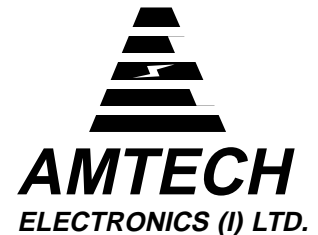


# APPLICATION CASE STUDY

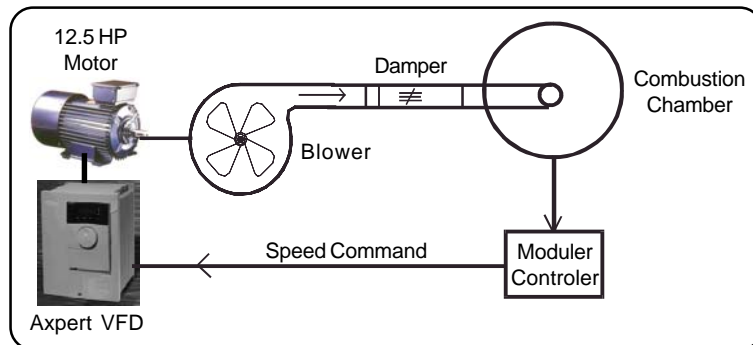


DOC.NO. : AMTCS-111

FEBRUARY-2004

## TITLE : ENERGY SAVING IN BOILER FEED BLOWER

- HOST ORGANIZATION** : M/S THERMAX LTD. (CHEMICAL DIV.) -KHOPOLI  
**PERFORMED BY** : AMTECH ELECTRONICS (INDIA) LTD. IN OCTOBER 2003  
**INDUSTRY** : CHEMICAL  
**APPLICATION** : FEED BLOWER  
**MOTOR RATING** : 3 PHASE AC INDUCTION MOTOR  
**RATING** - 12.5 HP **VOLT**- 415  
**Hz** - 50 Hz. **RPM** - 2900
- PREVIOUS SYSTEM** : 1. Star/Delta starter for air-blower motor operation.  
 2. Airflow controlled by damper.
- PROBLEM OBSERVED** : 1. High starting current kick.  
 2. Energy loss due to flow control through damper (all time full speed of operation of motor).
- PRESENT SYSTEM** : Removed the damper plates of air blower. (Damper 100% opened) Air flow control by varying the speed of motors through XPERT AC Variable frequency drive potentiometer with gear arrangement in correspondence to modulation system.
- SYSTEM BLOCK DIA.** :



- MERITS OF NEW SYSTEM** :
1. No starting current kick, hence pick demand is less.
  2. Saving of energy due to speed reduction of blower by AC VFD.
  3. Fuel saving due to uniform airflow through fast response of AC VFD Speed Control.

### ECONOMICAL ANALYSIS:

1. With old system Power consumption : 6KW at 50 Hz \* 24 hours = 144 kWh / DAY
2. With New system Power consumption : Power consumption details at different Flame condition as below :

FLAME	CURRENT	POWER	FREQUENCY	Average hours
HIGH	5.8A	2.9 KWH	39 Hz	9
MEDIUM	5.8A	2.9 KWH	39 Hz	6
LOW	1.5A	0.75 KWH	21 Hz	9

Power consumption = (2.9 X 9) + (2.9 X 6) + (0.75 X 9) = 26.1 + 17.4 + 6.75 = 50.25 kWh / DAY

3. NET SAVING IN POWER / DAY = 144 Kwh - 50.25 Kwh = 93.75 kWh / DAY
4. NET SAVING / YEAR (operating days) = 93.75 X 300 Days. = 28125 KWH / YEAR
5. NET SAVING/YERS in Rs. = 28125 Kwh X 3.7 (tarrif rate) = RS. 104062.50
5. NEW SYSTEM COST = 1,02512.00
6. HENCE PAYBACK Priod = 11.8 MONTHS
7. NOISE LEVEL = REDUCED UPTO 83 DB FROM 97 DB. AS REDUCED THE MOTOR RPM.

Regd.Office & Factory: E-6, GIDC, Electronics Zone, Gandhinagar - 382 044, Gujarat (India)

Phone : 079 - 23225324, 23227294, 23227304 Fax : 079 - 23224611 Gram : XPERT E-Mail : info@amtechelectronics.com