



# fisuel INFO

FISUEL INFORMATION LETTER

International Federation for the Safety of Electricity Users



## Editorial

### A STRATEGIC PLAN FOR FISUEL!

*With thirty-four members representing twenty-one countries, FISUEL, in less than ten years has established itself magnificently in its field.*

*Therefore, having succeeded Philippe André - its founder -, José Tomaz Gomes and Romualdo Arias, the three of them authors of this development, I will focus all my actions to continue this expansion.*

*Within the Board, we have considered it to be necessary to set up a "project" for the coming years, a "project" to position the Federation as "the international reference" for Electrical Safety, inviting all the players in this field, not yet represented in the Federation to join us.*

*The "Strategic Plan" being developed to this end by the Board of Directors will be presented to the members at the next General Assembly in Abidjan, May 11.*

*FISUEL means sharing and participation, means knowledge and experience, means cooperation. Let us spread the message of FISUEL, as widely as possible and make known the wealth of experience of its members.*

*This has always been our desire. Today it is our goal. Finally, on my own behalf and on behalf of the Board, I send you our best wishes for prosperity and happiness for 2012.*

Patricia YERFINO  
President

## News: three new members

### ■ Associate members

#### SEC

SEC (Saudi Electricity Company), which comprises all the power plants in Saudi Arabia started operations in April 2000. It is owned 74% by the government. The company is responsible for generation, transmission and distribution. It employs 29,000 people and has 4.49 million customers.



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**See the more detailed article further down.**

#### AMAD

AMAD has as its objective to develop a common concern for safe and sustainable electrical systems, so as to provide benefits for government authorities, electricity utilities, electrical consultants and contractors, electrical industry, electricians and the public including each and every individual consumer.

This Objective is carried out by seeking to build focus groups so increasing awareness of the need to ensure the safety of electrical installations, demonstrating the need for inspections defining the scope of these inspections, in new and existing buildings, so as to ensure conformity with Saudi safety standards in line with international best practice and Saudi building codes.

AMAD aggressively works to promote the safety of electricity users, safe viable use of electrical appliances, equipment and systems so as to achieve all the above benefits by the following:

1. **Promoting**, enhancing, and technically supporting the safety of electrical installations in buildings in Saudi Arabia ➔






➤ in accordance with the regulations and based on best international practices.

2. **Reviewing**, promoting and supporting the implementation of "Electrical Requirements" in "The Saudi Building Code" in Saudi Arabia.

3. **Promoting**:

- initial and periodic inspection of new and existing buildings.
- the "certificate of conformity" and the "certificate of occupancy" in Saudi Arabia.
- the establishment of the Saudi National Committee for the safety of electricity users.

4. **Supporting**, arranging and conducting professional training programs to achieve safe and sustainable electrical systems. 

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**CERTIEL BRASIL**

Certiel Brasil has been established in December 2008 and has today 8 associates that represents electrical material and conductor manufacturers, the Brazilian Committee on electrical standards and IEC Brazilian representative, ICA/Procobre (International Copper Association), the Brazilian Standardization Association – ABNT, electrical material distributors and retailers, organizations on monitoring of quality of electrical wires and cables. The main objectives are:

- To certificate voluntarily (in a first stage) low voltage electrical installations,
- To develop with local legislative representatives the basis for a mandatory certification and to preserve the presence of IEC requirements in the Brazilian Standard on low voltage installations (ABNT NBR 5410 equivalent to IEC 60364).

Since 2008, Certiel Brasil certificated public buildings (residential and administrative) and corporate buildings. 

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**SEC**  
**Saudi Electricity Company**

Electricity is a fundamental base in development, and it saw successive progressive steps that were crowned at the beginning of the Hegira year 1421 by reforming the structure and unifying the electrical companies so as to work under the umbrella of the Saudi Electricity Company on a commercial basis that does not rely on the financial support from the State. The State also seeks to privatize this vital sector and modernize it in order to develop the national income. In addition, the



participation of the private sector in this field will create a sound competitive environment for improving performance, reducing costs intensifying interest in scientific research, developing services, rationalizing the consumption of the electric power, keeping the environment clean, employing many of people and providing training programs for the national working staff in this sector.

The electricity sector in the kingdom aims primarily at retaining the electrical services that are qualified and credited, in return for low prices. Also, the government seeks to attract the confidence of investors thus attracting the investment and increase the participation of the private sector within the electrical sector. Moreover, it works by creating an atmosphere of competition and reducing monopoly, forming the basic foundation for protecting the consumer and improving the performance of this sector.



During recent years, the electrical sector has witnessed a rapid development in demand for electric power over a period in which several very large gas and steam generating stations were established in most regions of the Kingdom. In addition, the State set up a high voltage electric transmission grid that extends for thousands of kilometers within most regions of the Kingdom for so as to make electricity services generally available in all regions and thus to supply the needs of all citizens.

On other hand, the government is working on several future projects,

- Notably one aimed to develop new designs for air-conditioners with high efficiency and suitable for the hot climate with a 46°C ambient temperature,
- Also projects related to electrical installations in buildings, such as changing the voltage within the Kingdom from 127/220 volts to the inter-



*Giant projects in Saudi Arabia*

national voltage 230/400 volts, and to finding appropriate mechanisms for the implementation of the Saudi Building Code.

The electricity sector also has related activities in consumer protection from electrical hazards and increased energy efficiency and is drafting technical directives and will then work to

enforce them. The Government also works to spread awareness and to educate the various parties concerned with the risks resulting from electrical installations, and to develop measures to reduce waste of energy and the methods to achieve these aims. 🌐



*SEC operations*



*Training of young future staff*



## FORUM DE MEXICO

The November 9 was held in Mexico City the "International Forum of Electrical Safety," organized in partnership with ANCE (Asociación Nacional de Normalización Certificación y del Sector Eléctrico) and ICA (International Copper Association), led by FISUEL President Patricia Yerfino (Asociación para la Seguridad Promoción of Electrica) and Rafael Yanez (ANCE).

Along with representatives from public authorities in Mexico and from the electrical industry of this country, one could note in particular the presence of Madam Fatou Danielle Diagne, Ambassador of Senegal to Washington, Brett Brenner, president of the ESFI (Electrical Safety Foundation International - United States), Ravinder Bhan, ICA Principal Consultant GCC (Gulf Cooperation Council) and members of FISUEL.



One hundred participants and experts from some twenty countries once again received presentations on the importance of Standardization - products and installations – on the fight against non-compliant and/or counterfeit products, on communication to users, on training of practitioners and on the verification of installations – new ones before their connection and existing ones over the years - the last "link in the chain of electrical safety."

It was also an opportunity to receive an impressive presentation by the representative of FESIA (Japan), Mr Ryuji Suzuki on the measures taken in terms of required energy savings after the disaster of Fukushima in March.

In short, the 2011 Forum, thanks to the richness of the presentations and the quality of exchanges will have met the expectations of all.



**Forum website all members**

**Further to the Mexico Forum, you will find the various presentations which were made on the website:**

**[www.foroancefisuel.com.mx/index.html](http://www.foroancefisuel.com.mx/index.html)**

## Electric vehicles charging and Safety

**There is no going back: the electric car or plug-in hybrid is a reality.**

It is difficult to say today how rapidly these new technologies will be deployed but it is certain that by 2020 there will be millions of such vehicles that run on the roads of Europe and the rest of the world. Such a deployment requires the creation of charging infrastructures that will ensure the highest level of safety vis-à-vis users in accordance with international standards and national regulations. It is important to remember that the safety of the electrical infrastructure is the responsibility of the whole electrical industry: equipment manufacturers, wholesalers, consultants and installers and cannot be delegated to the automotive industry. On the other hand, only a constructive dialogue between the two sectors will ensure the best result for the end user of the vehicle.

### Where we are today and what developments can we anticipate?

First, a reminder of the charging techniques described in the international standards:

**Four modes of connections** between vehicles and charging infrastructure are defined in international standards IEC 61851, "conductive charging system for electric vehicles"

- **Mode 1:** defines a single or three-phase AC connection to a household socket outlet up to 3kW.

- **Mode 2:** defines a single or three-phase AC connection to a household socket outlet with additional protection included in the cable.

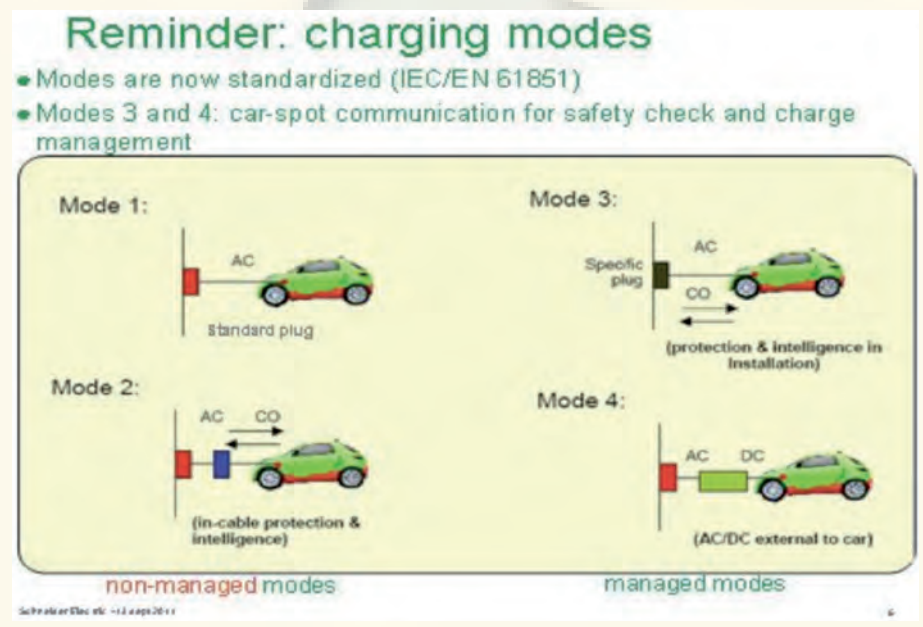
- **Mode 3:** defines a single or three phase AC connection to a specific socket outlet for a power of 22kW or 43kW which includes

two communication lines to allow a dialogue between the vehicle and the infrastructure to enable power management.

This mode is recommended today.

Vehicle manufacturers should converge with this solution by 2017.

- **Mode 4:** defines a DC connection for power beyond 43kW.



For these four charging modes there are **three corresponding types of plug** and socket systems defined in international standard IEC 62196:

- The type-1 single phase plug and socket from Yazaki;
- The mono / three phase plug without shutter type 2 plug and socket from Mennekes;
- The mono / three-phase plug with shutter type 3 plug and socket from Scame;

Only types 2 and 3 are consistent with a mode 3 charging system.

Today, the vast majority of stakeholders, automotive manufacturers,



electric utilities and suppliers of electrical infrastructure equipment, agree that **in Europe the mode 3 should be the one finally chosen**. This is indeed the solution which, with the possibility of communication between the vehicle and the infrastructure, guarantees maximum flexibility of use with an AC charging capacity ranging from 3kW to 43kW.

### How these systems can be compared as far as safety of users is concerned?

With regard to **modes 1 and 2**, many studies have shown that it is preferable to limit the charging current to 8 A on a household socket outlet (just under 2kW). While a new installation dedicated to the recharge may accept higher levels, it should be understood that the user can connect to any outlet, regardless of age, degree of wear or poor manipulations to which it could have

been submitted. The risk of abnormal heat at rated current becomes very high which results in the risk of fire.

Concerning **mode 3**, there are two competing technologies:

- Type 2 developed in Germany without a shutter and
- type 3, developed jointly by Italy and France, with shutters.

Type 2 safety depends entirely on the proper functioning of the electronics integral in the wall box containing the socket outlet. If a failure occurs which has the effect of maintaining the power switch closed, then the danger of the user to making contact with live parts is very high.

Type 3 is equipped with additional mechanical protection to prevent contact with live parts regardless of the state of electronics.

Regulations for Electrical Installations require, in 12 European countries representing over 55% of the population, protection of this type in buildings for devices that can be used by unqualified persons as is the case of the electric car.

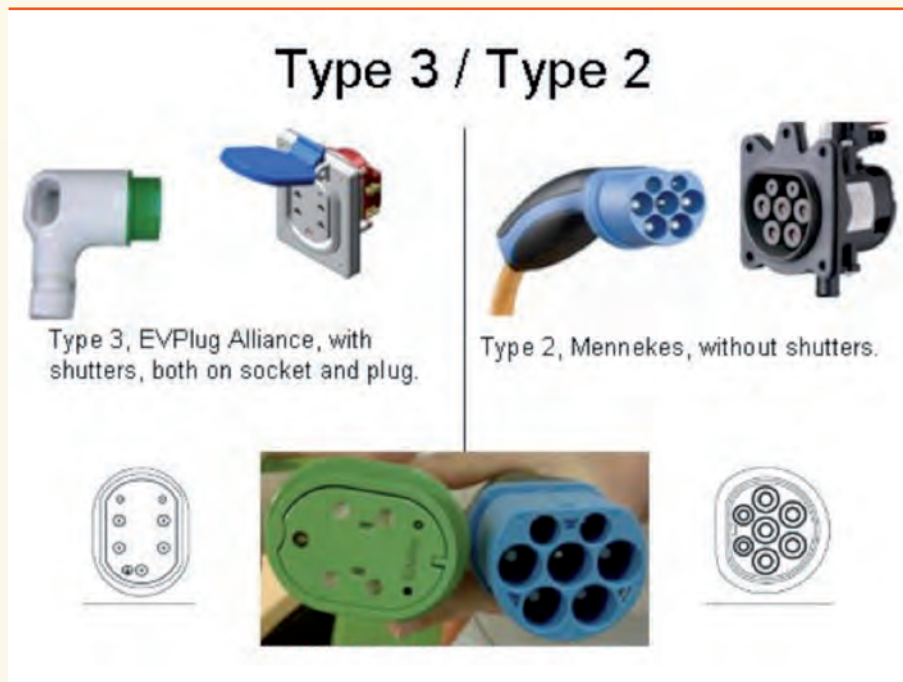
With regard to charging points located in public places it may be argued that they are not, a priori, subject to this regulation. This may be true, but they can be deemed by inference to be covered, to the extent that they will be used by unskilled people.

In addition, it is highly probable that among the tens of thousands of terminals which will be installed, a significant number will be damaged, sometimes by lightning and will be in an unpredictable state. There will then be a maximum risk because the user will handle a plug thinking that that it is off power when in fact it could be on. **All these are reasons to prefer the type 3 to type 2.**

In France these comments were taken into account in a general framework document published by the government and known as the "Green Book". **This document is a reference for all public infrastructures.**

The safety of charging stations, both public and private, is a major concern for the electrical industry and is an essential condition for this promising new market to become a reality because any electrical accident involving the charging infrastructure would give rise to an extremely serious risk of market collapse.

Dominique ROUSSEL  
General Director  
EV Plug Alliance



## Dates for your diary

- **March 20th, Paris (France)**  
Europe Working Group
- **Friday 10 and Saturday 11 May, Abidjan (Côte d'Ivoire)**  
Annual General Meeting of Members