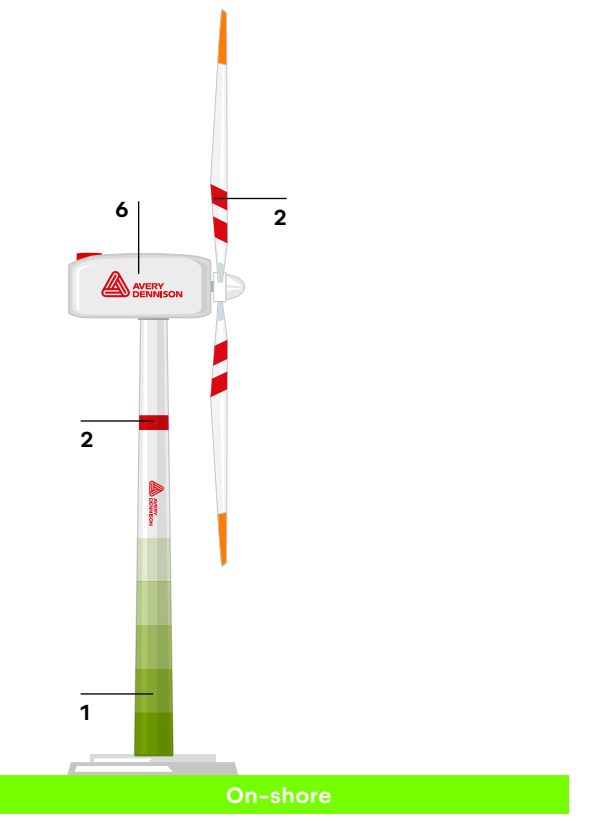
**Material: Graffiti protection film**  
Unnoticed graffiti damages brand image, and impacts nearby neighbourhoods and roads. Our Anti-Graffiti Series ensures quick and easy removal of graffiti for improved community relations.

### 3. ROTOR BLADE ANTI-EROSION

Limiting erosion (and also ice) makes an important contribution to continued turbine performance. The anti-erosion performance of the film is expected to maintain the efficiency of the rotor blades which in turn contributes to a reduced Levelized Energy Cost (LEC). Avery Dennison films can extend maintenance intervals and deliver fast, reliable application on site.

### 5. TOWER ANTI-CORROSION

**Material: Tower Protection Film**  
A durable film layer safeguards the building fabric on a long term basis, which is expected to reduce maintenance intervals and to protect the tower against environmental hazards on-shore and off-shore. The protective film provides a layer with uniform thickness, for more consistent protection. Application and maintenance are improved by the additional layer, eliminating the need for regular re-painting and keeping the surrounding area clean, without paint spills or paint dust.



### 2. TOWER HEIGHT VISIBILITY

**Material: Branding & Safety Marking Film**  
Consistent and continuous colour comes as standard with a self-adhesive film. One-time application and a long lifespan mean an end to in-air painting and unnecessary costs.

### 4. TOWER ANTI-FOULING

A non-polluting, biocide-free film offers greater protection against fouling, reducing maintenance intervals and unforeseen costs. The self-adhesive film reduces fouling of the splash zone for off-shore wind turbines. It adds protection to the tower and improves landing dock safety. A more sustainable, high-performance option.

### 6. GONDOLA HEIGHT VISIBILITY & DECORATION

**Material: Branding & Safety Marking Film**  
Gondolas can be more than simply 'visible', and Avery Dennison enables customised branding and advertising opportunities for long-lasting decoration. A colour matching service is available, offering millions of possible colours for precise matching. Any standard colour reference system can be used (e.g. RAL, PMS, Pantone, NCS), or a physical sample provided, to ensure excellent brand recognition.



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# Avery Dennison®

## Wind Turbine Series

Protecting and enhancing turbine towers, gondolas and blades





## Avery Dennison® Wind Turbine Series

Ongoing maintenance and the resultant costs are key issues for wind turbines – improvements can make a significant difference to both operating costs and visual perception.

As one of the world's leading manufacturers of self-adhesive materials, Avery Dennison has an enviable track record for innovating and creating value. Our Wind Turbine Series can enhance performance to meet challenges as diverse as visibility, erosion, corrosion, branding and graffiti – both on-shore and off-shore.

### Performing beyond paint

Decorating and protecting wind turbines using high performance, self-adhesive filmic materials can result in improvement across a wide range of operational challenges – providing many advantages compared to paint.



### Branding & Safety Marking Film

The Branding & Safety Marking Film is of premium cast vinyl, with excellent adhesion capabilities suitable for branding and safety marking purposes. The product is fitted for application on roughened, convex and concave surfaces.

The Branding & Safety Marking Film can be used for conversion on a broad range of computer signmaking equipment, drum and flatbed processing systems. For specific branding purposes, virtually every colour can be supplied by colour matching to exact customer requirements.

#### FEATURES

- Strong durability and outdoor performance
- Specification for adhesive coated labels for marine use, BS 5609:1978: No effect, 1 year half tide immersion
- Excellent UV-light, humidity and chemical resistance
- Superb conformity on roughened surfaces with the following characteristics: Concave, convex shapings
- Exceptional dimensional stability

#### RECOMMENDATIONS FOR USE

- On-shore and off-shore Wind Turbines



For supply conditions please consult your Avery Dennison representative.



### Tower Protection Film

Tower Protection Film - HT is a cast-quality vinyl with validated corrosion inhibition of up to 15 years (ISO 12944) in a C5-M environment. A thickness of 68 microns ensures an unbroken layer and complete surface coverage.

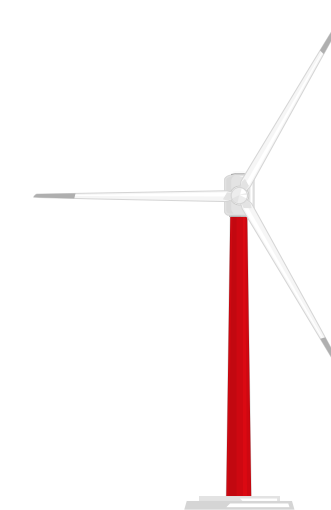
The film is suitable for both on- and off-shore wind turbines. A durable, high-tack, acrylic-based pressure-sensitive adhesive, enables fast application. The combination of a cast face-film and a high-tack adhesive delivers a long lifespan, along with good conformability on rough and slightly porous surfaces. Virtually every colour can be supplied, with colour matching by experienced colour specialists to suit customer requirements.

#### FEATURES

- Corrosion inhibition: 15 years in a C5-M environment (ISO 12944)
- Suitable for coastal and offshore environments with high salinity
- Designed for on-shore and off-shore wind turbines
- VOC (Volatile Organic Compound) free: no need to control solvent emissions
- Non-hazardous for the application team
- Highly durable with stable colour
- Easy to apply and repair: no risk of over-spray, only one layer needed and immediately dry after application

#### RECOMMENDATIONS FOR USE

- Application on Wind Turbine Towers, both on-shore and off-shore



For supply conditions please consult your Avery Dennison representative.



### Graffiti Protection Film

The Graffiti Protection Film preserves the on-shore wind turbine against permanent damage from graffiti paints. Most commercial available removal fluids will allow the removal of graffiti that do not damage the Graffiti Protection film.

#### FEATURES

- Allows easy removal of graffiti for on-shore wind turbines
- High scratch resistance
- High transparency
- Good resistance to UV radiation and weathering exposure
- Very good dimensional stability
- Excellent resistance to chemicals and solvents
- Excellent adhesion and vandal resistance

#### RECOMMENDATIONS FOR USE

- Application on Wind Turbine Towers, for on-shore Wind Turbines

