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Cathodic protection and external corrosion.

Certification of the competence for the personnel in cathodic protection for the metal works exposed to the sea

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Summary:

In France, the competence certification (AFNOR Compétence/ cathodic Protection) was created in 2000. This certification applies, for levels 1 and 2 according to the European standard of reference, with the buried metal works. The same type of certification exists in several other European countries. One makes here quickly the synthesis of it.

On the other hand, it does not seem to currently exist, in Europe, procedures allowing the competence certification for cathodic protection of works exposed to the sea

France set up into 2006/2007 a formation Center and a specific examination Center for the marine structures. The object of this presentation is to present these two centers which could become, in the year 2008, European Centers for the certification of competence in cathodic protection for the application sector " Sea ".

Résumé :

En France, la certification de la compétence (AFNOR Compétence/Protection cathodique) fonctionne depuis l'année 2000. Cette certification s'applique, pour les niveaux 1 et 2 selon la norme européenne de référence, aux ouvrages métalliques enterrés. Le même type de certification existe dans plusieurs autres pays européens. On en fait ici rapidement la synthèse. Par contre, il ne semble pas exister actuellement, en Europe, des procédures permettant la certification de la compétence en Protection cathodique pour les ouvrages marins ou exposés à la mer.

La France a mis en place en 2006/2007 un Centre de formation et un Centre d'examen spécifiques pour les structures marines. L'objet de la présente communication est de présenter ces deux centres qui pourraient devenir, dès 2008, des Centres européens pour la certification de la compétence en Protection cathodique pour le secteur d'application « Mer ».

1. Small history of French certification in Cathodic protection.

One will find hereafter a rapid historical of the action undertaken by France in the field of the certification of competence in cathodic protection. This action was initiated by the CEFRAFOR which ensures of it today management for the account of AFNOR Certification.

- 1990: First steps of the CEFRAFOR towards quality as regards cathodic protection.
- 1991: Development of the first French standards cathodic protection.
- 1998: Creation of certification AFNOR Compétence/ Cathodic Protection.
- 2000: Approval of the first examination Center for " ground ".
- 2000: Delivery of the first certificates of competence to the people for the sector concerning the buried structures.

Thus, it will have taken 10 years of preliminary work to lead to the delivery of officially recognized certificates.

2. Certification " AFNOR Competence / Cathodic protection " today.

French certification is in conformity with the specifications stated in the European standard EN 15.257 and the standard ISO CEI 17.024 concerning the organizations of certification.

To date, the number of certificates " AFNOR Competence/ Cathodic Protection " delivered rises with:

- - Level 1: 143 certified, Sector Ground.
- - Level 2: 51 certified, Sector Ground
- - Level 3: 16 certified, of which Ground : 9.
Sea : 4.
Concrete : 2.
Internal surfaces.: 1.

That is to say : 210 certified of which Belgian, Spanish, Moroccan and Swiss specialists.

3. AFNOR Certification also settled in Morocco.

One will find hereafter an historical rapid of the actions undertaken in Morocco by the CEFRAFOR:

- 2002 : First contacts with the ENIM (School of the Mines of Rabat) for a certification "Ground"
Signature of a cooperation agreement.
- 2004 : Installation of a formation Center in Rabat and Moroccan First certified with a formation in Rabat and tests of certification in France.
- 2005 : Construction and approval of the examination Center for " Ground " in Rabat.
First certifications AFNOR Compétence/ Cathodic protection in Morocco.

4. Project of harmonization of Italian and French certifications

For several years, we have worked with the APCE with an aim of harmonizing the Italian and French procedures of certification for competence in cathodic protection.

This work can be summarized as follows:

- * 2003 : Bringing together of the CEFRACOR with the APCE.
- * 2004 : Harmonization of the procedures of certification for level 1.
- * 2005 : Establishment of a draft-agreement concerning certification level 1 and including an harmonization of the questions for examination.
- * Since 2005, our work is stopped in waiting of the publication of the European standard EN 15.257.

From this work, it releases an Italian and French will to arrive to a mutual recognition of certifications of each one.

5. Number of Certificates of competence, in Europe, for the sector " buried Works ".

According to informations which were communicated to us, the number of certificates of competence issued in Europe in the field of cathodic protection would be

* Germany : 43 (2003)	* Norway : No information
* Austria : No information	* Denmark : No information
* Belgium : 23	* Poland : 0
* Netherlands : 130	* Sweden : No information
* Spain : 1	* Swiss : 2
* France : 210 (4 Sea)	* Tchèque : 0
* Italy : 194 (9 Sea)	* G.B. : 196 (2003)

6. Number of certificates of competence in cathodic protection, in Europe, for the works exposed to the Sea

- In France : 4 certified agents of Level 3, Sector " Sea ".

No certified level 1 or 2 because of the lack of formation and examination center for " Sea ".

- In Europe : 9 certified agents of Level 3 in Italy but, to our knowledge, no specific certification and no examination center " Sea ".

- In the United States, there is not any certification specific for the structures exposed to the sea. Delivered certification applies to the buried or immersed works.

Conclusion :

There is an unquestionable lack of certification of competence in the sector " Sea " taking into account the importance of the incurred risks: Human risks, pollution of the coastal areas and marine pollutions, degradation of the harbour structures and offshore oil rig...

7. Description of the way for Certification " Sea " in France.

The way traversed to arrive at the creation of a examination center specific to a certification Sea, can be summarized as it follows:

- 1. Selection, for the Center of Formation and the Center of Examination, of a site in edge of sea
 - 2. Signature of the corresponding agreements.
 - 3. Establishment of a project and a schedule of conditions of construction.
 - 4. Seek for a Financing of work.
 - 5. Choice of the Project superintendent.
 - 6. Completion of the work.
 - 7. Approval of the Examination Center for " Sea ".
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8. The selected site: The French City of Brest, a synergy of competences to the service of excellence.

Brest is the strongest European concentration of Research and Development in the field of the sea, in particular in:

- Oceanography.
 - living Resources and chemistry of the sea
 - national Defense.
 - Offshore.
 - marine Instrumentation.
 - Environment.
 - maritime Safety.
 - Corrosion.
 - Formation (8 schools of Engineers, 4 research institutes , a **Formation Center for Cathodic protection**, all directed towards the sea)
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9. Brest, a world Capital of sciences and technologies of the sea

Brest, it is a Pole of competitiveness with world vocation validated by the European Community. It is also:

- an international Center of Training in cathodic protection

- an European Examination Center " AFNOR Competence / Cathodic protection - Sector Works exposed to the Sea ".

Brest, it is also a coastal city located in Brittany, in a splendid French area.

10. Training in cathodic protection for the exposed structures to the sea

The Training is given by certified Agents of level 3 in the buildings of the Institute of corrosion, in Brest, near the examination Center .

Languages used: French and/or English.

Qualifying general formation.

Preparation with the examinations of certification.

Groups from 5 to 15 Trainees.

Duration of the formation: 5 + 3 days, followed by 2 day- examination.

Teaching means: Theoretical room of course, laboratory and instrumented experimental structures of the examination Center..

11. Constitution of the examination Center .

• 11.1. Establishment of the Center:

The examination Center is located on the site of the French Institute for the Research and the Exploitation of Sea (IFREMER) in Brest (45 000 m² of laboratories and technical or experimentation halls, 1 000 people including 690 scientists). Its specialized buildings dominate the Sainte Anne bay and the Atlantic Ocean.

• 11.2. Constitution:

- A room of examination.
- Fresh water and sea water fed laboratory and comprising 2 working stations.
- Tanks for instrumented tests filled with sea water
- An instrumented industrial structure representing a node of offshore oil platform.
- a wharf in sheeting piles under cathodic protection and instrumented.
- a testing paintings station.

12. Conclusions.

With significant investments, and:

- an European Center for Training in cathodic protection for the works exposed to sea.
- an European Center for Examination.
- an high level hotel infrastructure,
- a privileged place of interest.

France ensures, as of year 2007, the delivery of certificates " AFNOR Competence / Cathodic protection ", Secteur Sea.

France thus proposes to you obtaining certificates " AFNOR Competence / Cathodic protection " Sector: Sea (Certification conformed to the European standard EN 15 257). It becomes thus the only European country to deliver a certification for the sector of application concerning the works exposed to the marine environment.

European specialists in cathodic protection and Specialists in other countries :

- * Come to Brest to make certify your competence in cathodic protection.*
- * Come to develop your knowledge thanks to the attribution of an official recognition, known and appreciated in many countries.*
- * Come to visit the town of Brest and the superb French area which is Brittany. You will discover there culture, traditions, gastronomy and of the superb landscapes.*
