Existing residential buildings in Arctic Greenland often have problems with draughts, uncomfortably low temperatures indoors, and inadequate ventilation. The standard wooden house 18D provides low thermal comfort and poor indoor air quality and has high energy consumption. On the other hand, the new Low-energy house in Sisimiut, Greenland, provides good indoor air, thermal quality and reduced energy consumption. Using measurement data from both buildings, this paper discusses the impact of various issues, such as low indoor relative humidity, temperature variations, and high indoor humidity production, the use of buildings in the extreme Arctic climate with high density of inhabitants, problems with air leakages and overheating creating by solar radiation and heating system, and other issues affecting health of inhabitants. Looking at these issues leads to interesting findings in terms of the relationship between reducing energy consumption and indoor air quality (IAQ), which result from the need for sufficient airflow and sufficient relative humidity levels in buildings situated in the Arctic.