

# APPLICATION CASE STUDY



DOC.NO. : AMTCS-22

**HOST ORGANIZATION** : GUJARAT SIDHEE CEMENT LTD., VERAVAL, JUNAGADH.  
**INDUSTRY** : CEMENT  
**APPLICATION** : KILN COOLER FAN  
**METHOD OF CONTROL** : DAMPER CONTROL

**CASE STUDY OBJECTIVE** : To demonstrate the energy savings which can be achieved by using 150hp AC variable frequency drive on kiln cooler fan application.

## POWER CONSUMPTION BY PREVIOUS METHOD OF CONTROL

CONSUMPTION	FLOWRATE	DAMPER OPENING
80KW/Hr (140Amp)	550M <sup>3</sup> / MIN	70% (Approx)

## ACTUAL POWER CONSUMPTION USING AC VARIABLE FREQUENCY DRIVE & DAMPER FULLY OPEN

CONSUMPTION	FLOWRATE	DAMPER OPENING
70KW/Hr (105Amp)	550M <sup>3</sup> / MIN	100%

**NET POWER SAVING** : 80KW - 70KW = 10KW

**MOTOR OPERATION** : 24Hrs / DAY

**UNITS SAVING / DAY** : 240 KWH

**UNITS SAVING / MONTH** : 7200 KWH

**TARIFF RATE** : US \$ 9523.81UNIT

**ENERGY SAVING / MONTH** : US \$ 685.71(Aprox)

**ENERGY SAVING / YEAR** : US \$ 8095.23 (Aprox)

**ECONOMICAL ANALYSIS** : The total air flow developed by 150 hp fan was excessive & controlled by damper. With the usage of ac variable frequency drive specific & required air flow can be generated. Thus reduction in electricity consumption by 150hp cooler fan motor is estimated by 86400 kwh/year.

The plant are is operational all times of the year and thus its electricity consumption forms apart of the base demand of infirmary. In considering financial savings, the higher cost components of the electricity tariff are therefore applicable.

Analysis of the monitored data shows that average electrical demand of motor is reduced by 15% and the total saving achieved by using inverter is estimated US \$ 8095.23 (approx) hence payback of the system is only 15 months (approx).

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