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THE PYRAMID – THE HIGHEST RESEARCH STATION IN THE WORLD

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The Himalayas have always focused the interest of scientists and the fascination of travellers. Up until the 20th century the political and logistic context presented obstacles to doing research in the Himalayas. Even the mapping of that vast mountain range was carried out remotely. The measurement of the highest peak in the world, known at that time as Peak XV, during the Great Trigonometric Survey of India took almost two years. The measurement carried out from a distance of 240 km was surprisingly precise (8840 m a.s.l.). The highest peak in the Himalayas was named in honour of the Welsh geographer and cartographer Sir George Everest who was one of the first surveyors working in the subcontinent of India in the first half of the 19th century. The action of the Royal Geographical Society signified not only the great achievements of the geographic campaign but also the colonial attitude of British scholars. As a consequence all the local names (including the Nepali *Sagarmāthā*, and the Tibetan *Chomolungma* later also adopted by the Chinese) were totally ignored. It resulted in a long history of tension regarding this topic. The recent presence of European academics is showing more concern with collaboration and respects local communities. Recently modern technology and methods have allowed permanent research installations (manned or unmanned) to be installed in many extreme environments. Such activities carried on around the world are associated with gathering data and learning about that part of the world that has been out on a frontier. The Pyramid International Laboratory/Observatory (5050 m a.s.l.), a high-altitude scientific research centre, is one of the most impressive of such centres. The main goal of this enterprise was to create a suitable place for research respecting the principle of minimal intervention in the fragile environment of the high mountains. The idea of building the research station in the foothills of Mt. Everest

Figure 1. The Pyramid International Laboratory/Observatory inspired by the shape of the Mt. Pumori 7161 m a.s.l. (by K. Janecka)

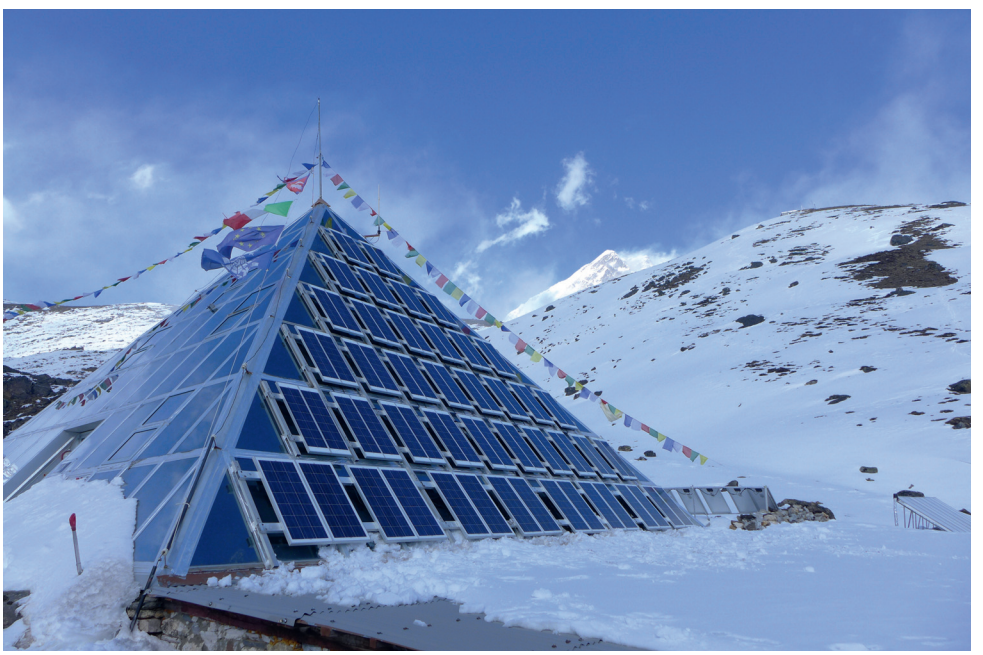

Figure 2. The almost 120 solar panels covering the pyramid form the most visible part of the complex system assuring the self-sufficiency of the station (by K. Janecka)

emerged from a group of alpine scientists in the mid-1980s and the station became fully operational in 1990. The station is part of the on-going Ev-K2-CNR Project, which was initiated by the Italian National Research Council and the Chinese Academy of Sciences. Originally the research station was supposed to be located in Tibet, on the northern slopes of the Mt. Everest. However, the political crises in 1989 linked to the Tiananmen Square massacre created a rift between the partners and finally resulted in changes in the location of the Pyramid. The station was built in the Khumbu Valley in the Sagarmatha National Park in Nepal following the joint decision of the Ev-K2-CNR Committee, the non-profit association, and the Nepal Academy of Science and Technology. The station building has a pyramid shape inspired by the outline of the surrounding peaks, especially Mt. Pumori (7161 m a.s.l.) (Fig.1). Its geometric shape (13.22 m high and 8.40 m at the base) and a glass/aluminium structure provide stability and resistance to the harsh mountain elements such as strong winds, heavy snow and rain. The Pyramid was built with the use of the most advanced technology of the 1980s. Together almost 120 solar panels cover all four surfaces of the pyramid and produce enough energy to make the station self-sufficient (Fig. 2).

Its precise location in the relatively small valley of the Lobuche Glacier, a tributary of the Khumbu Valley, provides access to the most popular Himalayan route leading to the Everest Base Camp while at the same time ensuring a quiet location away from crowds of tourists (Fig. 3). Since the building of the Pyramid, the research station has served as the base for more than 500 scientific projects on the high-mountain environment. Some of them, including the climate observatory (part of the GAW-WMO network), are associated with the permanent monitoring of climate change, glaciers, seismicity, pollution, soil, plant growth, tourist traffic etc. Some others are short-term projects

Figure 3. The Lobuche Glacier, a tributary of the Khumbu Valley (by K. Janecka)

focusing on a single topic e.g. human physiology in high altitude conditions, hydrobiology, paleolimnology and also anthropological and ethnographical studies. One of the main goals is promoting clean technologies and environmental management systems. During the nearly 25 years of existence of the Pyramid International Laboratory/ Observatory over 2 million Euros have been invested in scientific research, supporting the collaboration of 148 partners, and over 500 scientific missions. As a result of the research almost 800 scientific articles have been published. One of the pillars facilitating the successful operation of the Pyramid is the broad-ranging collaboration with the Nepali partners including the scientific and local communities.