CAD in architecture and building

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CAD (Computer Aided Design) technology has been widely adopted in architectural and building design in recent years. This has led to a re-evaluation of design methods and the production of presentation and drawing systems. This has been achieved through the use of computer-aided design (CAD) systems. These systems have revolutionised the way in which architectural designers work.

Architectural design has always been a complex and challenging process, involving a wide range of skills and disciplines. With the advent of CAD, architects are now able to create and manipulate designs in a much more efficient and effective manner.

APPRaisal AND EVALUATION OF DESIGNS

As a result of the increased use of CAD, there has been a greater emphasis on the appraisal and evaluation of designs. This has led to a greater understanding of the factors that influence design decisions.

The use of CAD has also led to a greater appreciation of the importance of maintaining a clear and concise design approach. This is particularly important when working with complex projects.

Implications of computer modelling

The use of computer models in architectural design is now a well-established practice. These models allow architects to explore different design possibilities and to test the feasibility of their proposals.

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In conclusion, the use of CAD technology has revolutionised the way in which architects work. It has led to a greater understanding of the factors that influence design decisions and has allowed for more efficient and effective design processes.

References


ENVIRONMENTAL PERFORMANCE

Figure 1. Energy flows within dynamically modelled by the program EDP.

The model allows for a detailed and comprehensive understanding of the energy flows within a building. By simulating the building's response to various environmental conditions, the model can help identify areas of inefficiency and suggest improvements to enhance the building's performance. This information is invaluable for both architects and engineers, as it enables them to design buildings that are not only energy-efficient but also comfortable and sustainable. The model incorporates a wide range of variables, including solar radiation, external temperatures, and indoor conditions, to provide a realistic simulation of the building's energy demands. This approach allows for the optimization of heating and cooling systems, leading to reduced energy consumption and lower operating costs. Furthermore, the model can be used to evaluate the impact of different design strategies, enabling architects and engineers to make informed decisions that result in more sustainable and efficient buildings. Overall, the dynamic model of energy flows offers a powerful tool for enhancing the environmental performance of buildings, contributing to a more sustainable built environment.
The concept of visual impact analysis is of growing interest where the reflection of proposed buildings (and similar structures) on their surroundings is determined by a number of common factors for the building and its landscape. In some cases, this involves the consideration of the ABACUS program. However, this process involves the use of computer-generated images and visualizations to assess the visual impact of the proposal.

**Hilton Hotel, Edinburgh**

Figure 3 shows the visual impact of an architectural view of the Hilton Hotel in Edinburgh (not yet in reality). The model of the building was created using a visualization software, allowing for the analysis of various visual aspects.

**Power Station, Hong Kong**

In order to create an accurate and realistic photomontage, it is necessary to know the physical location of the photometric viewpoint in relation to the building. This is achieved through a simulation of the location of the camera, in the case of the second power station, Hong Kong, located at Castle Peak by the architects Robert Mathen, Johnson Mathen, and Partners. The building's location and the positioning of the viewpoint for the photometric analysis were taken from the model of the building and a satellite view.

**SPACE LAYOUT**

The most important aspect of the design is to ensure that the layout of the building is efficient and functional. This involves the consideration of both the internal and external space, ensuring that the building is not only aesthetically pleasing but also practical. The layout of the building should be designed to maximize the use of natural light and ensure that the building is well-ventilated.

**CAD programs exist to aid in arranging space in urban environments.**
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