



**PRESS KIT:**

TOWARDS IMPROVED  
ELECTRICAL INSTALLATIONS IN EUROPEAN HOMES

*How improved safety levels can save lives, improve lifestyle  
and increase property value*

Communication Paper edited by the  
*Forum for European Electrical Domestic Safety (FEEDS)*

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Full study available on [www.electrical-safety.org](http://www.electrical-safety.org)



## 1 – Executive Summary

### Towards improved Electrical Installations in European Homes

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While standards of safety in most areas of life are constantly improving, safety of domestic electrical installations is not keeping pace. People expect to be at their safest when in their own homes and tend not to be aware of the risks that face them there. Incidents resulting from unsafe installations - deaths and injuries from fire and electric shock – are preventable. As housing stock ages, the need to introduce regulation to preserve and enhance safety becomes an increasing priority.

The current completion rate for new build dwellings implies the average lifetime of a European dwelling is 200 years and the majority of European housing stock (60%) is already over 30 years old. Unless these buildings are properly adapted, maintained and renovated, their technical installations become progressively less suited to the higher standards of functionality, security and safety required by today's lifestyle. Although the cost of renovation is one of the main barriers to overcome, the report concludes that it is not insurmountable. Appropriate measures to overcome the cost barrier include careful segmentation of the market, scheduling implementation according to levels of risk and fiscal incentives to share costs between government, owners and tenants. Proactive maintenance, through periodic inspection, will help to manage the housing stock - one of society's biggest capital items.

To reach these goals the following actions are proposed:

- **Introduce regulation on periodic inspection, i.e.:**
  - require a recent inspection certificate when changing the meter or supply contract, or at change of owner or tenant;
  - carry out inspection by a qualified inspector such as a certified installer, municipal inspector, utility representative or an independent certified body;
  - optimise inspection by covering all technical installations (electricity, gas, water) together;
  - ensure that any necessary renovation work identified is carried out in a reasonable time scale.
- **Raise awareness of electrical safety among residents, landlords, building managers and owners**

These actions would take place at national or regional level and their implementation would bring the following benefits to occupants and owners:

- Improved safety and sense of security
- Increased property value
- Enhanced lifestyle through greater comfort
- Reduced overall cost of ownership/maintenance and the following benefits to society:
  - Reduced healthcare costs
  - Energy saving
  - The creation of employment, with its double dividend of reduced unemployment benefits and increased tax income.

This report demonstrates that improving electrical safety in the home justifies the regulatory effort required.



## 2 – About Feeds

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The Forum for European Electrical Domestic Safety (FEEDS) is a partnership of 5 international organisations working together with the aim of improving electrical installations through regular periodic inspection:

### Association Européenne des Installateurs Electriciens (AIE)

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In 1954, five national Electrical Contractors Associations decided to create a European platform to reflect together on common problems and developments facing the Electrical Contractors. Today, the AIE has developed into an important association gathering 21 national member associations or organisations representing groups of electrical installation contractors from Europe and the accession countries to the E.U., representing more than 175,000 companies, 900,000 employees and 60,000 billion euro turnover. Over the last decade, the AIE has moreover established strong relationships with associations from the USA, Australia, Asia, Mexico, South Africa and recently handed over the chairmanship of the International Forum of Electrical Contractors to NECA USA. The Annual Assembly of the AIE, the Council of Delegates, is the opportunity for the worldwide electrical contracting industry to meet and exchange views, experiences & knowledge on the current trends and technical developments facing the Electrical Contractors. According to a recent survey carried out among its members, the AIE considers electrical safety as one of its major priorities at both national and European level.

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### European Copper Institute

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The European Copper Institute is a joint venture between the world's mining companies (represented by the International Copper Association, Ltd) and the leading European fabricators. Its mission is to promote copper's benefits to modern society across Europe, through its Brussels office and a network of 11 Copper Development Associations.

ECI is active in 4 key areas in Europe:

- Electricity & Energy
- Building Construction & Automotive
- Environment
- Health

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## Europacable

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Founded in 1991 Europacable is the European Confederation of 16 national associations of cable manufacturers. Its main missions are the promotion of the use of cables, the promotion of wire and cable technology which reflects state of the art safety and ecological aspects in all fields of application ranging from enamelled wires, general wiring cables for construction and industrial applications, energy cables, data and control cables to metallic and optical fibre telecommunication cables. Europacable represents 90 % of the European industry and, through National Associations, more than 200 individual cable manufacturers.

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## Fédération internationale pour la sécurité des usagers de l'électricité (Fisuel)

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International Federation for the Safety of Electricity Users is a Federation which brings together a number of organisations sharing a common objective, namely the promotion of electrical safety, by working for the setting up of installation inspection systems and their harmonisation in terms of reference standards, procedures and methods.

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## International Union for Electricity Applications (UIE)

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The International Union for Electricity Applications (UIE) is a non-profit making organisation founded in 1953 whose mission is to favour, at the international level, the development and institutional promotion of the use of electricity, alone or through multi-energy channels.

UIE's ambition is to be a network for exchanging ideas and information, to present a collection of expertise with a vocation to have all actors of economy (industrials, communities, etc.) benefit from the performance of electric solutions. These performances contribute not only to the optimisation of operating conditions by improving productivity, quality of products and services, automating, process reliability, but also to the improvement of the quality of the environment.

UIE is organised around a permanent secretariat, which coordinates the activities of a set of qualified bodies open to experts of research, education, applications and information.

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Prof. Ronnie J.M. BELMANS obtained his PhD in 1984 and a special PhD in 1989. In 1993 he obtained the Habilitation of the Rheinisch-Westfälische technische Hochschule (RWTH) in Aachen (Germany). He is currently a full professor teaching electrical energy, variable speed drives and power quality at the K.U.Leuven. His field of research ranges from power quality and variable speed drives to the technical aspects of electricity market deregulation. Since 1997, he has been an invited lecturer at the RWTH in Aachen and, since 1999, at Imperial College in London. Prof. Belmans is a Fellow of the IEE (United Kingdom), senior member of the IEEE and member of the Royal Flemish Association of Engineers (KVIV). Since June 2002, Prof. Belmans has been president of the Board of Directors of Elia, the Belgian transmission system operator. He is also president of UIE.

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Hans de Keulenaer is the Electricity & Energy Programme Manager of the European Copper Institute (ECI). His responsibilities comprise strategic planning, market research, campaign development and programme management. He has over 15 years experience in pan-European marketing for companies and international organisations in the industrial sector. His current interests are sustainable energy, quality of supply and the safety & comfort of electricity users.

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Oxford educated as a modern linguist, Jonathan Manson spent 25 years in the advertising business managing multinational clients. After a brief period of consulting for the British Standards Institute, he joined Gorham & Partners, where he is now a Director. For the past 10 years he has been working with the European Copper Institute and national Copper Development Centres (UK & Spain) on a number of projects related to the use of copper in electric and electronic applications. In the field of domestic electrical safety, he has managed and carried out national research and seminar projects in partnership with local government, electrical contractors associations, cable manufacturers, and fire prevention associations in both the UK and Spain.

Gorham & Partners Limited is a management consultancy that has been advising clients since the early 1970s. It carries out a broad range of advisory services across industrial sectors and both governmental and private sector organisations. G&P currently has 8 full time members and works with over 20 technical and sector specialists world wide.

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After gaining a Law Degree at the Catholic University of Leuven (KUL) and at the Faculté Notre Dame de la Paix of Namur, Evelyne Schellekens also obtained a certificate of the Institut européen des affaires publiques et du lobbying in 1998. In 1993 - 1994, she worked as junior consultant for European Programmes (TACIS & PHARE). In 1993, she became legal consultant at the National Association of Electrical Contractors of Belgium (FEDELEC, Fédération nationale des installateurs électriciens) and, from 1994 to 1997, she was General Secretary of the European Technical Contractors Committee for the Construction Industry (CEETB). Currently, she is General Secretary of the Association Européenne des Installateurs Electriciens - A.I.E.



## 4 – Copper's contribution to electrical safety & comfort

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### Electrical end uses of copper

Copper's high electrical conductivity makes it suitable for almost all types of wiring. In 2003, electrical applications including wire and cable end uses accounted for 60% of the world copper usage. Electricity flowing through copper wires meets far less resistance than any other metal except silver. Consequently, copper has become the material of choice for electric power systems. Today, it is used for power generation and distribution, technical installations in buildings, telecommunications, transportation and electrical and electronic products. Wires, cables, electrical appliances (sockets, fuses, etc) all contain copper.

### Copper, an asset for electrical safety and comfort

In addition to its electrical conductivity (the best among all non-precious metals), copper is durable. Its durability in electrical applications remains an important sustainable benefit, providing users with higher reliability and lower operating costs.

Moreover, it allows use of multi media applications throughout the home and will be essential for technology assisted-living.

### Copper, a key material to improve energy efficiency

Losses in electrical equipment are due to electrical resistance in conductors (wire and cable) and losses in the magnetic material which occur in motors and transformers. As electricity flowing through copper wires meets less resistance than in any other metal except silver, optimising copper contents in electrical equipment can reduce energy losses by up to 70%, thus generating energy savings and reducing CO<sub>2</sub> emissions.

As far as European industry is concerned, a recent ECI position paper, drafted with support of the UIE and the Fraunhofer Institute, estimate energy savings in Europe from the use of energy efficient motor driven systems of up to 200 billion kWh of electricity consumption, equivalent to 100 million tonne of greenhouse gas emissions a year.<sup>1</sup>

### Copper, an ally for sustainable development

When electrical and electronic products arrive at the end of their useful life, the copper they contain can be entirely recycled without any loss of quality or performance, as copper is 100% recyclable. 41% of Europe's annual demand for copper is supplied by recycling. Recycling copper also enables energy savings of 85%<sup>2</sup> compared to the extraction of new copper from ore.

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<sup>1</sup> "Energy Efficient Motor Driven Systems...can save Europe 200 billion kWh of electricity consumption and 100 million tonne of greenhouse gas emissions a year", Report edited by ECI with the support of the *Motor Challenge* Programme, Brussels, 29 April 2004.

<sup>2</sup> Source: BIR (Bureau of International Recycling)



## 5 – Some dangers of electrical installations in the home

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An electrical installation built over 30 years ago typically has the following two main problems:

- **The installation has deteriorated over the years**
  - ✓ *Avoid 'Do-it-yourself' (DIY) modifications and take care with the need of maintenance*
  - ✓ *Don't repair fuses with anything other than the correct fuse wire*
  - ✓ *Don't neglect loose sockets*
  - ✓ *Don't expose occupants to electric shock from an unprotected installation*
- **The functionality provided when the installation was built no longer meets today's needs.**

### Not enough socket outlets?

- ✓ *Don't use adapters* => *you increase the risk of fire*
- ✓ *Don't run cables under carpets* => *you risk damaging the insulation*

### Use your installation in a safe way:

- ✓ *Don't use electrical equipment in a bathroom*
  - ✓ *Don't let children play near sockets*
  - ✓ *Don't change a light bulb with the power still switched on*
  - ✓ *Don't use adapters for heavy duty appliances*
  - ✓ *Appropriate protective measures need to be in place and care must be taken for the safe use of outdoor electrical equipment*
- **Protect electrical equipment and installations using:**
    - ✓ *Adequate earthing*
    - ✓ *Adequate protection against earth leakage*
    - ✓ *Over-current protection*
    - ✓ *Correct sizing of wires because inadequate conductor size can cause overheating*
    - ✓ *Over-voltage protection*
    - ✓ *For your outdoor safety: use weather-proof equipment and cables, consistent use of 3-pin plugs, avoid product or cable misuse and over-long cables, unwind the cable completely before using a retractable cable on a reel and use of a local RCD.*