Let's shed light on CE marking of electrified furniture

Annamaria Franz

Today Catas opens its offer to the electricity sector, both for testing and for technical support, thanks to the recent alliance set up with **Sicom Testing srl**, Ronchi dei Legionari (Gorizia) laboratory specialized in the electronic and telecommunication sectors.
The collaboration between the two institutes makes it possible to combine the knowledge of Catas on the furniture product with those of Sicom Testing on the electrical component, to provide answers and integrated services to the many companies that are now including in their catalog also electrified products, more and more appreciated and required by the current market, which is smart and connected.
As usual, Catas focuses on: **rapid answer**, guaranteed by the fact that both laboratories have lean structures and also by the geographical proximity that allows us to organize the logistics of the sample when it has to be subjected to both mechanical tests and electrical checks; the **competence** of the technicians interfacing with the customer, who are always technical figures (in practice our customer, as soon as he signals the need for further information in the electrical field, is directly conveyed to the Sicom Testing staff for direct technical discussion, without intermediaries).
To break the ice and start providing some answers to the many questions that come to us from those furniture manufacturers who are now overlooking at the electrified furniture landscape, we recently organized a seminar on the subject. In this article we summarize the most relevant contents.
The aim of the meeting was to illustrate the European Directives which apply to electrified furniture, during a small talk that we thought would last an hour and a half. We faced a numerically modest but truly enthusiastic audience: the final debate lasted almost two hours! Let's try to resume the fundamental concepts that have emerged.

THE STARTING POINT.

We assume that the furniture manufacturer, in the approach to the standards about furniture, is accustomed mostly to voluntary product standards, which become mandatory only in very rare cases (eg reaction to fire). The electrified furniture brings a novelty: the **CE marking**. The presence of electrical, electronic and lighting components involves the application of some European Directives that are **mandatory** and the conformity of the products to these directives is the **responsibility of the manufacturer.**
Who is the manufacturer? Any "*natural or legal person who designs and/or manufactures the product object of the directive, or in the absence of a manufacturer as defined above, any natural or legal person who places the product on the market*". There is no escape. The European Union assigns to those who place the product on the market the burden of verifying and proving that the product itself is safe, in the sense that it meets the requirements and objectives set by the applicable directives.

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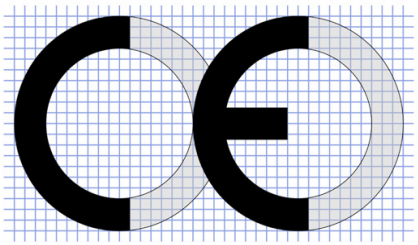

DIRECTIVES AND HARMONIZED STANDARDS.

What is a European directive? A directive is a legislative act that establishes an objective that all the countries of the European Union must achieve. Member States take responsibility for ensuring effective enforcement of the directive in their territory, and to endeavor to ensure effective monitoring.

The Directive defines only the essential health and safety requirements of general scope, supplemented by a series of more specific requirements for certain categories of products.

To make it easier for manufacturers to demonstrate compliance with these essential requirements and to allow inspections to meet these requirements, harmonized standards come to the rescue: these documents are set up on the explicit mandate of the European Commission, they are valid at Community level, for the purpose to prevent risks deriving from the design and construction of a specific product.

Thus:

- the manufacturer has the obligation to comply with the European directive;
- the directive establishes the essential health and safety requirements;
- the harmonized standard is the specific document, which covers a certain type of product in a limited way (eg EN 1129 parts 1 and 2 of 1995 on foldaway beds, harmonized with the European directive on general product safety): it identifies and assesses the main risks related to the product, **translating them into specific requirements** to be met;
- the manufacturers, adopting the harmonized standard, can prove the conformity of their product with its requirements, obtaining the **presumption of conformity** to the requirements of the directive to which the standard is harmonized.

Easy, ain't it?

Unfortunately not. Harmonized standards are not available for all types of products, they have to be written within standardization bodies, by entities (often private, see Catas) that operate on a voluntary basis and they must undergo a long and complex process of approval. We will see that at the moment there are no harmonized standards that cover our products with respect to the directives that interest us.

But which directive applies to electrified furniture?

Here we need to start making distinctions. We have identified 2 different types of furniture products on which the problem must be raised:

1. furniture products with electrified movements: relax armchairs, motorized sofas and beds, height-adjustable desks and tables, etc.
2. furniture products without movement but equipped with lighting or connectivity components: furniture with lights, lamps or LEDs, tables with electrical or USB plugs, ...

CASE 1. Furniture products with electrified movements.

This case falls in full in the definition of machine given by the corresponding **Machinery Directive** 006/42 / CE (in acronym, MD). A "machine", defined in Article 2, letter a) of the Directive, is "*an assembly, fitted with or intended to be fitted with a drive system other than directly applied human or animal effort, consisting of linked parts or components, at least one of which moves, and which are joined together for a specific application*".

So surely, whenever in our product there is an electrical component which operates a part causing a movement, we must apply this Directive. But how do we conform our product to the Machinery Directive (MD)? At the moment there is not (yet) a harmonized standard for the "electrified furniture" product and therefore this "implementation" tool of the pro-

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duct directive is missing. The manufacturer, to fulfill his/her responsibility, has to respond directly to the directive which is a comprehensive document, written to understand a much more heterogeneous set of products (from circular saws to relaxation chairs). We must therefore carry out the risk analysis and the assessment of compliance to all the essential requirements set by the MD (see Annex I, about forty pages...).

Furthermore, it is mandatory:

- to collect the product documentation and the results of all the tests carried out in a technical dossier. This dossier must be kept at the disposal of market inspectors for 10 years.
- To write and sign the European declaration of conformity of the product that will be attached to each piece produced.
- To ensure that all parts produced conform to the one initially tested and therefore comply with the requirements of the applicable European directives.
- To consider all the updates to the standards and other technical documents applied to the product.
- To apply the CE marking on the product, in the manner indicated by the Directive.

Should we contact a *notified body*? No, it is only intended for specific categories of machines, which do not include electrified furniture. The manufacturer can then comply with the MD independently, using the laboratory for any tests or to receive support in the drafting of documents and collection of files, which remain in any case under his full responsibility.

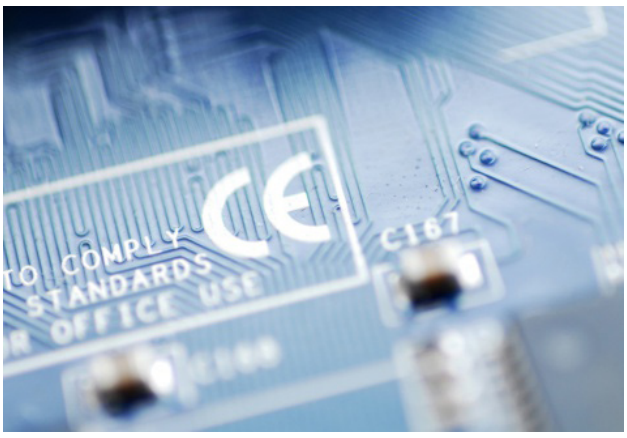
That's enough? No. In fact, each electrical appliance, being a " *finished appliance or combination thereof made available on the market as a single functional unit, intended for the end-user and liable to generate electromagnetic disturbance, or the performance of which is liable to be affected by such disturbance*" and any fixed installation, or "*particular combination of several types of apparatus and, where applicable, other devices, which are assembled, installed and intended to be used permanently at a predefined location*" are subject to the Directive 2014 / 30 / UE **Electromagnetic Compatibility** (EMCD).

What does this directive require? This time the essential requirements are expressed in a very concise way in these two points:

(a) the electromagnetic disturbance generated does not exceed the level above which radio and telecommunications equipment or other equipment cannot operate as intended;

(b) it has a level of immunity to the electromagnetic disturbance to be expected in its intended use which allows it to operate without unacceptable degradation of its intended use.

While for the Machinery Directive it is clear to us that the risk assessment of the motorized component alone is not sufficient for the assessment of the risks on the whole finished product, in this case the temptation to rely on the assessment already performed by our supplier for its component, for respect to the EMCD, is really strong. But are we sure that the designers of the component have evaluated all the risks inherent in the particular configuration that we are going to apply on our product? For example, the engine of a relax chair will have to bear loads far higher than those of the sole structure of the chair (the standards of the furniture sector refer to 110 kg as a weight that the chair must be able to withstand in normal use). And the risks arising from the surrounding environment? For example, a height-adjustable work desk could be placed in the technical office of a heavy industry plant, where it could be subject to the disturbance of even high electromagnetic fields.



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An explicit and conscious assessment of the Directive by the manufacturer is also necessary in this case. It is also necessary to set up appropriate technical documentation and a declaration of conformity and to affix the CE marking on the product; the intervention of a notified body is not provided.
And we have already two directives.
Should we also apply the 2014/35/EU **Low Voltage Directive** (in the acronym LVD)? In this case the answer is no. In practice, the Machinery Directive (MD) and the Low Voltage Directive (LVD) apply in a complementary manner on household appliances intended for domestic use: those covered by LVD do not fall under MD and vice versa. Since the Guide to MD of 2017 makes it clear that electrically moving furniture such as beds, chairs, tables, storage units including kitchen furniture remain subject to MD, the LVD remains excluded.

CASE 2. Furniture products with lighting or connettivity components
This case looks simpler: we have no moving parts and therefore the Machinery Directive does not apply. The Electromagnetic Compatibility Directive remains and what told above is still valid, and this time the Low Voltage Directive (LVD) comes into play. We know that also in this case the electrical component will come from the supplier provided with CE marking with reference to the LVD, but it is good to repeat the evaluation of conformity to the Directive in light of its configuration in the finished product and its intended use. The essential requirements include general requirements, protection against hazards that may arise from electrical equipment and protection against hazards due to the influence of external factors on electrical equipment. The directive covers injuries and damage to **persons, domestic animals and property**.

IN CONCLUSION.
With these two cases we believe we have covered most of the products that we recently saw in the laboratory, but there are certainly many other items of furniture that it is difficult to include here. The laboratory can certainly help the manufacturer to identify the applicable directives, indeed Catas and Sicom Testing carry out this activity free of charge during the set up of their offer. Another crucial issue on which the laboratory can guide the manufacturer is the definition of the so-called "**product families**", groups of different products but very similar, so that repeating the same tests on all of them may seem redundant. Since the European standards do not give an indication of how to behave, Catas and Sicom Testing propose a solution, determined on a technical basis, where some tests are performed only on some products of the family. The manufacturer can decide whether to accept it or proceed to a different selection or even to perform the tests on all the products of the family.

The news of a fatal accident in Birmingham, which involved a man who was watching a film in a movie theater in the Vue chain, was reported on last March 20th. The man had bent down trying to reach his mobile phone, fallen under the footrest of the electric chair on which he was seated: the footrest suddenly lowered, clamping down on the man's head in a fatal grip. We would like to mention this event, tragic in its absurd randomness, not to scare but to sensitize those who read about the importance of the work of consumer health and safety risk assessment.

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