



**CEOCOR - SECTOR A**  
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**Paper A10 – A competence Certification in Cathodic Protection Marine Environment**

**INTERNATIONAL TRAINING CENTER AND  
OPENING OF THE FIRST EXAMINATION CENTER**

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**Summary**

In 2009, the French Anticorrosion Centre has opened the first training and examination centre allowing the delivery of a Certificate of Competence in the protection of metallic works exposed to marine environment .

Certificates Level 1,2 and 3 are delivered in line with the specifications defined in the European standard EN. 15.257. They are awarded the official label “ AFNOR Competence / Cathodic Protection – Marine Environment “

A detailed presentation of the certification and of the examination centre will be outlined. It shows its evolution since the beginning of its foundation in the year 2007. The presentation outlines also how to prepare and the conditions required to succeed to each of the three levels of the certification exams

During 2009 several preparation and certification sessions are planned. Some are programmed for French speaking candidates others are programmed for English speaking candidates.

A presentation of the investments which were required to establish this Centre is also presented. Possibilities of additional future extensions in the years to come are also outlined

Thoughts are also given to team up with a large European organisation to offer competence certificates recognised both by this European organisation and by AFNOR Competence.

As part of more general policy of protecting the industrial and the marine environment . Several cooperation paths are suggested to the Representatives of the European members of CEOCOR .

## Competence Certification in Cathodic Protection – Marine Environment

### Opening of an International Training Centre and the first examination centre in the world

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#### 1. The French Anticorrosion Centre

The French Anticorrosion Centre is a non profit organism in which the best French specialists in anticorrosion are divided in 14 Sectorial Commissions :

These individuals are either research engineers, auditors , field engineers, surveyors etc...

In 1998 CEFRACOR decided to create its own specialised department **CFPC ( French council for Cathodic protection)** in charge of putting in place and managing the competence certification of cathodic protection

#### 2. AFNOR Certification and AFNOR Competence / Cathodic Protection

In December 1998 AFNOR Certification established the quality label “**AFNOR Competence / Cathodic Protection**” and thereafter selected CEFRACOR to promote and manage this certification and deliver competence certificate in Cathodic Protection.

The first certificates were delivered in 2000 .Until recently only certificates level 1 and 2 for earth environment have been delivered. Level 3 apply to all environments.

In 2008 the certification was extended to those metallic structures expose to marine environment.

The “AFNOR Competence/Cathodic Protection“ certificates meet the European standard EN 15257 related to “levels of competence and certification of individuals in Cathodic protection”.

**Three examination centres** are currently operational:

- a) in Compiègne ( France ) earth environment only
- b) in Rabat ( Morocco ) Ecole Nationale pour l’Industrie Mineral earth environment only
- c) in Brest ( France ) marine environment only

**Five approved training centres** offer the necessary courses preparing for the certification examination

**3. Number of Certificates delivered to date (10 of April 2009 )**

	<b>Earth environment</b>	<b>Marine environment</b>	<b>Other environment</b>	<b>Total</b>
<b>Level 1</b>	<b>194</b>	<b>14</b>		
<b>Level 2</b>	<b>80</b>	<b>8</b>		
<b>Level 3</b>	<b>9</b>	<b>4</b>	<b>3</b>	
<b>TOTAL</b>	<b>283</b>	<b>26</b>	<b>3</b>	<b>312</b>

**4. Dates of the next certification examination**

<b>Level 1</b>	<b>Level 2</b>	<b>Examination centre location</b>
<b>Earth Environment</b>		
12 & 13 may 2009	11 march 2009	Compiègne
3 & 4 June 2009		Rabat ( Morocco) at ENIM
30 June & 1 July		Compiègne
	13 &14 October 2009	Compiègne
<b>Marine Environment</b>		
2 & 3 April 2009		Brest
22 & 23 October	26 & 27 November 2009	Brest

## 5. Metallic structures exposed to marine environment and need for a specific certification

The initial investments related to structures exposed to marine influence are always extremely large .. It concerns :

- shore facilities : sea lines , docks, piers and other metallic port structures..
- offshore structures : production platforms , ships , submarines etc..

They are all very much subject to the corrosive action of the environment. The damages caused by the corrosion of these structures can be enormous both industrially as well as environmentally. they can reach million of dollars. In cases like the Erika shipwreck they are even unlimited.

Generally speaking ,applying correctly and systematically the technology of cathodic protection permit to reduce drastically the speed of development of corrosive action to steel structures.

These facts confirm the necessity and benefits of putting in place immediately a strict policy regarding the protection of all structures exposed to marine aggression .The competence certification of individuals in charge of applying and controlling the implementation of the Cathodic protection procedures is the way the French authorities have chosen to reach this objective.

Since 2008 , CEFRACOR has been delegated by AFNOR the responsibility to deliver the certification “ **AFNOR Competence / Cathodic Protection in Marine Environment** “

**The examination centre is establish in Brest ( Brittany) on the premises of IFREMER in a scientific marine environment**

In 2009 we decided to transform and **develop this centre into a European centre** in such a way that we can now accommodate candidates from countries interested in acquiring this knowledge and wanting to acquire this well recognised certification.

## 6. The training and exam preparation centre

A training and exam preparation centre has been founded. It is managed by the Corrosion Institute and is located on the same premises in Brest. The Corrosion Institute is a training centre as well as a research organism dedicated to the development of anticorrosion method and procedure in a marine environment. The courses of the training centre is approved by CEFRACOR CFPC.

**This approbation** is issued **according to a CFPC procedure** checking the following main points :

- the technical content of lectures
- the hands on technical practice
- the facilities, equipment and instruments available on site
- the technical and scientific competences of the trainers

**The teachers** are generally level 3 certified agents with recognised pedagogic ability. Well qualified individuals may be called in to perfect the lectures.

**The training Centre is open to French or English speaking** individuals who meet the prerequisite outlined in the European norm EN15257.

The training session is an intensive 8 working days course. The course ends with a 1 or 2 days ( depending on the physical availability of space due to the number of candidates )

## 7. The certification content

The certification examination respects the prescription of the European norm EN15257. It includes :

- 1.a “common base” test valued at 20 points for level 1 and 30 for level2
- 2 a marine environment test valued at 20 point for level 1 and 2
- 3 a hand-on session on site or in the lab test valued at 60 points for level 1 and 50 for level2

Example of the questions asked at the examination for level 2 :

- Oral test : polarisation curves and current ?  
    selection of adequate metal and calculation
- technical report : analysis of the control measures gathered during a test of a stray? current applied to a ship's hull
- preparing the instructions to run a campaign of measurement taken by scuba divers on an offshore platform protected by galvanic anodes.

Level 3 certification requires the presentation of a thesis on a particular subject such as :

- a) Modelling of the polarisation of an immersed structure under Cathodic protection
- b) anticorrosion protection of a dual system installed in 2 French harbours.
- c) Development and usage of an evaluation method of electrochemical data and modelling of the Cathodic protection of an offshore structure Practical application to the oil field of N'Kossa ( Congo).

Underneath you will find the list of test and their grading which candidates level 1 and 2 have to go through. Candidate for level 3 must submit a written report on a research project or a specific in-depth study which he or she has conducted . Thereafter he or she has to present the content of the report in front of a jury of 6 to 9 anticorrosion experts and/or scientific academic.

Level	Test	Grading
<b>Level 1</b>	Common Base questions	2
	Marine environment questions	2
	Hands-on test:	
	Measurement	2,5
	Laboratory	1,5
	measurements in instrumented facility	2
<b>Level 2</b>	Common base questions	3
	Marine environment questions	2
	Hands-on test:	
	Oral questions	2
	Written technical report	2
	Written instruction procedure aimed at level1 agents	1
<b>Level 3</b>	Technical and scientific value of the report	
	Didactic quality of the report	
	Report defence in front of the jury	
	Theoretical knowledge and mastering of the subject	2,5
	Clarity of the presentation	1

The certification procedures meet the quality control standard of CEFRACOR CFPC. Regular audits are performed by AFNOR Certification.

Success to the exam requires an average general note equal or higher than 70/100 with no grade being below 6/10 at any of the tests.

## 8. The international marine examination centre in Brest

This Centre is the only specific one dedicated to marine environment operating in the world. it is composed of :

- A large 70 m3 tank filled with sea water and equipped with an instrumented metallic structure which mock part of an offshore platform.
- Two smaller 2m3 tanks filled also with sea water in which samples of different materials can be immersed.
- An electrical installation where all situations encountered in marine environment may be simulated.
- An instrumented pier made of 3 pile plank gabions 15 meters in diameter.
- A lab which may host up 3 candidates simultaneously.
- A lounge and an exam preparation room.

## 9. Investment budget of the examination centre

Over a period of 2 years the following amounts have been spent :

Type of investment	Amount w/o taxes	TOTAL In €
<b>Purchase of land &amp; equipment</b>		
Cost of property	20.300	
Installation of tanks and pipes	20.900	
Building and equipment of the electrical complex	22.000	
Supply of working stock	53.250	
Instrumentation of the pier	41.000	
Building and fitting of the lab	22.600	
Electrical and insurance initial cost	24.100	
Other costs (including audit)	3.000	
<b>Total equipment cost</b>	<b>207.150</b>	<b>207.150</b>
Administrative and evaluation costs		
Building plans and documents	4.000	
Set up of examination list of questions	18.000	
Translation of exam questions & procedures	42.000	
General costs : copy , telecom, management	17.600	
Reception and travel cost	6.500	
Service subcontractors & miscellaneous	8.000	
<b>Total admin costs</b>	<b>96.100</b>	<b>96.100</b>
<b>General cost investment</b>		<b>303.250</b>

## 10. Projects and development

### 10.1 The examination Centre

Since the centre is well fitted to-day, very few extensions are expected in the near future. However it may be soon necessary to expand the working capacity and scientific capability of the lab .These expansion will be required to carry out specific experiments and studies on marine corrosion. The purchase of additional new measurement equipment would be favourably looked at by CFPC.

**10.2 Joined Competence Certificates**

Thoughts are currently being exchanged with other European certification authorities to define the conditions and procedures under which they could give their agreement to CEFRACOR CFPC to deliver joined certification certificates, bearing then the double label “Associated Organism and AFNOR Certification”.

**11. Partnership proposal to other European countries**

**The quality of the installation currently available in Brest** may be considered as the being the only of its kind operational in the world. Therefore, in order to maximise the use of the Centre, we would like to **offer to our** European colleagues :

- Delivery of **joined qualification certificates** for specialist technicians and engineers in marine cathodic protection. This opportunity may be offered to Certifying Organisations or similar Associations.
- Another open possibility would be to make **the lab installation available to European engineers** wanting to run personal experimentations or research in the field of marine cathodic protection. In such a case we might be even able to request **a financial participation from the Regional Government or the City of Brest** . The practical conditions of use of the installation and equipment would have to be agreed between the requesting individual or organism and CEFRACOR CFPC.
- In view of the international development of our Centre, we plan to call on well recognised individuals in this field or individuals designated by the associated organism to **join our team on a case by case basis** either to serve as instructors, members of the jury or members of a research evaluation team. Condition of their participation will be discussed individually.

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