Pietro Fiorentini

# Surface coatings

## TECHNICAL BROCHURE

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# Who we are

We are a global organization that specializes in designing and manufacturing technologically advanced solutions for natural gas treatment, transmission and distribution systems.

We are the ideal partner for operators in the Oil & Gas sector, with a business solutions that span the whole natural gas chain.

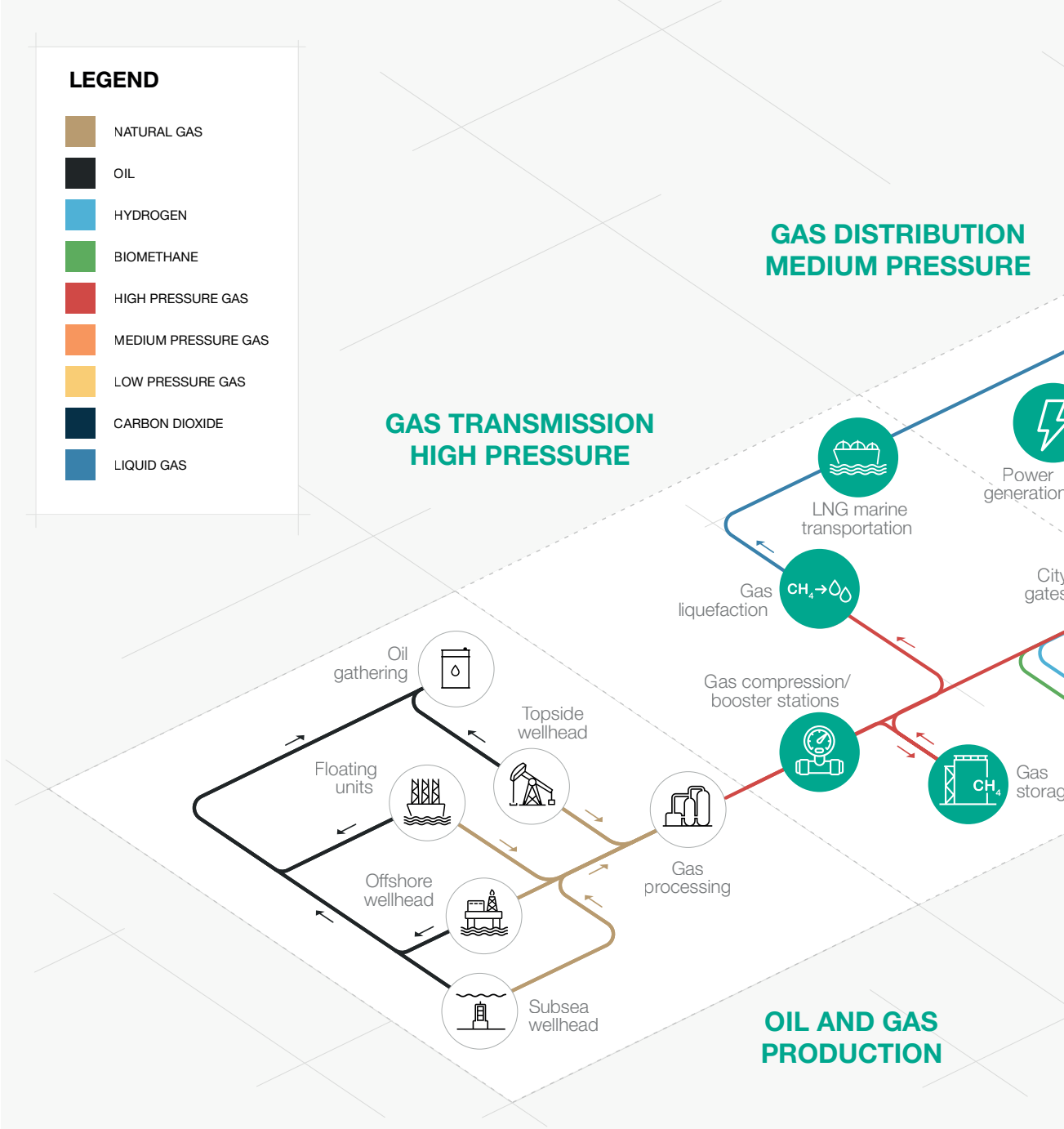
We are constantly evolving to meet our customers' highest expectations in terms of quality and reliability.

Our aim is to be a step ahead of the competition, with customized technologies and an after-sale service program undertaken with the highest level of professionalism.

## **Pietro Fiorentini** advantages

- Localised technical support
- Experience since 1940
- Operating in over 100 countries

# Area of Application




Green icon indicates the application where this product is suitable for

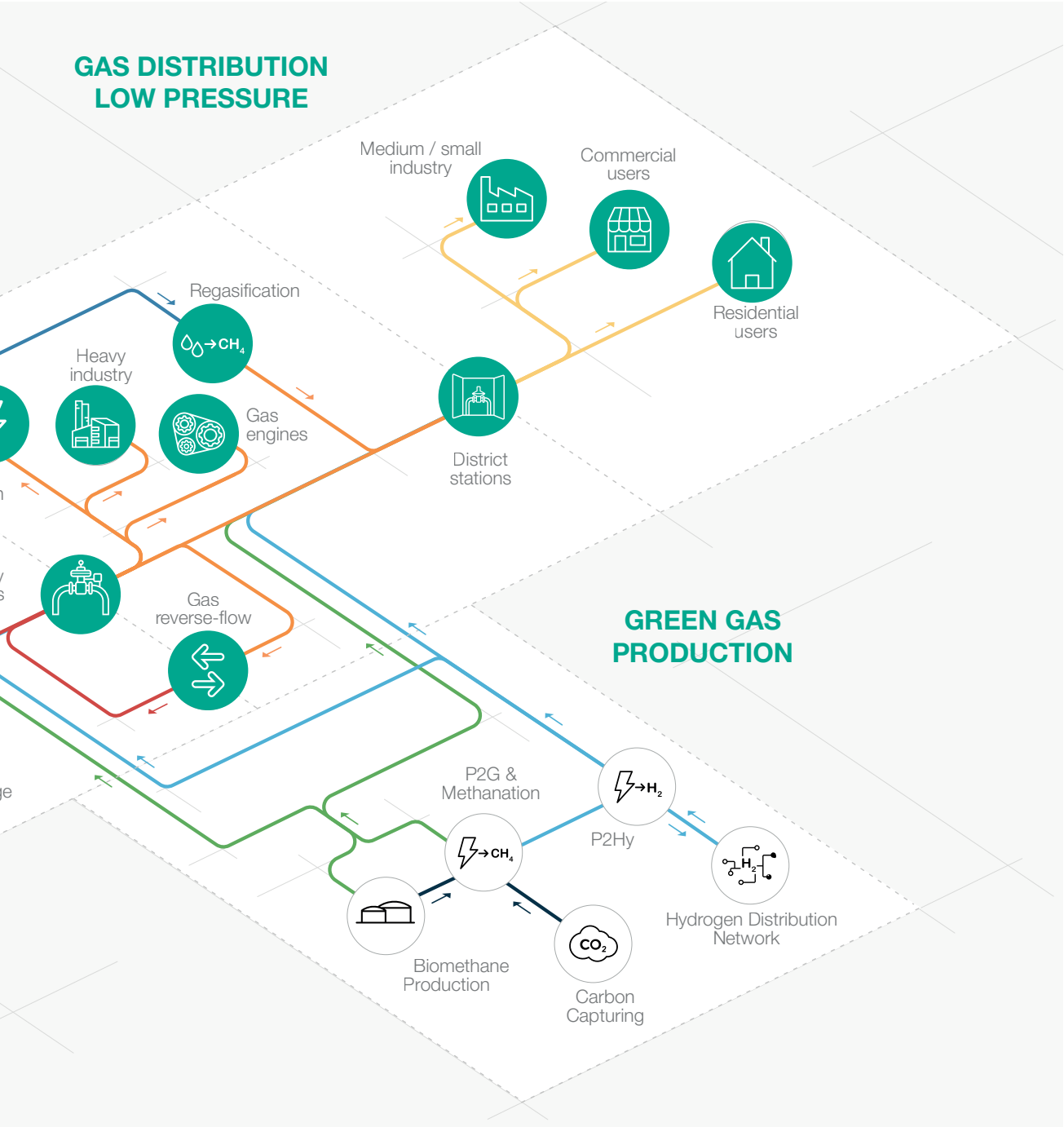



**Figure 1** Area of Application Map

# Introduction

In the world of industrial and commercial applications, the importance of surface treatment cannot be underestimated.

Surface treatment is a critical step in preserving the integrity and longevity of structures and equipment, especially when they are exposed to various environmental conditions.

This technical brochure is designed to guide you about the significance of surface treatment across different environments, with a particular focus on the classifications outlined in the ISO 12944 Standard.

ISO 12944 is the recognized industry benchmark for safeguarding steel structures against corrosion using protective paint systems.
Its inception in 1998 was a collaborative effort involving experts from pivotal nations and industry players committed to establishing a universally advantageous norm.

This comprehensive standard serves as a valuable resource for architects, engineers, specifiers, applicators, and all stakeholders involved in the application of coatings to steel surfaces.

Developed with nine parts, ISO 12944 addresses essential aspect such as environmental categorization, protective paint system specifications, as well as laboratory and field testing methods, including those tailored for offshore structures.

# ISO 12944 STANDARD

The ISO 12944 standard defines several corrosivity categories, including C1, C2, C3, C4, and C5, each representing different levels of environmental corrosivity.

This classification helps in determining the appropriate level of protective coating required to prevent corrosion and maintain the integrity of the surface.

| CATEGORY | CORROSIVITY | 12944:2018 |
|---|---|---|
| **C1** | Very low | • Very low levels of pollution and minimal exposure to corrosive agents.<br>• Examples include indoor environments with controlled conditions. |
| **C2** | Low | • Low pollution levels and limited exposure to corrosive agents.<br>• Typical examples include rural areas with clean air and minimal industrial activity. |
| **C3** | Medium | • Areas with moderate pollution and exposure to corrosive agents.<br>• This category often includes urban and industrial atmospheres with moderate humidity. |
| **C4** | High | • High pollution levels and significant exposure to corrosive agents.<br>• These environments can include industrial areas with high humidity and aggressive atmospheres. |
| **C5** | Very high | Extremely high pollution levels and intense exposure to corrosive agents, such as coastal regions with salt-laden air or chemical processing facilities. |

**Table 1** Corrosivity categories

Additionally, the durability category helps to understand the longevity of the protection:

| CATEGORY | DURABILITY |
|---|---|
| **Low (L)** | up to 7 years |
| **Medium (M)** | 7-15 years |
| **High (H)** | 15-25 years |
| **Very High (VH)** | more than 25 years |

**Table 2** Durability categories

# Coatings specification selection table

Pietro Fiorentini, has developed over decades of experience specific selections of painting cycles to protect its equipment form the most challenging environments which are outlined in the below table.

| Product | Corrosion category | | | | |
|---|---|---|---|---|---|
| | C3H | | | C4H | C5H |
| | SV/7-98 size 1-3” | SV/0-91 size 4-12” | SV/7-121 | SV/7-114 | SV/7-115 |
| Aperflux 851<br>Aperflux 101 | X | X | | X | X |
| Aperval<br>Aperval 101 | X | X | | X | X |
| ASX 176 | X | X | | X | X |
| Cirval | | | | X | |
| Dival 500 | | | X | X | X |
| Dival 600<br>Dival 700 | X | | | X | X |
| Dival SQD | | | X | X | X |
| Norflux | X | | | X | X |
| Norval | X | X | | X | X |
| HBC 975 | X | X | | X | X |
| PVS 782<br>PVS 803 | X | X | | X | X |
| Reflux 819<br>Reflux 819/FO<br>Reflux 919 | X | X | | X | X |
| Reval 182 | X | X | | X | X |
| SBC 782 | X | X | | X | X |
| SSX 176 | X | X | | X | X |
| Staflux 185<br>Staflux 187<br>Staflux mini | X | | | X | X |
| Terval/A<br>Terval/R | X | X | | X | X |
| Custom version are available upon request | | | | | |

**Table 3** Features

# C3H

## **SV/7-98** coating specification

C3H category

15-25 years durability

480 h salt spray resistance

## Features

| Features | Values | | |
|---|---|---|---|
| Corrosion category[1] | C3H | | |
| Durability[1] | 15 - 25 years | | |
| Parts | Body | Cover (Reflux) | Cover (Reval, Norval, Dival) |
| Primer-final type* | Acrylic | Acrylic | Powder coating |
| Primer-final DFT* | 180 | 180 | 120 |
| Final layer colour* | RAL 9006 | | |
| Surface protection for unpainted parts | • **Upper/bottom/intermediate flanges:** zinc plated<br>• **Pilots:** cataphoresis on aluminium<br>• **Tubing and compression fittings:** stainless steel (if applicable)<br>• **Anti-pumping device:** zinc plated<br>• **Others:** zinc plated | | |
| Salt spray test resistance[2] | 480 h | | |

(1) according to UNI EN ISO 12944 standard
(2) according to UNI EN ISO 9227 standard
(*) NOTE: Different functional features and/or extended ranges may be available on request.

**Table 4** Features

# C3H

## **SV/0-91** coating specification

C3H category

15-25 years durability

480h salt spray resistance

## Features

| Features | Values | | |
|---|---|---|---|
| Corrosion category[1] | C3H | | |
| Durability[1] | 15 - 25 years | | |
| Parts | Body | Cover (Reflux) | Cover (Reval, Norval, Dival) |
| Primer type* | Epoxy | Epoxy | - |
| Primer DFT* | 60 | 60 | - |
| Intermidiate layer type* | - | Epoxy polyurethane | Powder coating |
| Intermidiate layer DFT* | - | 60 | 120 |
| Final layer type* | Polyurethane | - | - |
| Final layer DFT* | 60 | - | - |
| Total Dry Film Thickness (DFT)* | 120 | 120 | 120 |
| Final layer colour* | RAL 9006 | | |
| Surface protection for unpainted parts | • **Upper/bottom/intermediate flanges:** zinc plated<br>• **Pilots:** cataphoresis on aluminium<br>• **Tubing and compression fittings:** stainless steel (if applicable)<br>• **Anti-pumping device:** zinc plated<br>• **Others:** zinc plated | | |
| Salt spray test resistance[2] | 480h | | |

(1) according to UNI EN ISO 12944 standard
(2) according to UNI EN ISO 9227 standard
(*) NOTE: Different functional features and/or extended ranges may be available on request.

**Table 5** Features

# C3H

## SV/7-121 coating specification

C3H category

15-25 years durability

480h salt spray resistance

## Features

| Features | Values | |
|---|---|---|
| Corrosion category[1] | C3H | |
| Durability[1] | 15 - 25 years | |
| Parts | Body | Cover (Dival SQD) |
| Primer-final type* | Cataphoresis | Powder coating |
| Primer-final DFT* | 30 | 120 |
| Final layer colour* | RAL 9006 | |
| Surface protection for unpainted parts | • **Upper/bottom/intermediate flanges:** zinc plated<br>• **Tubing and compression fittings:** stainless steel (if applicable)<br>• **Anti-pumping device:** zinc plated<br>• **Others:** zinc plated | |
| Salt spray test resistance[2] | 480 h | |

([1]) according to UNI EN ISO 12944 standard
([2]) according to UNI EN ISO 9227 standard
(*) NOTE: Different functional features and/or extended ranges may be available on request.

**Table 6** Features

# C4H

## SV/7-114 coating specification

C4H category

15-25 years durability

720h salt spray resistance

## Features

| Features | Values | | |
|---|---|---|---|
| Corrosion category[1] | C4H | | |
| Durability[1] | 15 - 25 years | | |
| Parts | Body | Cover (Reflux) | Cover (Reval, Norval, Dival) |
| Primer type* | Epoxy | Epoxy | Cataphoresis |
| Primer DFT* | 170 | 170 | 30 |
| Intermidiate layer type* | - | - | - |
| Intermidiate layer DFT* | - | - | - |
| Final layer type* | Polyurethane | Polyurethane | Powder coating |
| Final layer DFT* | 50 | 50 | 120 |
| Total Dry Film Thickness (DFT)* | 220 | 220 | 150 |
| Final layer colour* | RAL 9006 | | |
| Surface protection for unpainted parts | • **Upper/bottom/intermediate flanges:** zinc plated + acrylic<br>• **Pilots:** cataphoresis on aluminium<br>• **Tubing and compression fittings:** stainless steel (if applicable)<br>• **Anti-pumping device:** zinc plated<br>• **Others:** zinc plated | | |
| Salt spray test resistance[2] | 720h | | |

([1]) according to UNI EN ISO 12944 standard
([2]) according to UNI EN ISO 9227 standard
(*) NOTE: Different functional features and/or extended ranges may be available on request.

**Table 7** Features

# C5H

## **SV/7-115** coating specification

C5H category

15-25 years durability

1440h salt spray resistance

## Features

| Features | Values | |
|---|---|---|
| Corrosion category[1] | C5H | |
| Durability[1] | 15 - 25 years | |
| Parts | Body | Cover and Upper/bottom/inter-mediate flanges: |
| Primer type* | Epoxy | Epoxy |
| Primer DFT* | 200 | 200 |
| Intermidiate layer type* | - | - |
| Intermidiate layer DFT* | - | - |
| Final layer type* | Polyurethane | Polyurethane |
| Final layer DFT* | 80 | 80 |
| Total Dry Film Thickness (DFT)* | 280 | 280 |
| Final layer colour* | RAL 9006 | |
| Surface protection for unpainted parts | • **Pilots:** cataphoresis on aluminium<br>• **Tubing and compression fittings:** stainless steel (if applicable)<br>• **Anti-pumping device:** stainless steel<br>• **Others:** stainless steel | |
| Salt spray test resistance[2] | 1440h | |

([1]) according to UNI EN ISO 12944 standard
([2]) according to UNI EN ISO 9227 standard
(*) NOTE: Different functional features and/or extended ranges may be available on request.

**Table 8** Features

# Colour selection

Below a list of final colour coating available to be selected on-demand prior to manufacturing.
Default colour, if not specified, will be **RAL 9006**

**RAL 9006**
White aluminium

**RAL 1004**
Golden yellow

**RAL 1012**
Lemon yellow

**RAL 3000**
Flame red

**RAL 6011**
Reseda green

**RAL 7035**
Light grey

**RAL 7038**
Agate grey

**NOTE:** Please refer to RAL number and description. Colour palette may be different on printed documents and screens, so they are for illustrative purpose only.

# Customer Centricity

Pietro Fiorentini is one of the main italian international company with high focus on product and service quality.

The main strategy is to create a stable long-term oriented relationship, putting the customer's needs first. Lean management and thinking and customer centricity are used to improve and maintain the highest level of customer experience.

**Support**

One of Pietro Fiorentini's top priorities is to provide support to the client in all phases of project development, during installation, commissioning and operation. Pietro Fiorentini has developed a highly standardized intervention management system, which helps to facilitate the entire process and effectively archive all the interventions carried out, drawing on valuable information to improve the product and service. Many services are available remotely, avoiding long waiting times or expensive interventions.

**Training**

Pietro Fiorentini offers training services available for both experienced operators and new users. The training is composed of the theoretical and the practical parts, and is designed, selected and prepared according to the level of use and the customer's need.

**Customer Relation Management (CRM)**

The centrality of customer is one of the main missions and vision of Pietro Fiorentini. For this reason, Pietro Fiorentini has enhanced the customer relation management system. This enable to track every opportunity and request from Customer in one single point and make free the information flow.

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