

# APPLICATION CASE STUDY



DOC.NO. : AMTCS-25

**HOST ORGANIZATION** : SOUTHERN PETROCHEMICAL IND. CORPORATION, MADRAS.  
**INDUSTRY** : CHEMICAL  
**APPLICATION** : FUSION COOLING WATER PUMP  
**PREVIOUS SYSTEM** : CONTROL VALVE

**CASE STUDY OBJECTIVE** : To demonstrate the energy savings which can be achieved by using 60Hp AXPert AC variable frequency drive on fusion cooling water pump.

## POWER CONSUMPTION BY PREVIOUS METHOD OF CONTROL

**CONSUMPTION**      **VALVE OPENING**

39 KW / HR                      77.5%

## ACTUAL POWER CONSUMPTION USING AXPert AC VARIABLE FREQUENCY DRIVE & CONTROL VALVE FULLY OPEN

**CONSUMPTION**      **VALVE OPENING**

23.3KW / HR                      100%

NET POWER SAVING                      : 39 KW - 23.3 KW = 15.70 KW  
MOTOR OPERATION                      : 7680 HRS / YEAR  
ENERGY SAVING / YEAR                      : 1,20,576 KWH / YEAR  
TARIFF RATE                      : US \$ 6666.67 / UNIT  
ENERGY SAVING / MONTH                      : US \$ 669.85 / MONTH (Approx)  
ENERGY SAVING / YEAR                      : 8038.40 / YEAR (Approx)  
PAYBACK PERIOD                      : 8 MONTHS

**ECONOMICAL ANALYSIS** : The total flow obtained by 60 hp pump motor was excessive & controlled by control valve. With the usage of AC variable frequency drive required flow can be generated by reducing the speed and kaping the fully gain. Thus by using drive reduction in power consumption by 60hp cooling water pump motor is estimated by 1,20,576 kwh / year.

Analysis of the monitored data shows that average electrical power demand of motor is reduced by 59% and the total saving per year achieved by using inverter is estimated US \$ 8023.80 (approx) hence payback period of the system is only 8 months(approx).

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