Paper ID: 74029
student

33rd IAA SYMPOSIUM ON SPACE AND SOCIETY (E5)
Interactive Presentations - 33rd IAA SYMPOSIUM ON SPACE AND SOCIETY (IP)

Author: Ms. Wiktoria Dziadula
Silesian University of Technology, Poland

Prof. Klaudiusz Fross
Silesian University of Technology, Poland

ABOUT ARCHITECTURE IN EXTREME CONDITIONS. HOW CAN SPACE AND EXTREME ENVIRONMENT HELP ARCHITECTS DESIGN BETTER?

Abstract

In 1988, Dr. Wolfgang Feist, together with employees of the Institute of Housing and Environment, developed the first assumptions for a passive building. And although the energy-saving architecture has been known to architects for so long, it is only now starting to become popular. This is caused not only by trends and situational awareness in design but also by newer directives and requirements for newly designed facilities. The next step is the development of a new generation of self-sufficient architecture, i.e. one that responds to the increasing environmental challenges related to extreme climate change. What now seems to be the norm and convenience may become unavailable to us in the future and it will be necessary to adapt to new, more difficult conditions. The extreme conditions in which we live and work are known today, and functioning there is mastered (to some extent) to perfection. Such environments are, for example, polar areas, deserts, and underwater environments. People have adapted (also thanks to architecture) to function at polar stations or submarines and even in such an extreme environment as space. The article presents an overview of selected projects in extreme conditions (including polar stations, submarines, underwater research stations), including projects in space and analog habits, a detailed description of the applied solutions from the architecture in order to find solutions and design ideas that can be implemented in the self-supporting construction of the future. The work provides answers to the questions: how can architecture in extreme conditions have an impact on future construction and architecture? How can solutions be implemented in space architecture to help in building the idea of a sustainable, self-sufficient environment? Why should every architect design at least one habitat in space? The work also includes an analysis of the feasibility of transferring individual solutions and ideas for adapting individual solutions in designing now and in the future.