PAINTING SYSTEMS FOR INDUSTRIAL GEAR UNITS.

---THIS DOCUMENT MAY BE SENT TO CUSTOMERS AS "INFORMATION ONLY"---

SELECTION OF PAINTING SYSTEM

Hansen Industrial Transmissions nv (H.I.T.) offers different painting systems to be used in the different corrosivity categories according to ISO 12944-2:

H.I.T. painting systems		Corrosivity category (1)																	
		C1			C2			C3			C4			C5-I			C5-M		
		L(2)	M	H	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H
2A	3A(3)																		
2B	3B(3)																		
2C	3C(3)																		

Not allowed
Mandatory (minimum requirement)
Upon customer request

(1) Refer to ISO 12944-2 (Table 1): atmospheric-corrosivity categories and examples of typical environments.
Supporting document: ISO 9223

(2) Durability range (according to ISO 12944-1):

L	Low	2 to 5 years
M	Medium	5 to 15 years
H	High	more than 15 years

The durability range is NOT a "guarantee time". Durability is a technical consideration that can help the owner set up a maintenance programme.

(3) Contains additional layer on 2A, 2B and 2C to avoid chalking (see separate paragraph for more details)

1A BASIC PREPARATION AND PRIMER (BASE)

All industrial gear units require the same preparation and primer, which forms the **base** for the industrial painting systems:

A. Surface preparation: shot blast cleaned to:
   - **SA 2 ½ (ISO 8501-1)**
   - or **SP 10 (SSPC)**

B. Inner and outer surface of the housing painted with
   Two-component polyamide cured epoxy shop primer
   Recommended dry film thickness: 20µm
   Colour: red brown

Applying the primer is the final phase in the casting process. During the manufacturing process of the casted components, removal of the primer on limited areas is possible.
After complete assembly the outside of the gear unit will be painted, depending on the requirements, with one of the following painting systems:

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2A PAINTING SYSTEM

One additional layer on 1A (base): two-component high build epoxy primer and build coat.

Average minimum dry film thickness:	80 µm
Total average minimum dry film thickness:	100 µm
Colour:	water blue RAL 5021

Properties: - excellent corrosion protection in neutral and dry environment even without overcoating.
- can be overcoated with practically all paints, also after longer periods.

It is designed for gear units installed indoors only and not exposed to humidity or aggressive chemicals.

The painting system is suitable to be applied in the atmospheric-corrosivity category "C1" (high) according to ISO 12944-2.
The choice of colour has no influence on the technical quality of the painting system.

This painting system is standard applied on Hansen industrial gearboxes unless otherwise agreed.

Although this "Standard epoxy painting" provides already a certain corrosion protection, it is recommended to apply additional coatings on top of it.

Preferably, this overcoating is done by the customer (installer) on site: scratches and damages due to transport and installation can be more easily repaired, and a nice and sealed layer is obtained.

2B PAINTING SYSTEM

One additional layer on 1A (base): two-component high build epoxy primer and build coat.

Average minimum dry film thickness:	160 µm
Total average minimum dry film thickness:	180 µm
Colour:	water blue RAL 5021

The painting system provides excellent corrosion protection in atmospheric exposure.

The painting system is suitable to be applied in the atmospheric-corrosivity category "C4" (low) according to ISO 12944-2 (and ISO 12944-5).
The choice of colour has no influence on the technical quality of the painting system.

This painting system is available upon request.

2C PAINTING SYSTEM

One additional layer on 1A (base): two-component epoxy coating.

Average minimum dry film thickness:	300 µm
Total average minimum dry film thickness:	320 µm
Colour:	quarts grey RAL 7039

The painting system provides excellent corrosion resistance for gear units installed outdoors in coastal and offshore areas with high salinity.

The painting system is suitable to be applied in the atmospheric-corrosivity category "C5-M" (high) according to ISO 12944-2.
The choice of colour has no influence on the technical quality of the painting system.

This painting system is available upon request.

DISTRI

CHALKING

Epoxy based coatings can be subject to degradation by UV radiation depending on the circumstances in which the gear unit is installed.
The above mentioned phenomenon is called "chalking" and can be described as degradation of the resin component by UV light, leaving pigments and fillers as a residue on the surface.
This is mainly an aesthetic issue when the total dry film thickness of the total paint film is within specification.
Degradation is very slow (around 5µm/year) but when the paint film is becoming too thin, application of an additional coat might be necessary to maintain the same corrosion protection rate.
To avoid chalking of the epoxy coating system, it is necessary to apply a UV-resistant topcoat.

On top of the painting systems 2A, 2B and 2C, H.I.T. can apply one extra layer of paint resulting in following paint systems:

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3A PAINTING SYSTEM

One additional layer on 2A painting system: two-component polyurethane paint.

Average minimum dry film thickness:	50 µm
Total average minimum dry film thickness:	150 µm
Colour:	water blue RAL 5021

The painting system is suitable to be applied in the atmospheric-corrosivity category "C1" (high) according to ISO 12944-2.

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3B PAINTING SYSTEM

One additional layer on 2B painting system: two-component polyurethane paint.

Average minimum dry film thickness:	50 µm
Total average minimum dry film thickness:	230 µm
Colour:	water blue RAL 5021

The painting system is suitable to be applied in the atmospheric-corrosivity category "C4" (low) according to ISO 12944-2 (and ISO 12944-5).

3C PAINTING SYSTEM

One additional layer on 2C painting system: two-component polyurethane paint.

Average minimum dry film thickness:	50 µm
Total average minimum dry film thickness:	370 µm
Colour:	quarts grey RAL 7039

The painting system is suitable to be applied in the atmospheric-corrosivity category "C5-M" (high) according to ISO 12944-2.

IMPORTANT NOTE

Other colours are available upon request.

Painting systems A and B have an unlimited maximum overcoating interval provided the surface is free from chalking and other contaminations.
As the maximum overcoating interval for painting system C is limited from 4 to 40 days (depending on temperature and the subsequent coating) one should take into account that overcoating is not possible without applying specific procedures.

The described painting systems are H.I.T. painting systems and cannot be found as such in ISO 12944. Determination of the appropriate atmospheric-corrosivity category according to ISO 12944-2 / ISO 12944-5 is the responsibility of the customer.

Because of health reasons H.I.T. supports only the use of painting systems without coal tar.

Transport and erection damage of completely finished material should be repaired skilfully. See also FM 77.7.15-efdn. Repair procedure for mechanical damaged paint systems. For this purpose small quantities of the paint can be ordered.
H.I.T. cannot be held responsible for such repairs.