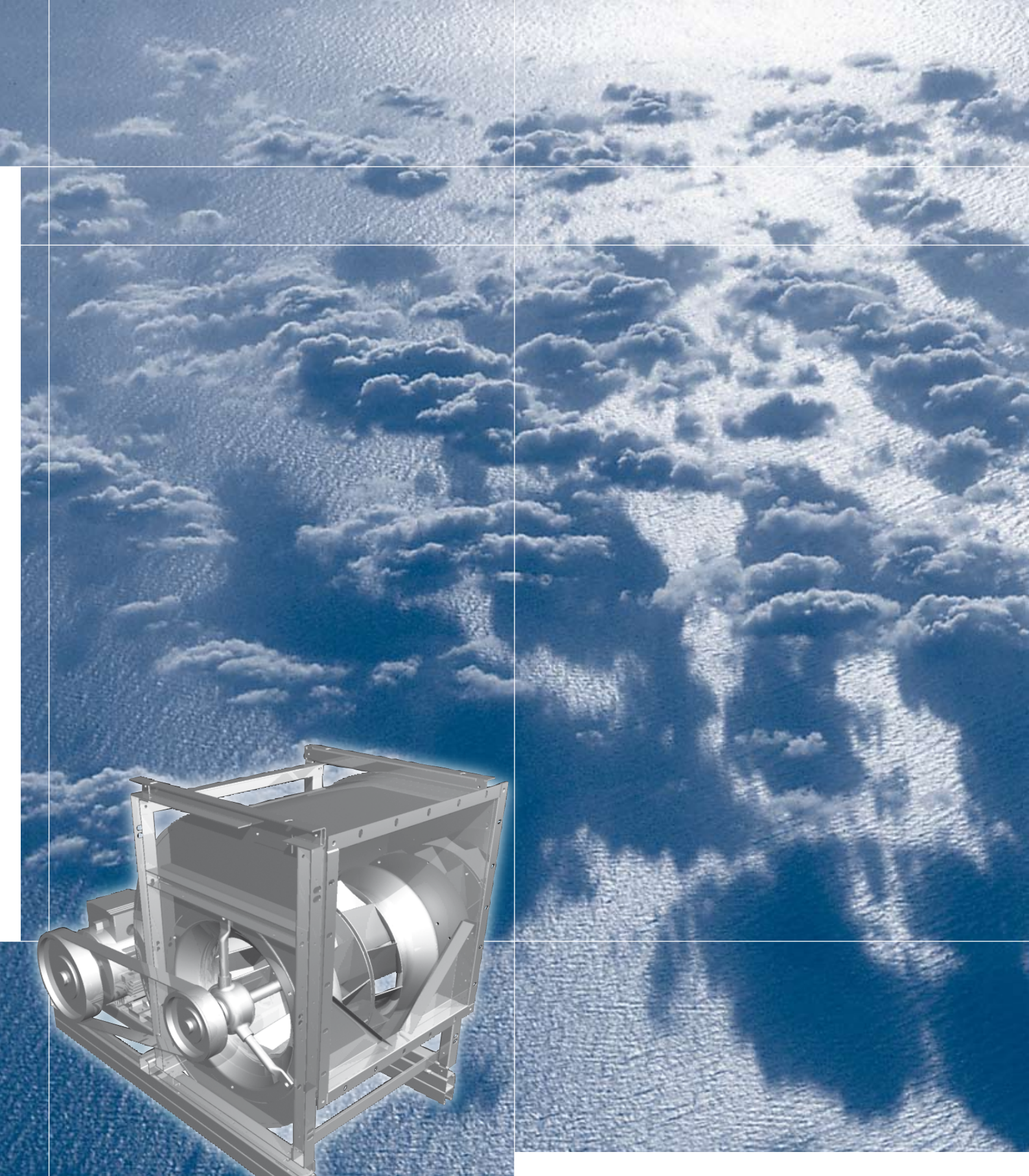


Corrosion protection systems for any application





Fans need an excellent atmosphere or an excellent protection layer

To prevent them from corrosion, we provide extra layers.

Fans are not always exposed to a gentle atmosphere over their lifetime. Damage to the surface can occur caused by high temperatures, UV radiation, contact to abrasive material, or by mechanical impacts. We in **Gebhardt**Ventilatoren provide our products with layer by layer a protection against perishable actions.

The higher the corrosion load, the more important is the protection layer.

Especially high corrosion loads occur in the chemical industry or in coastal areas. A good corrosion protection will be essential in these places. But even in less aggressive areas corrosion may occur – e.g. in places with higher industrial pollution.

In any case a class of its own.

We adapt solutions for different applications. Besides selecting corrosion-resistant construction materials (galvanised sheet steel, aluminium, stainless steel, or plastics) we offer a system consisting of 3 different classes of corrosion protection based on different coating materials.

This system confirms: **Gebhardt**Ventilatoren is in a class of its own.



Every fan you receive from us provided with corrosion protection

All fans in standard execution are already equipped with a basic corrosion protection by either using corrosion-resistant materials or by receiving a basic layer of coating. This corrosion protection satisfies the need for longlasting material lifetime in most fan applications. If stronger requirements are demanded, an increased corrosion protection will be applied.

Step-by-step corrosion-protected Gebhardt fan

Any corrosion protection system is only as good as the quality of the pretreatment!

For this reason, all parts made by **GebhardtVentilatoren** to be coated are submitted to the following pretreatment processes:

Zone 1: Intensive washing and degreasing, then full iron phosphating

Zone 2: Rinsing process

Zone 3: Clear rinsing with VE water

Zone 4: Drying

After this, the coating process is made. One of two different procedures may be applied:

- Electrostatic powder coating
- Wet lacquering

The electrostatic powder coating

The epoxy-polyester mixed powder coating

combines the features of epoxy and polyester. Excellent mechanical and chemical resistance are the advantages of this combination.

The thermoplastic powder coating

is recommended for cases where highest resistance, long life operation and increased surface quality are required. Also sound and electrical isolation features are added. Frequently required is this application of thermoplastic powder coating for tropical and subtropical areas.

This coating fulfils the specifications concerning long lasting corrosion protection for industrial, ventilation and air treatment installations. Our High-Tec powder coating plant with bar code control and efficient power & free conveyors ensures that a continuous quality level in surface protection is met.

The wet lacquering unit

One component synthetic enamel (1K)

The 1K synthetic enamel provides an excellent chemical resistance. The mechanical stress resistance is high because the material keeps a certain flexibility when hardened.

Two components acrylic lacquer (2K)

The 2K acrylic lacquer provides an excellent resistance against mechanical stress and UV radiation. It resists against splash or condensation water and also against diluted acids and alkaline solutions.

Environmental control by optimised water and energy management.

In both coating method the water is permanently treated in the pretreatment zones 1 to 3. Advantage: low need for fresh water and good environmental control.

The drying plant as well is very energy-efficient using the waste heat of the powder polymerisation oven – thus saving a lot of energy.

Test procedures

In order to assure the quality of the corrosion protection of our fans, they are submitted to special quality checks.

- The salt-water spray test to DIN 50 021 evaluates the layer quality in regard to the corrosion-inhibiting effect.
- The grid cutting method to DIN ISO 2409 evaluates the adhesive capacity of the coating.
- The impact test finally evaluates the resistance against mechanical shocks as they may occur during transport.

Further options

Welding seams

As a standard, the welding on a fan casing and impeller is made discontinuously (stitch-welded). In order to increase the corrosion resistance and to avoid intergranular corrosion, when conveying wet or slightly aggressive media, the weld can be executed continuously (seam-welded).

Detachable fixing elements of the shaft

As a standard, all detachable fixing elements (screws, nuts and bolts, washers) in **Gebhardt** Ventilatoren are made of galvanised steel. Fan shafts are made of steel and protected by a Tectyle coating. For increased protection requirements, these elements can be made of stainless steel – as an option.



Which corrosion protection class do you need?

In standard HVAC installations and for AHU (air handling units) without special corrosion protection requirements, the standard execution of the fans will be sufficient. If higher corrosion loads are expected, the additional corrosion protection class „S40“, the increased protection class „K90“ or the premium protection class

Without having further details, the subsequent criteria may only be understood as an indication. The final decision for a corrosion protection class has to be made by the end-user evaluating the conditions of operation of the fan.

For operation in:

- Buildings with varying temperatures
- Fair air humidity conditions
- Operation in open air, country or city site without major corrosion loads

Additional corrosion protection Class S40

Powder coating

For fan components not exceeding dimensions of L 2,000 × W 1,400 × H 1,600 mm, made of blank or galvanised steel and aluminium

- Degreasing and iron phosphating
- Epoxy-polyester powder mix
- Layer thickness $\geq 40 \mu\text{m}$
- Colour RAL 7039

Wet lacquering

For fan components not exceeding dimensions of L 2,000 × W 1,400 × H 1,600 mm made of blank steel

- Degreasing and iron phosphating
- 1x1-component primer (synthetic enamel primer alkyd-based)
- 1x1-component lacquer finish (synthetic enamel)
- Total layer thickness $\geq 40 \mu\text{m}$
- Colour RAL 7039

For fan components not exceeding dimensions of L 2,000 × W 1,400 × H 1,600 mm made of steel and aluminium

- Degreasing and iron phosphating
- 1x2-component primer (polyacrylate/polyisocyanate)
- 1x1-component lacquer finish (synthetic enamel)
- Total layer thickness $\geq 40 \mu\text{m}$
- Colour RAL 7039

For applications in:

- High-value air-conditioning installations in hygienic execution
- Laboratories, shelters, cooling towers
- Installation outside at seaside or industrial areas
- Air-conditioning installation in chemical or pharmaceutical industry

Increase corrosion protection Class K90

Powder coating

For fan components not exceeding dimensions of L 2,000 × W 1,400 × H 1,600 mm made of blank or galvanised steel and aluminium

- Degreasing and iron phosphating
- Epoxy-polyester powder mix
- Total layer thickness $\geq 90 \mu\text{m}$
- Colour RAL 7039

Wet lacquering

For fan components not exceeding dimensions of L 2,000 × W 1,400 × H 1,600 mm made of blank steel

- Degreasing and iron phosphating
- 1x2-component primer (polyacrylate/polyisocyanate)
- 1x2-component lacquer finish (polyurethane)
- Total layer thickness $\geq 90 \mu\text{m}$
- Colour RAL 7039

For fan components not exceeding dimensions of L 2,000 × W 1,400 × H 1,600 mm made of galvanised steel and aluminium

- Degreasing and iron phosphating
- 1x2-component primer (polyacrylate/polyisocyanate)
- 1x2-component lacquer finish (polyurethane)
- Total layer thickness $\geq 90 \mu\text{m}$
- Colour RAL 7039

For the classes S40, K90 and P100, the following corrosion protection improvement options can be additionally chosen (see also catalogues or price lists):

- Impeller blades continuously welded
- Casing inside or outside continuously welded
- Fan, shaft made of stainless steel
- Fixing elements made of stainless steel

„P100“ will be adequate. For fans working in areas of high temperatures, we offer the class “H” execution. The subsequent criteria may serve as guidelines. The final decision for a corrosion protection class has to be made by the end-user evaluating the operating conditions of the fan.

For operation at:

- Ship building
- Chemical industry, laboratories
- Canal building and tunnel building
- Air-conditioning
- Environment with aggressive media
- for highest corrosion protection

Premium corrosion protection Class P100

Thermoplastic powder coating consisting of a single component.

For fan components not exceeding dimensions of L 2,000 × W 1,400 × H 1,600 mm made of blank or galvanized steel and aluminium

- Degreasing and iron phosphating
- Thermoplastic powder coating
- Total layer thickness $\geq 100 \mu\text{m}$
- Colour RAL 7001

For operation at:

- High temperatures up to 500 °C and relatively low corrosion load

High temperature corrosion protection Class H

Wet lacquer primer

For fans operating in a temperature range up to 500 °C. The high-temperature primer can only be applied to fan components made of blank steel

- Degreasing
- Single-layer lacquering primer (silicone resin)
- Colour RAL 7004



Perfect technology for perfect corrosion protection



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