

# 3<sup>rd</sup> International Conference and Exhibition on **Mechanical & Aerospace Engineering**

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## **An experimental study on heat gain in window with an external shutter**

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Windows account for the majority of the heat gain in buildings, and to reduce the heat gain, exterior shutters are commonly installed in residential buildings in hot climates. The shutter is typically incompletely closed during the daytime to have indoor natural lighting, which potentially reduces the thermal effectiveness of the shutter. Since there is temperature difference between the window glass and shutter, natural convection flow is induced in the space between the window and shutter. Experimental measurements are employed to study the effect of the shutter on the heat gain through the window during the month of June. The results indicate that when the shutter is incompletely closed, the heat gain through window can be increased by 44.5%, depending on the shutter opening distance.

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## **Energy efficient designs of low carbon buildings in urban development**

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The developing communities in their path for rapid development are endeavoring to make all necessary and appropriate measures to enhance the efficiency of energy utilization and increase the beneficiation of the energy resources. The energy production, transmission, distribution and utilization efficiency becomes a vital factor and measure of national development. Governmental organizations were established earlier to be responsible for energy planning and efficient utilization, information dissemination and capacity building as well as devising the necessary codes and standards. Throughout the Nation energy resources are widely used and consumption rates are in general exceeding the International accepted values. Energy rationalization and audit exercises were developed and monitored by Governmental authorities, Universities and Research centers through the past two decades with a definitive positive energy reduction and beneficiation. The development of the relevant codes for Residential and Commercial Energy Efficiency in Building is underway through the governmental bodies responsible for the research and development in the building Technology sector and is the umbrella under which the National and Unified Arab Codes are developed and issued. A proposed new Energy Performance in Buildings Directive based on relevant ISO, ASHRAE and LEED would be beneficial to practitioners to meet targets of Energy Performance Directive.

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