Kameran Khalid Taher

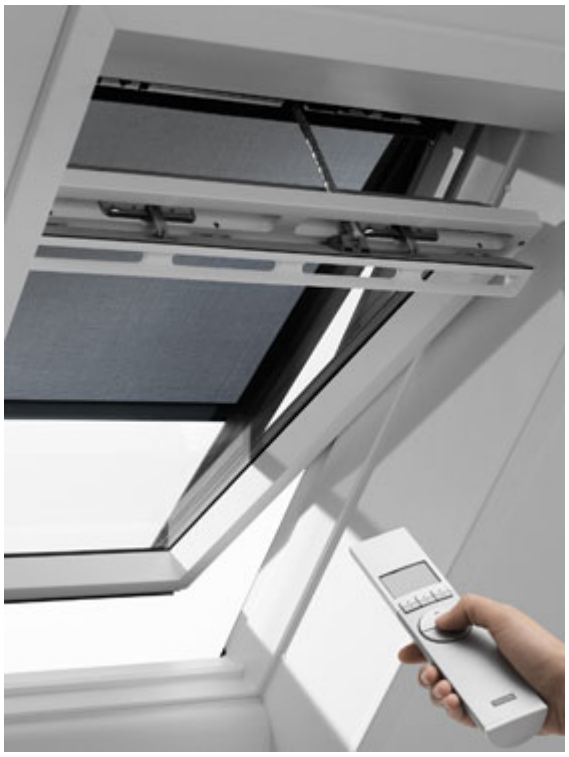
Civil Engineer

June ٢٣, ٢٠١٣

Research Paper

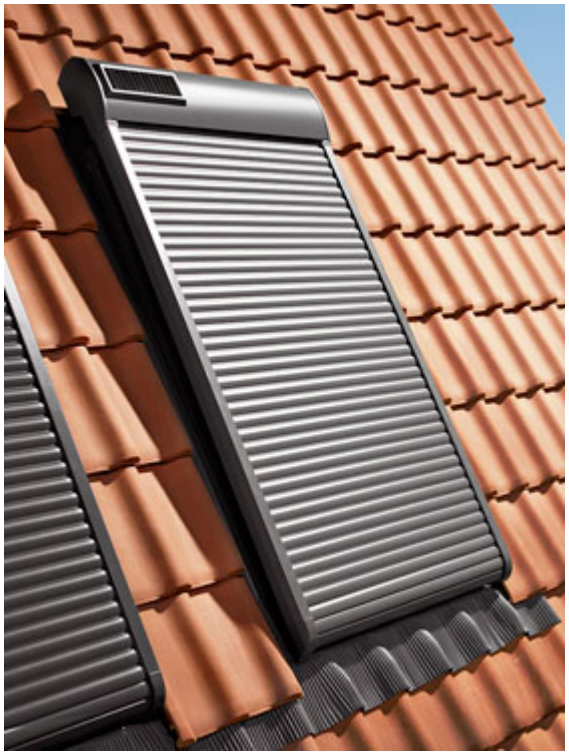
Topic: Skylights

Engineering has been and still is one of the fundamentals of everyday life around the world. Engineering innovations have been in constant developments. Ever since the Greeks and before them the Egyptians constructed jaw-dropping buildings, be it the Parthenon or the Pyramids, Engineering advances have never ceased to awe us with new ideas and innovations . And today it is growing at a very rapid pace. Therefore, if an engineer does not constantly update his ideas, information, and more importantly, his imagination, he will be left behind.



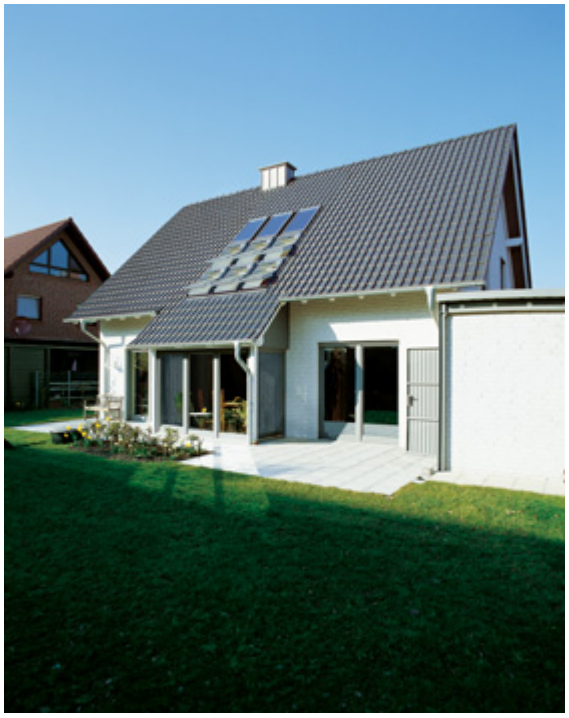
Having grown up in Kurdistan of Iraq and having graduated from the University of Salahadin, College of Civil Engineering, I have been working on the field and in the office for more than ٣٠ years. I have seen

the good and the bad in the region, the hard worker and the slacker. I have seen successful projects and those who have failed. However, what has struck me most is the lack of ideas and imaginations in our buildings. Most buildings in Kurdistan of Iraq, especially in the city of Sulaimani, are very old-fashioned and outdated. Those who are considered new and up-to-date are constructed very unprofessionally. This is mostly due to them being constructed only for the profit that would be gained and very little care has been given to their exterior and – especially – interior look. Our buildings have been made ‘just to get the job done.’



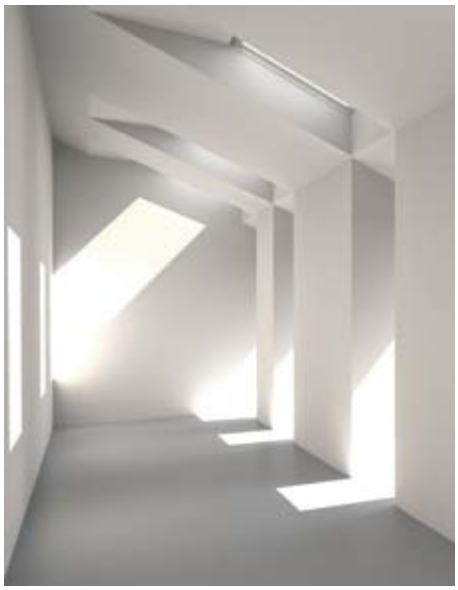
Having had the chance to travel out of the country and visit many different cities and towns, I have always closely explored the cities and

carefully scrutinized the buildings in each country, from small houses to shopping malls via hotels and so forth. I have been very attentive to details in observing the buildings and when compared to the buildings in my country, I can say we are lagging behind and if we do not act quickly, we will never catch up. Therefore, I thought I could help in improving certain areas of the Engineering system in my Kurdistan and Iraq. The main area I will be focusing on in this research paper is the concept of skylight and its lack of use in Kurdistan even though it is one of the most important concepts in engineering that has existed and implemented successfully for decades throughout the world.



Skylights are light transmitting fenestration that form all, or a portion of, the roof of a building space. Skylights can either be in the form of roof windows, unit skylights, tubular day-lighting devices

(TDDs), or sloped glazing. The concept and implementation of skylightis used to convey abundant daylight or top-lighting and to provide a connection to the outdoor environment to inhabitants, and often to help fresh outside air enter the space below. Hence, skylights can provide light for the longest period during the day even when the sun is about to set. Moreover, skylights can also be very useful in air circulation throughout the day and even at night. It can aid in cooling or warming the rooms and hallways of a house.

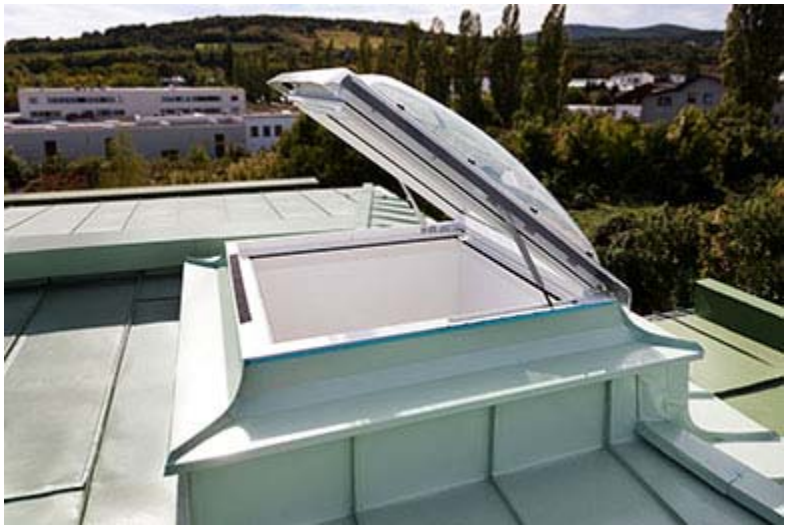


It is very rare to see skylights used in buildings in Kurdistan and even the rest of Iraq. Only windows at the front and at the sides of buildings are used to transmit light. Therefore, in Kurdistan it is a problem when constructed buildings do not face the south – the sun for the longest period during the day. This results in the back rooms of the

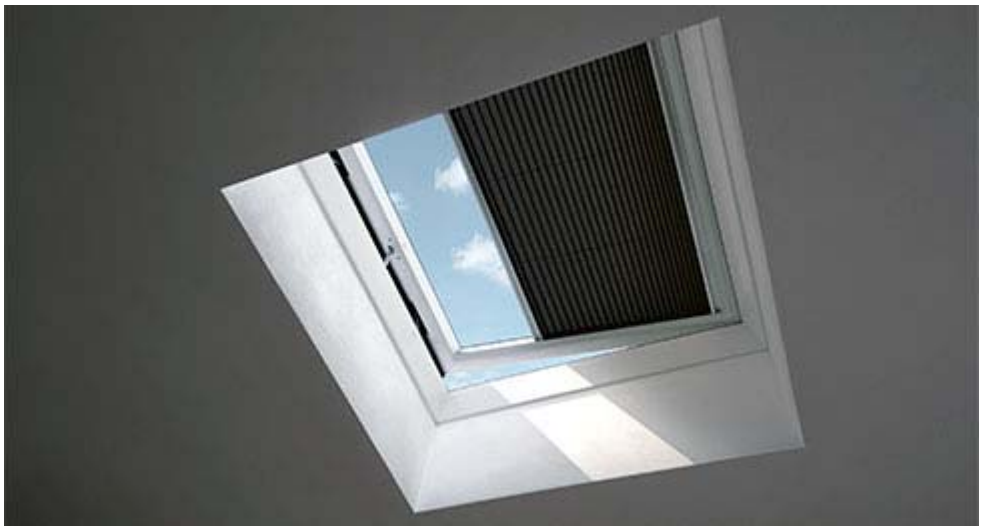
building being dark for most of the time of the day. Moreover, this automatically results in dropping the price of the buildings.

Skylights can prove to be very helpful in such situations. Implementing the skylight at the roof of the building, either horizontally or diagonally, can increase the lighting of the rooms dramatically. Our country helps greatly in this matter. Being a country where the sun is seen for most parts of the year, skylights can prove to be the best partner in helping shed light on the rooms and hallways of the buildings. It might come as a surprise that skylights have not come into use more often since the rays of the sun in Iraq are very strong and bright and every small windows working as skylights can enlighten the building for

longer periods. Again, this comes down to the lack of imagination and innovation in our engineering systems.

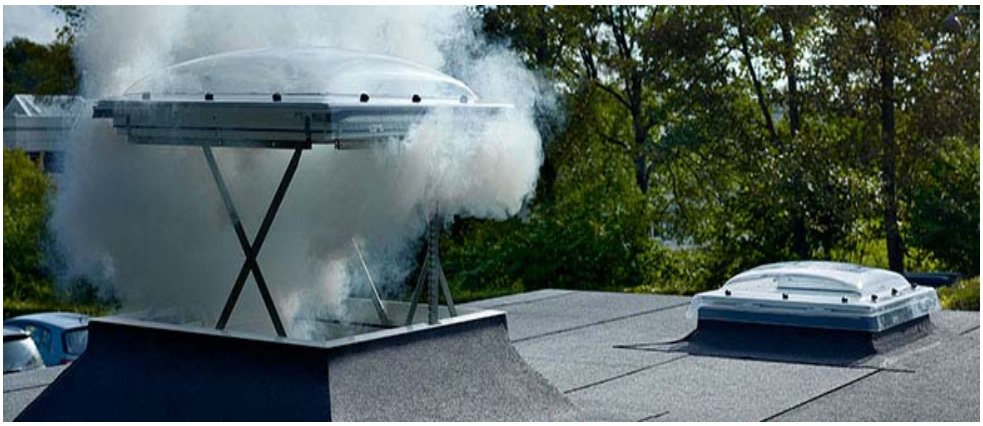


Back in the day, something similar to skylights was used in the buildings in the Kurdish region of Iraq. It was called “KlawRozhne” translating to a hat transmitting the sun’s ray and brightness. Therefore, going back in time, this should be a new concept to Kurds. It should be more of an updated concept.



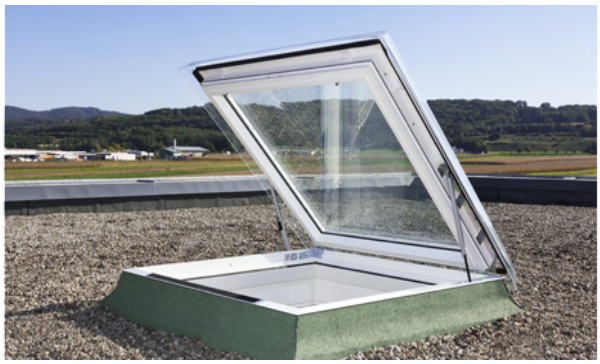
Skylights are mostly used in shopping malls. Since malls are huge buildings where the corridors in between the stores are long and usually located in the middle of the buildings, skylights provide the best sunlight for such multi-story buildings. Examples

The main problem with skylight is water leakage. Since it is placed at the roof of buildings, skylights are exposed to rain. Therefore, before implementing skylights, the amount of rain hitting the skylight has to be put into consideration and the materials used to connect the skylight to the roof of the building have to be well thought of. Heavy rain can damage the glasses of the skylight. Therefore, that might be an obstacle when applying skylights to buildings.



In Kurdistan and Iraq, dust is a serious matter. Dust falls throughout the year. Hence, skylights in this region will be highly exposed to dusts and will easily become dirty. Therefore, it is very important to provide cleaning periodically.

Skylights take in various forms. One of its most beneficiary forms is ‘Long-light’ skylight. Architectural innovations have come up with this concept for confined places. Being an elegant and flexible solution, long-light skylight can be helpful in transmitting light to restricted areas, such as hallways, narrow arcades, stairways, etc.The strong galvanized steel mounting bracket system ensures an easy installation. The bracket design allows installations from ٥° to ٢٥° tone.The high performance, prefabricated modular flashing comes with integrated protection and snow stop. It is also waterproof.



Another major form of skylight is Ridge-light.An illuminating centerpiece, ridge-light is the perfect solution for large hallways, galleries and similar areas where people meet or pass in transit.Its installation is not cumbersome. With interlocking mounting brackets of galvanized steel,it can be set us quickly and precisely.The high performance flexible flashing comes with integrated insulation and snow stop. The flashing is quick and easy to install, providing a perfect fit that makes it completely waterproof.This ridge-light skylightcan be installed

on a ٥° slope. The supporting beam for ٥° ridge light installations offers an elegant solution for large spans.

Another invention in skylights is the Atrium skylight, or ‘roof with no roof’.Atrium roof coating consists of several rows of long-lights or ridge-lights, supported only by structural beams, forming large glazed areas. The comprehensive functionality makes your atrium perform much better than most traditional roof glazing.The valley gutter between the rows of skylights offers easy access to external maintenance and cleaning of the skylights.

The above three types of skylight can be the solution to many of the buildings in Kurdistan and Iraq. VELUX Group is one of the leading companies in providing those skylights. Having read about it from their website, they make the concept of skylight very precise and easy to use.

As mentioned throughout this research paper, skylights are not beautiful but very helpful. Our country lacks innovation and up-to-date technology. Skylight is one of the many engineering inventions that has been executed successfully yet hasn’t been implemented in our country. Therefore, I believed I should focus on skylight in this research paper in the aim of opening the eyes of many current and future engineers in helping our country develop and hopefully one day compete on Engineering and technological fronts.