ABSTRACT

The Global warming effect is becoming the biggest challenge of the 21st century. In this context, it will be necessary to radically reduce the emission of green house gasses, by using technology, which already exists and will be developed further in the future. “Today’s problems come from yesterday’s solutions”,[1] choices of energy and material sources during the design process will be the key factor in bringing a higher responsibility to the Architects.

Today, “Computer Aided Design” (CAD) and modelling are the standard tools in architectural firms. Models are a visual aid in the presentation of buildings and projects to clients and making the construction understandable as a visual concept. However, the next evolution in architecture will not be the design field, but it will be the field of techniques and solutions that will be used to make a building future proof. Thermal insulation, solar energy, water catchment systems, recycled and renewable materials are only a few examples of these developments. This would become the 4th dimension of the 3D model and it will become possible that the effects of all these solutions can be viewed.

The aim of this research paper is to determine if it is possible to bring these new techniques of energy conservation into a CAD application. Would it be possible to translate these considerations into a computer based model to be viewed by clients or customers? It will be helpful to present problems and solutions in a construction model of a new building. This kind of model could present specific problems and effects, which may can meet the global warming effect.

This research paper explores a few examples of new software tools, like “Building Information Modelling” and “Life Cycle Assessment”. The report identifies how these tools can be helpful to make the right choice to the right time to save energy, material resources and to reduce the environmental impacts. The report proclaims the current problems for architectural firms and their staff members. It tries to show against the current view of several architects and architectural writers that these new programs and software tools are actually evolved enough to be implemented into a “Computer Aided Design” application. This research paper comes to the conclusion that architects and engineers can get a wide range of new possibilities through the potential of these new software tools. Finally, these possibilities can be used to reduce the wasting of energy and material resources.

1 Peter Senge, “Unhealthy energy conservation practices”, in *The green braid: towards an architecture of ecology, economy and equity*, ed. Kim Tanzer and Rafael Longoria, New York, NY, Routledge, 2007, p.153