

# CASE STUDY

## Replacing conventional ceiling fans with BLDC ceiling fans offers 40% energy savings for cold storage unit

### BACKGROUND

Hooghly district, in the state of West Bengal, has a large number of cold storage units for storing horticultural products like potato. Hundreds of ceiling fans are installed in the cold storage units for space cooling and air circulation, with the majority (99%) being of conventional type, having a power rating between 55–90 W. Energy consumed by the ceiling fans is a significant component of the total electricity consumption in the cold storage units.

Very few units have adopted star-labelled ceiling fans which have rated capacity of 48–55 W, or brushless DC (BLDC) fans which consume 28–35 W. Replacing the existing conventional ceiling fans with energy efficient BLDC fans will lead to substantial energy and CO<sub>2</sub> savings.

#### Baseline

A cold storage unit had conventional ceiling fans of the following specifications (Figure 1).

No. of conventional ceiling fans	380
Rated wattage (W)	55



Figure 1: Ceiling fans installed in a cold storage

Based on an energy audit in 2023, it was recommended that the unit replace all its conventional fans with BLDC fans.

### IMPLEMENTATION OF BLDC FAN AND ENERGY SAVINGS

The energy performance of fans is measured in airflow (measured in cubic metres per minute, CMM) per unit power (W) consumed. The term 'Service Value' is used to refer to efficacy. The minimum air delivery and service value of 1200 mm conventional ceiling fan should be at least 4 CMM/W, as per IS 374 standard. The specifications of the new BLDC ceiling fans recommended for implementation by the unit are as follows:

No. of BLDC fans installed	380
Rated wattage (W)	35

Upon installation, the BLDC ceiling fans will reduce electricity consumption by 52,000 kWh/yr (Figure 2), leading to annual monetary savings of INR 3.48 lakhs. The investment required for new BLDC fans is INR 8.75 lakh.

#### ENERGY SAVINGS

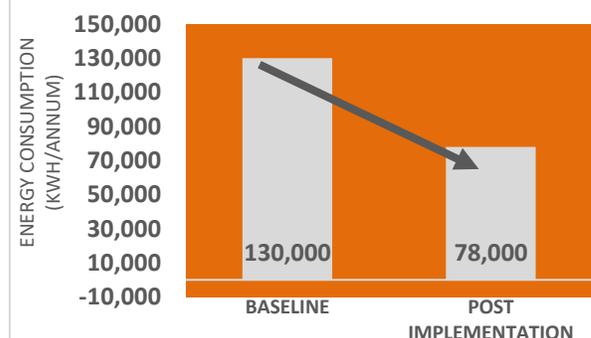


Figure 2: Energy savings

to 2.5 years, and the GHG emission reduction is about 37 tCO<sub>2</sub> per annum.

For more details, please contact

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