



1	ID: 43	Title of measure	Sector: Electronics
2	Survey Year: 2007	Installation of variable speed drives in air handling units	Technology : Variable Frequency Drives
3	Name of the Company	: Bharat Electronics Limited, Bangalore, INDIA	
4	Agency that executed the project	: In-house	
5	Year of Implementation	: 2006	
6	Unit Profile: Bharat Electronics Limited (BEL), founded in 1954 to meet the Defense needs of the Government of India, is India's premier Electronics Organization . BEL manufactures more than 350 different products, comprising communications equipment, solar – powered traffic signals, solar energy, radars for military and civil use, optical and opto–electronic equipment, sound and vision broadcasting equipment, electronic components and electronic voting machines etc., The annual turnover of the unit is nearly US\$ 0.49 billion.		
7	Description of Energy Conservation Measure:- In BEL Bangalore, normally blowers are operated as per the requirement. The measured air flow from these blowers is around 70% of the rated capacity. Also the requirement of air flow varies with the ambient conditions. The in-house team in the unit felt that the best method to control the air flow rate is by optimizing the speed of the blower. At times the air flow requirement will go down as low as 50%. At present, plant is operating one blower in each AHU (Air Handling Unit). For reduction in flow variable speed drivers were installed to these blowers. After installation the blowers are operating at lower speed (20 - 30% less speed than rated) this has resulted in reduction in power consumption Present power consumption of blowers Present operating blowers power cons. (2 nos.) : 106 kW Expected reduction in power consumption (2 nos.) : 42 kW (At 20% less speed) Annual operating hours : 4000 (AHU 9 -8 hr, AHU 10-16 hr per day) Annual reduction in power consumption : 168 million kWh		
8	BEL Bangalore 	Picture After Modification 	
9	Total investment :		30,000 US\$
10	First year energy cost savings :		20,025 US\$
11	First year additional savings beyond energy (i.e. water, raw materials etc.):		Nil
12	Annual electricity consumption before, MWh		424
13	Annual electricity consumption after, MWh		256
14	First year electricity savings, MWh		168
15	First year tons of CO ₂ mitigated		168
16	Assumed sustainability, years		10
17	Expected tons of CO₂ mitigated throughout life cycle		1,680