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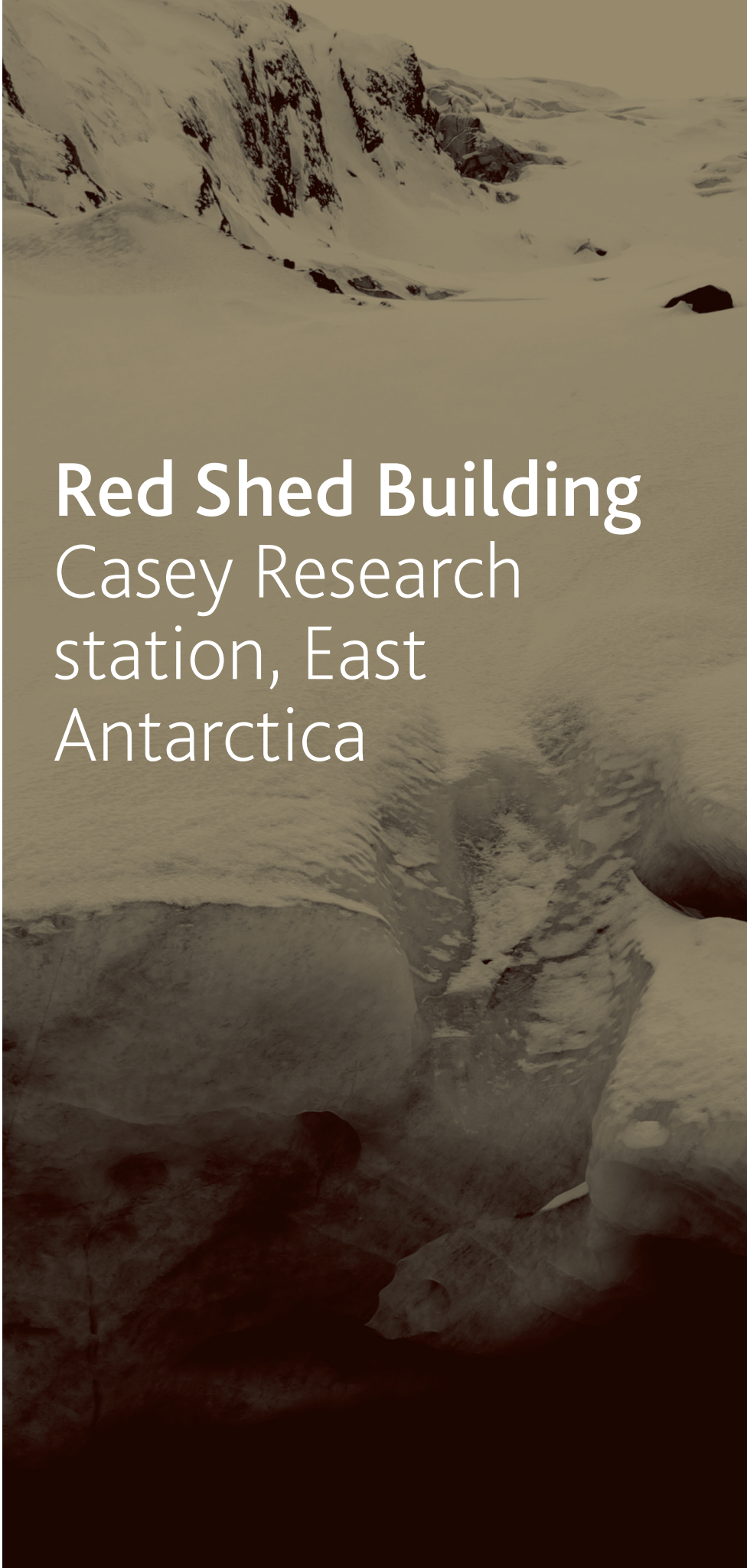
IESVE for Engineers was used to create a bench mark energy model of the Red Shed Building at Casey Research Station in order to validate the energy consumption of the building and inform future energy efficiency improvements.



Red Shed Building
Casey Research station, East Antarctica

RED SHED BUILDING
CASEY RESEARCH STATION, EAST ANTARCTICA

SECTOR: IESVE for Engineers
DATE: December 2014
COUNTRY: Antartica

www.iesve.com

RED SHED BUILDING
CASEY RESEARCH STATION, EAST ANTARCTICA

The Red-shed is at the epicentre of station life at Casey Research station East Antarctica, this large multi-use, multi activity building is a hub for over 100 expeditioners and scientists in summer and around 20 through the winter months.

Constructed in the late 1980's on the northern side of the Bailey Peninsula on concrete footings the building was one of the first of its kind to utilise a unique modular design called AANBUS (Australian Antarctic Building System).

The building owner's objective was to conduct a study to find out how the building was performing in terms of energy efficiency. To do this, Stuart Gibson, the lead engineer on the project, along with his team, created a dynamic thermal model using advanced performance modeling software, IESVE for Engineers.

The model was used to analyse a number of inputs, including climate data, building design and HVAC design, among others, to calculate the building's energy consumption. A unique and very specific type of weather file was used due to the unreliable nature of the weather in Antarctica. This proved to be very useful in terms of enabling the team to make a valuable assessment on the use of renewable energy systems.

By using the IESVE model as a benchmark, the team were able to investigate the best value energy-saving strategies, based on the return-on-investment. Some of the measures investigated, included renewable energy systems such as roof solar panels.

The team were surprised by the results as they indicated the building was still operating relatively efficiently after 25 years of operating in such a harsh environment. They discovered that if they were to retrofit the building and implement the energy saving strategies they could increase the energy efficiency of the building by 5% with a payback period of 5 years.

"The unique weather data available within the IESVE proved to be invaluable for this project. It enabled us to much more accurately analyse the energy efficiency of the building and evaluate renewable energy options in terms of solar and climate impact."

Stuart Gibson
Lead Engineer

KEY FACTS

- Built in the late 1980s
- Operating efficiently after 25 years in harsh environment
- 5% more energy efficient with 5 year payback period

INFO

PLEASE CONTACT

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