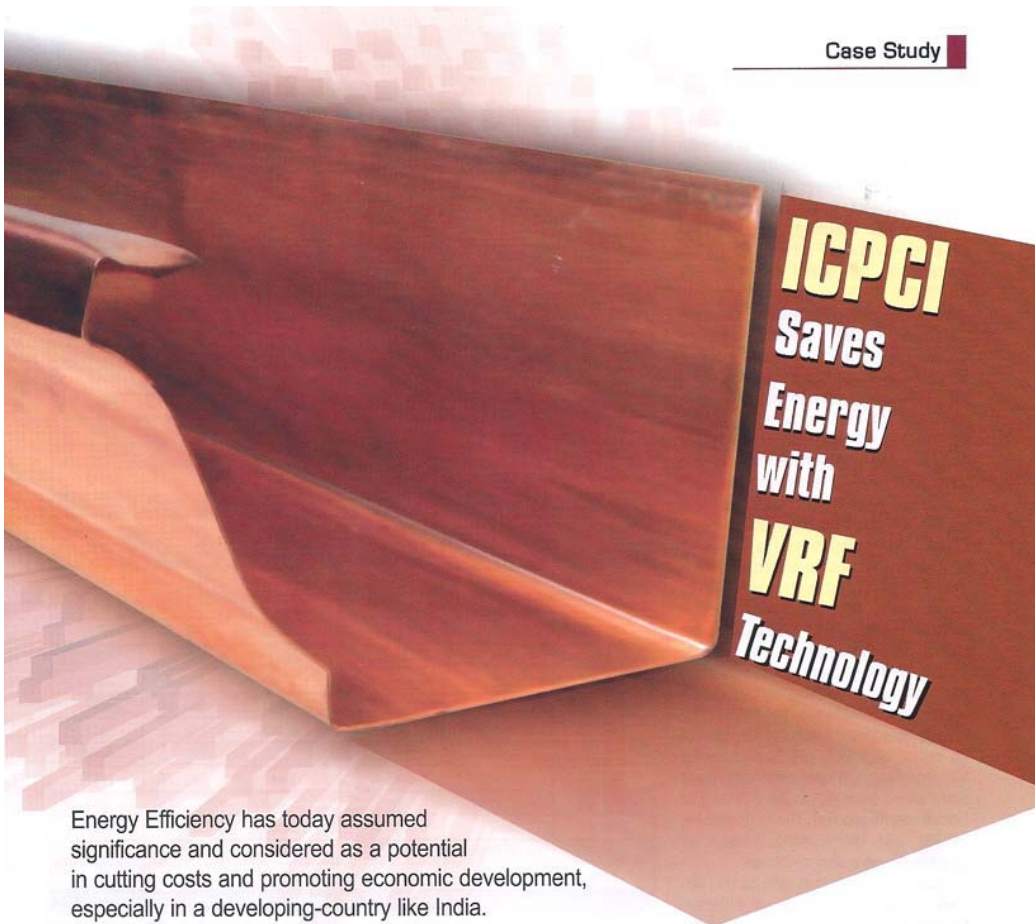


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## Case Study



Energy Efficiency has today assumed significance and considered as a potential in cutting costs and promoting economic development, especially in a developing-country like India.

**E**nergy efficiency has proved to be a cost-effective strategy for building economies without necessarily growing energy consumption. Though companies often consider energy efficiency as low priority, few organisations such as the International Copper Promotion Council (India) that have taken simple steps to work towards attaining an eco-friendly habitat.

International Copper Promotion Council (India), (ICPCI), in Mumbai is the Indian centre of the International Copper Association Limited, the

leading organization for the promotion of copper world wide. ICPCI regularly participates in public forums and such other events globally to promote safety, energy efficiency and sustainability, constantly striving to strengthen the link between the stakeholders of Energy Efficiency and Climate Change.

As an organization promoting energy efficiency as a means to reduce carbon footprint, ICPCI faced an inhouse challenge of energy loss with its existing Air-cooling systems. The seven Split Air Conditioners, fitted

at different places in the office could not maintain comfort conditions in the office, even though they were under annual maintenance contract with a dealer of a reputed manufacturer. The electrical power supply to ICPCI office is provided by a private electrical company, under LT2 tariff. With escalating electricity tariff charges, the annual spend on AC energy consumption was increasing; however the staff comfort was reducing.

Initially discussion prevailed on changing to a 5 star labelled (under Ministry of Power, Bureau of Energy

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Efficiency's Standards and Labelling Program) split air-conditioner units with higher efficiency to reduce the increasing energy tariffs. However with the existing five star products in the market, concern remained that despite the highest level of efficiency being offered at higher investment by ICPCI; the rapidly increasing energy costs may prove the return on investment unviable. Therefore solutions for higher efficient ranges of cooling as a retrofit in small and medium sized office space were explored. The other challenge was to cater to wide variations of cooling demand in the office due to varied bandwidth of occupancy during various time of the day or the week or even the month.

ICPCI discussed the issue and application requirement with Emerson Climate Technologies and under their suggestion decided to switch over to a new Digital AC system to counter its energy and comfort issues though initially costlier than even five star standard unitary products. In order to ascertain the energy savings and improvement in comfort conditions, an audit was undertaken by TERI (The Energy Resource Institute, Bangalore) on behalf of ICPCI, pre & post Digital VRF installation. A baseline energy audit was carried by ICPCI in April 2008 just before commissioning. The temperature, % RH and the comfort feelings of employees were also recorded.

Blue Star Limited is one of the key Digital VRF OEM partner of Emerson Climate Technologies in India. With the involvement of Blue Star sales team and technical team, a 12HP, R410A, Digital VRF unit Model BVRF-12TCE was installed. This 12HP outdoor unit is



Month	Total Consumption, kWh	Month	Total	Month	Total Consumption, kWh
May - 09	1956	May - 08	1824	May - 07	4811
Apr - 09	1864	Apr - 08	2402	Apr - 07	4178
Mar - 09	1854	Mar - 08	2201	Mar - 07	4142
Feb - 09	1704	Feb - 08	1799	Feb - 07	3406
Jan - 09	1745	Jan - 08	1260	Jan - 07	3425
Dec - 08	1450	Dec - 07	1814	Dec - 06	3205
Nov - 08	1717	Nov - 07	2649	Nov - 06	4108
Oct - 08	1659	Oct - 07	3501	Oct - 06	4525
Sep - 08	1719	Sep - 07	3368	Sep - 06	3851
Aug - 08	1824	Aug - 07	2758	Aug - 06	2513
July - 08	1851	July - 07	3699	July - 06	2688
Jun - 08	1895	Jun - 07	3811	Jun - 06	4097
<b>Total</b>	<b>21238</b>		<b>31086</b>		<b>44949</b>

Table 1: Month-wise electricity consumption for last three years

Month	Energy Bill, (Rs)	Month	Energy Bill, (Rs)	Month	Energy Bill, (Rs)
May - 09	16291	May - 08	16610	May - 07	45137
Apr - 09	15535	Apr - 08	22570	Apr - 07	35883
Mar - 09	16211	Mar - 08	20010	Mar - 07	27012
Feb - 09	15357	Feb - 08	17090	Feb - 07	23482
Jan - 09	15721	Jan - 08	11011	Jan - 07	23633
Dec - 08	13102	Dec - 07	16583	Dec - 06	22840
Nov - 08	15473	Nov - 07	25106	Nov - 06	29230
Oct - 08	13720	Oct - 07	33802	Oct - 06	46497
Sep - 08	14344	Sep - 07	32445	Sep - 06	24836
Aug - 08	15207	Aug - 07	25553	Aug - 06	15814
July - 08	15429	July - 07	34889	July - 06	16994
Jun - 08	14770	Jun - 07	36507	Jun - 06	26130
<b>Total</b>	<b>1,81,160</b>		<b>2,92,176</b>		<b>3,37,488</b>

Table 2: Month-wise Energy bill amount for last three years

connected to eight different indoor units of wall mounted & cassettes type units with different cooling capacity. The Digital VRF AC system was commissioned in May 2008.

The incremental investment for VRF system over five star top end available standard products in the market came to around Rs. Two Lakhs Fifty Thousand only (INR 2,50,000/-) inclusive of installation and commissioning charges. In any case earlier nine to ten year old split air conditioners were due for replacement in a harmonious manner without disturbing the operation of a functioning and running office. The commissioning was well defined and

planned to the detail with the help of equipment supplier and installation team. Whole job including partial opening of false-ceiling and conversion of available conduits for VRF system compatible piping was completed by week end without declaring the closure of office on any working day.

After successful operation of the Digital VRF system for 12 months, planned post energy audit was taken up during August 2009. Comparison of energy bills paid by ICPCI, Mumbai office over a period of June 2006 (before Digital VRF installation) to May 2009 (one year after Digital VRF AC installation) proved reduction energy

