1-PROBLEM

In consideration of the especially significant number of cultural manifestations (festivals, shows, exhibitions), commercial (trade fairs, fairs, exchanges), sporting or political festivals, where the assembly of temporary infrastructures is necessary, a tangible need regarding the material is manifested and induces an impression of the real growth in the event branch.

In terms of the entirety of the European countries, the average of the population attending a “live” performance in 2006 was around a little bit more than 40 % of the population [1]. These different figures accentuate the high potential of developments in this branch and consequently the essentially increasing demand for temporary event infrastructures.

When the model offers advantages of fast assembly and certain flexibility, it has some significant disadvantages at the same time, especially regarding comfort and sustainability. Following the lead of other constructive systems, it seems to be relevant consequently, to research new ways to integrate sustainability criteria into the design process of event infrastructures.

2-STATE OF THE ART

In order to comprehend more precisely the advantages and the disadvantages of the usual practice of event infrastructure, a case study has been conducted on a representative model, focusing on the most significant limits of the common practice considering criteria of sustainability.

Thermal comfort

In term of heating and aeration the efficiency is very bad, due to the light construction energy is very quickly dispersed.

Acoustic comfort

The acoustic comfort is also influenced by the light construction, the more acoustic quality you have inside the more emissions sound to the neighborhood.

Architectural quality and sustainability

The first aim is to comply with the functional requirements without caring for architecture. Even such an infrastructure is temporary, it represents a spatial impact that is important for the site and this aspect must be handled carefully.

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3-GOALS & METHODOLOGY

From this point of view, the objective of the PhD thesis is to develop new ways of construction and design in order to reach high performances in several environmental, sociocultural and economic dimensions for such infrastructures.

After a preliminary phase of diagnostic, targeted objectives are formulated for the process of development and a first design sketch is made. This preliminary design model is the first step and constitutes a working basis for a process of integrated design which implies in a repetitive way the interdisciplinary competences (civil engineers, specialist for thermal and acoustic, carpenters, specialists for photovoltaic technology and operators). Such workflows can be characterized by iteration loops involving actors in each phase [2]. The design can be upgraded and improved at each loop, in order to progress toward targeted objectives.

The objective of the next stages of the strategy is to arrange a reliable basis in the long run for the realization of a first prototype, verified not only on the architectural, constructive and technical level, but also regarding regulations and economic efficiency.

The objective is to keep the inner climate in a comfortable zone [3]. The objective is to keep the inner climate in a comfortable zone [3].

Optimization of comfort

The objective is to keep the inner climate in a comfortable zone [3]. In this sense, the project must offer a certain mass in order to minimize the variations in temperature and to control the acoustic aspects.

Optimal use of resources

To increase the sustainability, the model will include architectural bioclimatic principles, especially regarding the thermal insulation, natural ventilation and passive reflection, in order to reduce energetic demand (warmth and cold) and the prior valorization of resources that are locally disposable (solar/photothermal) [4].

4-PRELIMINARY STUDY

Regarding the analysis and the significant points mentioned, the following targeted objectives are formulated.

Flexibility and efficient exploitation

The first objective of the project is being able to offer adequate advantages for the classic tent, especially regarding the aspects of flexibility.

Optimization of comfort

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Thermal comfort

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