

## CASE STUDY

# Alimak elevator at the South Pole

Imagine living and working in an environment where temperatures can reach  $-50^{\circ}\text{C}$ . A place where snowfall is so intensive that it has necessitated periodic rebuilding of snow-crushed buildings around every ten years. Welcome to the Halley Survey Base in Antarctica, year round home to a maximum population of researchers and scientists.

An unusual application for an Alimak goods elevator involves a unit that was supplied by Alimak to Structaply Limited, Ross-on-Wye, Herefordshire in 1983.

Structaply manufacture insulated timber buildings was awarded a contract for a twin 2-storey articulated building to provide accommodation for 18 scientists at the Halley survey base in the Antarctic. Built directly onto the ice cap, the accommodation was designed for a life-span of 15 years, and in that time increasing snow falls that freeze, combined with the settling of the building itself, will submerge it to an estimated maximum depth of 20 meters below the surface (summer temperatures at the base average  $-30^{\circ}\text{C}$ , winter temperature approximately  $-50^{\circ}\text{C}$ ).

Services Consultants, Dale & Goldfinger, insisted that the equipment was guaranteed to withstand temperatures to  $-50^{\circ}\text{C}$ , and Alimak was able to so guarantee the equipment without the need for special steel certification. No other elevator manufacturer was prepared to bid for the contract with this stringent temperature requirement, and this highlights the high quality used in the standard Alimak product range.

The Alimak elevator had a maximum capacity of 1,150 kg and was erected to facilitate the movement of materials between the building and the variable surface during the building's life until 1998. The unit supplied was a standard elevator from the range, although low temperature lubricating grease and space heaters for the cabinet/worm gear were supplied. The Alimak elevator was selected because of its complete reliability, and its ability to withstand the extreme cold. Maintenance engineers from Antarctic survey team were specially trained in the installation and maintenance of the equipment at the Rushden works of Alimak.



Halley Survey Base, Antarctica

According to Structaply the accommodation building which is housed in 4 tubes and manufactured in double skin plywood can withstand an crushing pressure of 9 tons per square metre. The high standard of insulation necessary for the men's survival and comfort will also prevent melted snow re-freezing beneath the building and causing damage to the underside of the structure – which has been a serious problem in previously used corrugated steel designed buildings.

### ELEVATOR DETAILS

Location:	Halley Survey Base, Brunt Ice Shelf, Antarctica
Application:	Research Station
Elevator type:	Rack and Pinion
Elevator model:	Alimak Scando M
Capacity:	1,150 kg
Lifting height:	20 m