



**INTERNATIONAL ELECTROTECHNICAL COMMISSION SCHEME  
FOR CERTIFICATION TO STANDARDS RELATING TO EQUIPMENT FOR  
USE IN EXPLOSIVE ATMOSPHERES  
(IECEx SCHEME)**

**Ex Management Committee, ExMC**

**TITLE: IECEx Assessment Report for acceptance of CESI – Centro  
Elettrotecnico Sperimentale Italiano S.p.A as an IECEx Test  
Laboratory (ExTL)**

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This document contains the IECEx Assessment Report for the acceptance of CESI–  
Centro Elettrotecnico Sperimentale Italiano S.p.A as an IECEx Test Laboratory (ExTL)  
within the IECEx Scheme.

The report is hereby submitted for voting

Please consider the assessment report and return the completed voting form to the  
Secretariat by **2005 09 25**. Your speedy response to the voting process will be very much  
appreciated.

You may return your completed voting form (available in Word format) via fax or e-mail.  
Details below.

A handwritten signature in black ink, appearing to read 'Chris Agius'.

**Chris Agius  
IECEx Secretariat**

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IECEx Secretariat  
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# IECEX ASSESSMENT REPORT FORM (TEST LABORATORY – ExTL) CESI – Centro Elettrotecnico Sperimentale Italiano S.p.A, Milano, Italy

## Type of Assessment:

Initial Assessment for Candidate ExTL  
Surveillance Assessment for existing ExTL

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## 1. OBJECT AND FIELD OF APPLICATION

1.1 **Country:**  
Italy

1.2 **Name of Candidate TL**  
CESI - Centro Elettrotecnico Sperimentale Italiano S.p.a

1.3 **Members of the Assessment Team**  
**On site:**  
Jim Munro, (Lead Assessor)  
Heinz Berger, (Expert Assessor)  
  
**Off site: Document review and support**  
Wolf Dill (Expert Assessor)

1.4 **Place and Date of Assessment**  
CESI-Centro Elettrotecnico Sperimentale Italiano S.p.a  
Via R. Rubattino 54  
20134, Milano  
Italy  
22-24 November 2004

1.5 **Assessment References**  
Document:  
i) IECEx 02 Rules of Procedure Second Edition  
ii) IECEx Operational Document OD/003 (ExMC/100/CD)  
iii) ISO/IEC 17025  
iv) IECEx Technical Guidance Documents  
v) ExTL application documents

1.6 **Scope of Application**

Product Category	Standard
General Requirements	IEC 60079-0
Flameproof Enclosures "d"	IEC 60079-1
Pressurised Enclosures "p"	IEC 60079-2
Sand-filled Apparatus "q"	IEC 60079-5
Oil-immersed Apparatus "o"	IEC 60079-6
Increased Safety "e"	IEC 60079-7

Intrinsic Safety "i"	IEC 60079-11
Electrical Apparatus with Type of Protection "n"	IEC 60079-15
Encapsulation "m"	IEC 60079-18
Intrinsically Safe Systems	IEC 60079-25
Group II Zone "O" Electrical Apparatus	IEC 60079-26
Field bus Intrinsically Safety concept (FISCO)	IEC 60079-27
Combustible dust - General requirements	IEC 61241-0
Combustible dust - Protection by Enclosures "tD"	IEC 61241-1
Apparatus for combustible dusts	IEC 61241-1-1
Combustible dust – Type of protection "pD"	IEC 61241-4
Combustible dust – Type of protection "mD"	IEC 61241-18

### 1.7 **Candidate TL Persons Interviewed**

Name	Position
Dr. Ulisse Colombo	Mgr. Certification Business Unit
Mirko Balaz	Mgr. Certification Line Ex
Francesco Esposito	Business Unit Certification (Ex i and m)
Damiano Cavanna	Business Unit Certification (Ex e)
Angelo Milanesi	Business Unit Certification (Ex p)
Andrea Padovani	Business Unit Certification (Ex d and testing)
Alfredo Colombo	Metrology Laboratory

### 1.8 **Legal Entity of the Candidate TL**

CESI–Centro Elettrotecnico Sperimentale Italiano G. Motta S.p.A.

### 1.9 **Associated ExCB**

#### **Address**

CESI–Centro Elettrotecnico Sperimentale Italiano G. Motta S.p.A. As above

While the ExTL is integral with the Certification Body, the assessment team are satisfied that the quality management system and operational procedures provide sufficient separation of the testing and certification functions

### 1.10 **Financial Support**

Income comes from testing and contracted research. As part of the assessment the Assessment Team confirmed that there are sufficient financial resources for CESI to meet its obligations. The whole company of CESI totals about 1200 people.

### 1.11 **History**

#### **1956: Foundation**

CESI was founded with the support of the Italian electrical utilities and electromechanical manufacturers with the aim of concentrating:

- large investments in testing facilities to qualify Italian electromechanical industry
- skills on power system analysis for the development of the national grid

#### **1962: Nationalization of the Italian electrical industry**

Enel acquires the majority of CESI share capital and CESI acts as:

- technical support to Enel in transmission and distribution fields
- supplier of testing, certification and consulting services on the international market

### **2000: Liberalization of the Italian Electrical System**

CESI incorporates Enel Research activities with the aim of:

- concentrating all research knowledge and expertise in a unique company
- widening the range of services offered to the national & international market in the electro-energetic and environmental sectors
- developing "full range" approaches and solutions for the market

### **2002: CESI acquires**

- Piacenza Laboratory from Enel Power Generation, which integrates and strengthens the packages of services dedicated to O&M in thermo-electrical power plants
- Polo Idraulico e Strutturale specializing in structural and hydraulic engineering for hydroelectric and thermoelectric systems and relevant infrastructures.

#### **1.12 Relevant Standards**

See 1.6 Scope

CESI operates within the European CENELEC system and as such declares compliance with the declared European Group differences and standards listed in the IECEx Bulletin.

## **2. ORGANISATION**

### **2.1 Names, Titles and Experience of the Senior Executives**

Giulio Santagostino	Managing Director	30+ Years
Ulisse Colombo	Manager Certification Business Unit	19 Years
Mirko Balaz	Ex Certification Manager	30 Years

### **2.2 Name, Title and Experience of the Quality Management Representative**

Gabriele Villafranca Soissons	5 Years (for overall CESI)
Francesco Gallucci	15 Years (for certification)

### **2.3 Name and Title of Nominated Principal Contact**

Mirko Balaz

### **2.4 Employees**

Within CESI there are 23 people involved in the Ex process (ExTL, ExCB, Management, secretaries): 13 of the employees, with professional qualifications, are involved in Ex assessment and testing work.

For the ExTL there are 11 employees directly involved in Ex assessment and testing work plus three involved in either management or secretarial work.

Some of the employees may be involved both as a testing expert and as a certification expert, but never on the same work. If one has been involved in a testing activity, he cannot be involved in certification activity on the same equipment.

As stated in Item 1.10 the company of CESI employs about 1200 people.

## 2.5 Organisational Structure

Refer to Annex A for the organisational chart

# 3. RESOURCES

The laboratory is well equipped with appropriate procedures and competent staff. The Ex testing operation forms part of a much larger operation primarily engaged in testing and research in the electrical engineering field.

All the laboratory work is performed in CESI, except for minor testing. CESI subcontracts to only two Laboratories:

- a) Istituto di Ricerche e Collaudi M. Masini S.r.l., only for testing on sintered metal elements, according to Std IEC 60079-1, § B.1.2, § B.1.3 and § B.1.4;
- b) Cerisie (Laboratorio per la Certificazione e Ricerca sui Sistemi Elastomerici), for test on separate plastics/compounds pieces, according to Std. IEC 60079-18, § 8.1 and IEC 60079-0, § 26.13 (only when CESI facility is busy).

The companies are subcontracted on a single job basis. Both companies are accredited by SINAL (national accreditation body for laboratories).

# 4. TEST METHODS

## 4.1 Procedures

There are two major laboratory procedures: Laboratory Procedure Ex(P172) A4507804 and Laboratory Procedure IP A4507800, both issued 19/7/04. These were reviewed in detail during the assessment visit.

A procedure covering acceptance of testing results for other laboratories and from manufacturers was also reviewed. In all cases CESI maintains full control, and in the latter case always requires, the presence of an inspector from CESI and appropriate checks.

For each protection technique notes have recently been developed based on the IECEx Technical guidance documents (TGDs).

## 4.2 Staff Work Instructions

There are work instructions for all critical the tests as follows:

- 6 work instructions for Ex-d protection;
- 4 work instructions for Ex-e protection;
- 4 work instructions for Ex-i protection;
- 2 work instructions for Ex-m protection;
- 1 work instruction for Ex-p protection;
- 1 work instruction for Dust protection;

## 5. TEST REPORTS AND RECORDS

### 5.1 Test Reports Issued

The following are the reports issued under ATEX and other standards (IEC) in the period of 2002 and October 2004:

Flameproof	d	304
intrinsic safety	i	79
oil-immersion	o	5
increased safety	e	71
special	s	none
powder filled	q	none
encapsulated	m	10
type	n	60
pressurized	p	41
Gas Detectors (IEC61779 series)		2
Apparatus for Dusts		149

### 5.2 Test Records

During the site assessment the assessment team identified the need for improvement in the area of test record management including control over computer-stored results. Changes made in both areas were reviewed to the satisfaction of the assessment team, with copies of work instructions compiled addressing these issues.

## 6. CALIBRATION

The CESI organisation has a comprehensive calibration facility that does calibration of internal and external equipment. It is accredited by SIT (Italian System for Calibration). The facility manages the calibration process for all internal instruments when they either calibrate the instruments themselves or send them to an external body. Accredited external bodies are also used. Where they are not accredited they are subjected to checks by CESI, in particular, checking for traceability.

## 7. DOCUMENTATION

### 7.1 *Quality Manual*

The latest version of the Quality Manual of CESI, is the 5<sup>th</sup> revision, dated May 28<sup>th</sup>, 2004, number A4004390.

The current Quality Manual covering Ex certification was issued on October 31<sup>st</sup>, 2003, number A3/021488.

### 7.2 *Document Change Control*

There is an effective system of change control in place. Procedures exist for dealing with control of documents and were reviewed by the assessment team and found to comply with the requirements of ISO/IEC 17025 and Guide 65.

## **8. CONFIDENTIALITY**

Each person involved in Ex activities (internal and external) is required to sign a declaration of confidentiality and impartiality.

## **9. NATIONAL ACCREDITATION**

CESI has an accreditation letter issued by the Ministero delle Attività Produttive in Roma, dated March 20, 2003 under number 829559 for the scope of protection techniques covered by standards listed in Clause 1.6 of this report.

The document is shown in Annex C.

A surveillance visit by the Ministry took place on 7<sup>th</sup> and 8<sup>th</sup> of October, 2004, and continued acceptance of CESI was granted. For this visit a checklist against ISO/IEC17025 was completed by CESI to show which of their policies or procedures met each of the requirements of the standard. Each of these requirements were then verified and checked off with a tick and each page of the checklist endorsed with an official stamp and signed by two representatives from the Ministry. CESI declared that no Ex technical testing experts were used as part of the assessment of the laboratory.

CESI holds accreditation from SINAL for IP testing to IEC 60529 (See Annex D).

## **10. RECOGNITION AND AGREEMENTS**

CESI has been active in Ex procedures since 1968. It has listed with reference to the "Old Approach" EU-Directives (76/117/EEC, 82/130/EEC), since 1982 and since 1998 with reference to the New Approach "ATEX" Directive (94/9/EC) as Notified Body No. 0722.

CESI has recognition as an independent testing laboratory by the U.S. Department of Homeland Security (U.S. Coast Guard).

## **11. INTERNAL AUDIT AND PERIODIC REVIEW**

Internal Audit is covered in the Ex certification quality manual under chapter 4.7.1. However the 2004 internal audit will not be performed due to the several audits received from SQS, from the Ministry and SINAL (accreditation body for laboratories). The internal audit program of 2004 will be delayed to January 2005. The regular internal audit of 2005 will take place later in 2005.

Furthermore, the Certification Committee (CTC) every year performs their own surveillance audit on certification activities. The last report was issued on March 5<sup>th</sup>, 2004 prior to one of the two annual meetings of the CTC.

## **12. COMPLAINTS MECHANISM**

Complaints are handled according to Certification Quality manual, chapter 7.

Usually complaints are directed to the Certification Business Unit Manager. However, the customer may also directly approach the Technical Certification Committee.

## 13. SPECIAL FACTS TO BE NOTED

It was noted that CESI had made a good start on applying measurement uncertainty to its Ex processes. However, it was indicated that it is likely to take some time to apply it to all of the relevant measurements carried out for Ex testing.

There were no facilities for doing comparative tracking index (CTI) testing. It was advised that in almost all cases they rely on data supplied by the manufacturer of the material. However, they do have access to accredited external laboratories that could do the testing. These laboratories are used in other instances where other material testing is used, for example encapsulating material for Ex m.

## 14. COMMENTS

The following issues were found during the assessment:

- 14.1 Some work instructions (notes) were found to be still under development and in draft form. These have since been completed and issued.
- 14.2 An issue that was raised in relation to the short-circuit testing of cells was subsequently resolved.
- 14.3 An issue with availability of capacitances and inductors that can be used for simulating external parameters when testing with the spark test apparatus was raised. These are now available.
- 14.4 The need for procedures to ensure that the gas analysers used for Ex d testing achieve the accuracies necessary. This has now been addressed by the provision of calibrated gas mixtures for checking of gas analysers.
- 14.5 Issues were raised on the adequacy of data retained and controlled on file. Evidence has been provided of the implementation of procedures to ensure this occurs in the future.
- 14.6 The need to improve scheduling of internal audits in relation to the IECEx Scheme activities was identified. Subsequent actions were taken by CESI to resolve the matter.
- 14.7 From discussions with CESI management, it was agreed that the assessments that will be carried out by the Ministry for the purposes of surveillance of the testing facility, must be technically improved by using an auditor with adequate Ex testing expertise. CESI have advised that they will be working with the Ministry to achieve this.

*This matter has been highlighted by the Secretariat for follow-up action*

## 15. RECOMMENDATION

Based on the initial assessment performed during 22 to 24 November 2004, CESI is recommended for acceptance into the IECEx scheme as a Testing Laboratory (ExTL) according to the scope of the standards listed in this document.





## **LIST OF ANNEXES**

- Annex A: Organizational Chart of CESI Management  
Annex B: Organizational Chart of CESI Ex Certification  
Annex C: CESI Accreditation Letter “Ministero delle Attività Produttive”, March 2003  
Annex D: SINAL accreditation which covers IP testing.

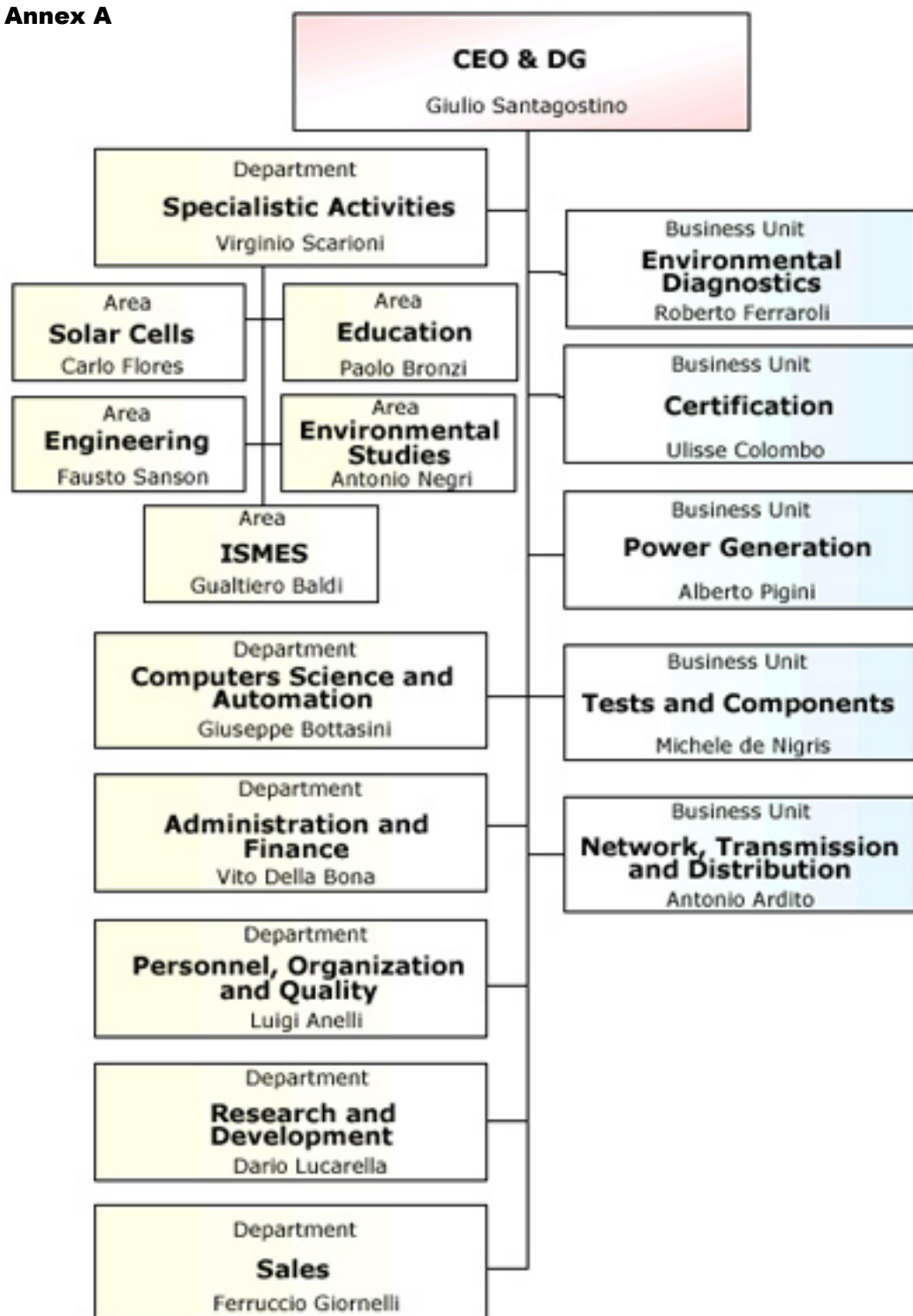
**Jim Munro**  
**Lead Assessor**

**Heinz Berger**  
**Assessor**

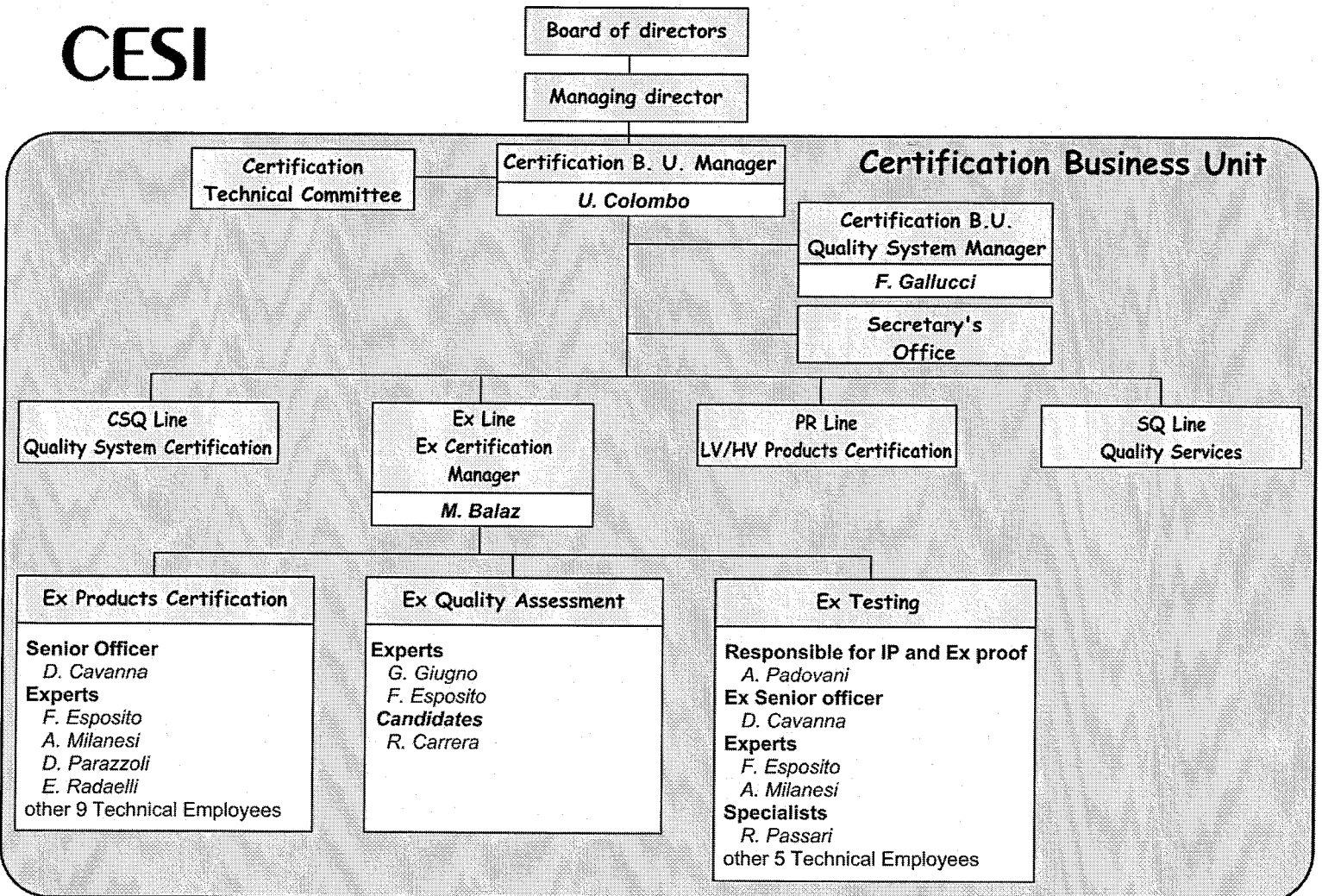
**Wolf Dill**  
**Assessor**

**8 June 2005**

## Annex A



**CESI**



20-MAR-03 11:51

Da-

T-991 P.02/02 F-184

MOD 25 P

MODULARIO  
M.43P. - 22

Notifica CESI-P

PROT. A3/00071

20 MAR. 2003

20 MAR. 2003

20

*Ministero  
delle Attività Produttive*  
DGSPC - Ispettorato Tecnico  
Ufficio F2 - Normativa Tecnica

Archivio CERT/PR, EX

Copia a: Balaz

CESI S.p.A.  
c.a. Ing. U. COLOMBO  
Via Rubattino, 54

20134 MILANO

*Proi. N. 29559 Allegati*  
*Proposta al Foglio N. 2* A3/007038  
*del* 27 febbraio 2003

OGGETTO : Notifica del CESI ad operare ai sensi della Direttiva 94/9/CE (ATEX).

In relazione alla nota sopra citata concernente la notifica in oggetto, si precisa che le verifiche ispettive svolte dal Ministero delle Attività Produttive nell'ambito dell'accreditamento del CESI ad operare quale Organismo notificato n. 722 dalla Commissione Europea ai sensi della Direttiva 94/9/CE (ATEX) per la certificazione di apparecchi e sistemi destinati ad atmosfere potenzialmente esplosive, comprendono, tra gli altri, controlli atti ad accertare:

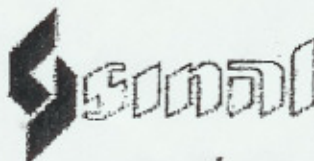
- la competenza del CESI a svolgere le funzioni di Organismo di certificazione in conformità ai requisiti della norma EN 45011:1998 *General requirements for bodies operating product certification system (ISO/IEC Guide 65:1996)* per i prodotti destinati ad essere utilizzati in atmosfere potenzialmente esplosive
- che il laboratorio CESI EX (Prove di apparecchiature antideflagranti e a prova di esplosione) è conforme ai requisiti della norma ISO/IEC 17025:1999 *General requirements for the competence of testing and calibration laboratories*, per quanto attiene l'effettuazione delle prove di tipo di cui alle seguenti norme tecniche:  
CEI EN 50014; CEI EN 50015; CEI EN 50016; CEI EN 50017; CEI EN 50018;  
CEI EN 50019; CEI EN 50020; CEI EN 50021 : CEI EN 50281-1-1 ; CEI EN 50284 ;  
CEI EN 50303 ; CEI EN 60529 ; EN 13463-1,  
e a quelle riportate negli elenchi riepilogativi delle norme armonizzate, adottate ai sensi dell'art. 3 del decreto del Presidente della Repubblica 23 marzo 1998, n. 126.

Pertanto l'autorizzazione rilasciata da questo Ministero ad operare quale Organismo notificato per la Direttiva 94/9/CE, comprende il riconoscimento del CESI come Organismo di certificazione ai sensi della EN 45011 Ed. 1998 e come laboratorio di prova ai sensi della ISO/IEC 17025:1999 per i prodotti e le prove di cui ai precedenti punti a) e b).

IL DIRETTORE GENERALE

(M. Goti)

Federici/Celeste



Sistema Nazionale per l'Accreditamento di Laboratori

## CERTIFICATE OF ACCREDITATION

Number of Accreditation

**0030**

It is certified that

The Laboratory **CESI - CENTRO ELETTROTECNICO SPERIMENTALE  
ITALIANO "G. MOTTA" SpA**

Via Rubattino 54 - 20134 Milano - MI

and

Sede di Piacenza: Via Nino Bixio 39 - 29100 Piacenza - PC

is accredited by SINAL to perform the tests detailed in the enclosed attachment with the certificate number reported above. The attachment can be subject to changes in time.

The accreditation entails the verification of the technical competence of the Laboratory as far as the accredited tests and the Quality System are concerned, in compliance with the provisions of the UNI CEI EN ISO / IEC 17025 standard.

The accredited Laboratory works also in compliance with the provisions of the UNI EN ISO 9001/9002:1994 series which apply to the tests services subject of the accreditation.

The certificate is valid until **march 2008**, following the agreement signed by SINAL and the above written Laboratory, provided that the Laboratory maintains the compliance with the provisions of the SINAL General Regulation as well as with the particular rules which apply to the Laboratory itself.

Director

(Dr. P. Bianco)

Roma, li **18/03/2004**

Revision 0 of 18/03/2004

President

(Dr. S. Allulli)



**Annex D**

# SEARCH RESULTS

## FROM SINAL ON-LINE DATABASE

*Last update: 3-12-2004. SINAL does not take any responsibility about incorrect or missing data published in this on-line database, which is not intended as an official reference information. Official lists and schedules of accreditation may be requested at no charge to the Laboratories concerned or to the SINAL office. SINAL values your feedback and/ or remarks on data published in this on-line database, and any other suggestion is welcome at our mailbox. Thank you.*

### Schedule of accreditation of the Site A of Laboratory: 0030

<b>CESI - CENTRO ELETTROTECNICO SPERIMENTALE ITALIANO "G. MOTTA" SpA</b>	
Via Rubattino 54 20134 Milano (MI)	
Tel. 02 2125.1 Fax 02 2125 5 621 E-mail <a href="mailto:caruso@cesi.it">caruso@cesi.it</a> Web <a href="http://www.cesi.it">www.cesi.it</a>	

Schedule of accreditation (data shown limited to 1 tests) matching all of the following keyword(s):

Test method/standard contains keyword(s): "60529"

*For tests marked by asterisk \*, the Laboratory has temporarily suspended the issue of SINAL endorsed test reports.*

S.	Cat.	Object/product/material	Test description	Method/standard
	0	Involucri per apparecchiature elettriche - Involucri per apparecchiature elettriche < 72.5 kV	Classificazione del grado di protezione IP fino a IP67, esclusa la seconda cifra 1 e 2 - Classification of degrees of protection up to IP67, excluding second number 1 and 2	CEI EN 60529 1997 + A1 2000, IEC 60529 2001

*Click here to perform a new search*

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