Abstract:

The application of appropriate technology represents a visible approach to achieve sustainability in building construction. It emphasizes that "appropriate technology" is a multidisciplinary process of many socio-economical, organizational, technical & environmental aspects.

This presentation reviews a concept of "Appropriate Building Technology" developed by the author earlier, composing of all application phases of building construction process: design, production, construction and marketing. The Quarto concept of appropriate technology depends on meeting the criteria of all involved parties: the intervener/designer, the producer of building materials & components, the builder/contractor and the intervener/promoter.

This concept was used to develop innovative sustainable building methods for low rise traditional building in the Middle East. Two inventions of the author in the field of building construction would be presented. Both inventions apply earlier criteria to achieve environmental residential lower cost buildings.

The first is “Easy-build cut stone wall laying method”, which employs natural cut stone blocks, rather than manufactured bricks or blocks. It is an Innovative process of wall bearing masonry, using developed semi-dry Flemish bond in an interlocking arrangement. This method was published by the US patent office; US20140245679A1.

The second is “Vaulted floor slab technique & method”, which minimizes the use of steel and cement in traditional concrete structures. Two graded-cost proposals could be achieved; the first reduces steel to 10%, where prefab joists are used similar to jack-arch concept, however arches are made of ordinary insitu-concrete. Concrete cast depend on reusable modular adjustable form. The second proposal eliminates the use of steel and cement as well, by using brick arches instead of previous RC joists. Abounded local Lime pozolana is casted instead of ordinary
concrete.

**Biography:**

Dr. Khaled Nabil is a professor of architecture & building technology, with 30 years of experience in both architectural education and practical experience. He has received his Masters in Building Construction from Zagazig University, and Ph.D. in Architecture from Cairo University Egypt, with collaboration of Pennsylvania State University in 1987 and 1995 respectively. Professor Nabil's Ph.D. thesis entitled “TOWARDS APPROPRIATE SELF BUILD TECHNOLOGY”. It was an international study seeking technical solutions for low cost housing, where research & analysis was conducted for different international case studies. During his study, Professor Nabil has come up with a Self Build innovative building system, developed in the labs of Ohio State University in 1992. This has led him to file 2 patents to the US Patent Office and another 2 inventions have been filed as PCT, in the field of building technology and interior construction. Prof Nabil is a design consultant since 1996, due to his wide professional practice of design and supervision of numerous projects. He has won several architectural competitions in Egypt & Saudi Arabia. He has taught Architecture & Building Technology in 7 different universities, in Egypt, USA, UAE and Saudi Arabia between 1983- 2014. He is currently teaching courses in Architectural Design, Architecture Theories & Building Construction at Effat University. Prof Nabil’s teaching philosophy and research interests lies in technology innovation, development and problem solving of Architectural/building construction problems. He believes this would enhance student mentality, produce knowledgeable graduates of modern Architecture and recent building construction advances.