Estado de conocimiento de las cubiertas metálicas

Abstract:

This work is a state of the art of the metallic covers and is based on a bibliographical consultation and a wide consultation on Internet of the European companies leaders on the market of the covers.

In the first chapter a brief introductory is done on the definitions and principal characteristics of the covers having in one tells that these covers can not exist isolated but it forms part of a building or industrial ship, emphasizing also the multiple fields of application and when can be projected those covers.

In the second chapter there are described the characteristics that have to be respected at the moment of designing a cover such as the durability, resistance and stability, the thermal insulation, the acoustic insulation, the protection against fires, the lighting, ventilation and heating and finally the waterproofing. For general norm, the structures of steel are lasting structures and they will have to fulfill the useful life projected in the environmental conditions of the zone where they are located. To obtain this, the elements and structural components of a cover must be designed with the suitable resistance in order that the roof is kept intact, stable and with a deformation limited and controlled under the tensions that operate as a result of the dead load and live load.

Besides, these structures are protected with a series of superficial treatments that are explained in this chapter. Apart from the resistant capacity, the metallic covers will have to guarantee the thermal wished insulation. The most important mission of the thermal insulation in the environment of the construction is the contributing to the achievement of a few reasonable stable temperatures and that turn out to be tolerable and comfortable for the effective activity of the occupants of the building, or, that of the temperature that is necessary for a certain process. In general terms it means a scale of temperature of 15 to 22 º C that is the suitable one for most of the situations in the life and in the work. Another important aspect to consider is the acoustic insulation; this one carries out by means of synthetic materials, as the glass wool, which mission is to diminish the noise by absorption or damping of acoustic waves.

With regard to the protection against fires to indicate that the covers can catch fire in its exterior part for the exhibition to an intense heat and to the flames proceeding from the fires of adjacent buildings, or alternatively, in its interior part for inflamed material transported by the warm air that gets up, that it can cross considerable distances up to lodging at the cover. There the fire was remaining lit and it will propagate if the combustible material of the cover or of its supports they light fire. Measurement to fight against the fire and to increase the protection against fires is the use of slightly inflammable materials and not toxins as for example the polystyrene.

In the topic of the lighting there will be looked the maximum utilization of the natural light but avoiding generally the direct effect of the beams. This way unwanted increases of temperature are avoided when the ventilation is considered and heating of the future work will be looked, always having in bills future conditions of use, which the design of the cover guarantees the ideal energetic efficiency of the building. This way one will reduce the needs in ventilation and heating. Finally, in the topic of the waterproofing, it will have to look across a correct design and maintenance that the conditions of waterproofing are equal to the initials during the whole life of the structure.

Opposite to all these regulation or normative requirements of comfort, is added the search of the aesthetic aspect of the cover, the cost and the quality.

Later, in the third chapter there are exposed the types of metallic modern covers that are already on the market and that know a wide application as the covers type sandwich or double cover, type Deck, cover of metallic or simple sheet and the spatial covers. These covers are analyzed attending to its structural, economic characteristics and adequacy to the requirements of the project.

The chapter 4 exposes closely a few examples of the systems of metallic covers most perfected patented by companies leaders in the world of metallic covers, the exposed detailed, they show the system diversity that they reflect the philosophy and the creativity of every company. These seek to offer to its clients solutions that fulfill the requirements of a structure and that allow them to face to the international competitiveness, therefore, the industrial innovation and the satisfaction of the client is the only tool that can guarantee the success of every company.
Finally, the chapter 5 exposes a few final conclusions. The topic of the metallic covers is a very complex one, because it offers a great margin of innovation for the companies that act in this field, and for the fact that it is a world that offers many possibilities of creating and innovating using every time materials of new technology. For this reason it is difficult to find a bibliography that assembles of exhaustive form the different solutions for the metallic copulation or steel frame. The present work tries to cover this lagoon showing the different systems of covers together with its constructive details. As final conclusion to distinguish the need from that should exist a monograph that allows the engineer to be formed in the conception, design calculation and checking of any metallic cover.