

# APPLICATION CASE STUDY



DOC.NO. : AMTCS-6

**HOST ORGANISATION** : MAHINDRA & MAHINDRA LTD. NASIK  
**INDUSTRY** : AUTOMOBILE  
**APPLICATION** : PAINT SHOP BLOWER  
**METHOD OF CONTROL** : DAMPER CONTROL  
**OBJECTIVE** :  
To demonstrate the energy savings which can be achieved by using a AC variable frequency drive on the 225 hp paint shop blower.  
**POTENTIAL USERS** : PAINT SHOP PLANTS

## POWER CONSUMPTION BY PRESENT METHOD OF THROTTLING

CONSUMPTION	DAMPER POSITION OPENING
120 KW/HR	65%

## ACTUAL POWER CONSUMPTION USING AC VARIABLE SPEED DRIVE & THROTTLING VALVE FULLY OPEN

CONSUMPTION	DAMPER POSITION OPENING
85 KW / HR	100%

NET POWER SAVING : 120 KW - 85 KW = 35 KW/HR  
MOTOR OPERATION : 20 HRS/DAY  
UNITS SAVING/DAY : 700 KWH  
UNITS SAVING/MONTH : 21000 KWH  
TARRIF RATE : US \$ 8333.33 / UNIT  
ENERGY SAVING/MONTH : US \$ 1666.67 APPROX.  
ENERGY SAVING/YEAR : RS US \$ 19047.6 APPROX.

**ECONOMIC ANALYSIS** : The total air pressure generated in paint shop was excessive & controlled by damper system. by application of ac variable frequency drive ,and based upon specific air pressure generation figures obtained from monitoring periods, the reduction in electricity consumption by 225 hp fan motor is estimated by 21,000 kwh / months.

The paint shop is operational all times of the year and thus it's electricity consumption forms apart of the base demand of the infirmary. in considering financial savings, the higher cost components of the electricity tariff are therefore applicable.

Analysys of monitored data showed that average electrical demand of moter was reduced by 40% and the total saving achived by used by inverter are estimated rs. 8 lacs hence payback of the system is only 10 months.

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