

Saving the Energy For Your Facility

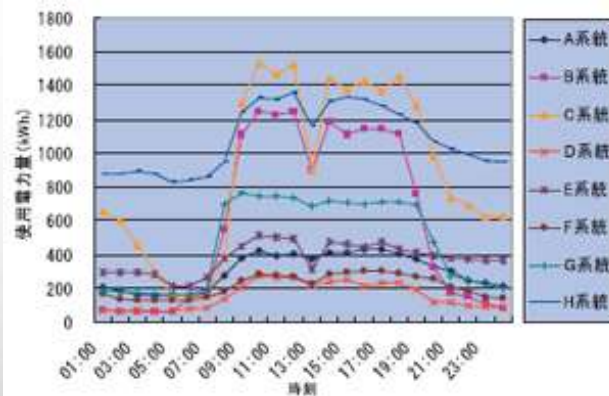


# Energy consumption in the Factory.

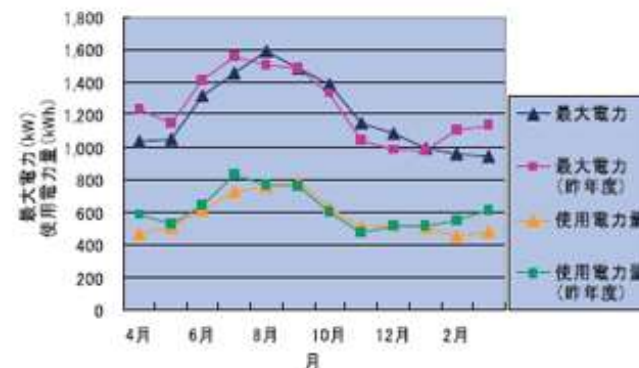
Depending on the production, operating conditions, scales, etc., the energy usage in a factory is different. However, when classified into electric power and fuel (gas, oil, etc.), generally, the ratio of about 70% electric power and 30% fuel is the most common.

In the factories, there are seasonal fluctuations and daily load fluctuations about energy usage due to the influence of production plans, etc., and by controlling fluctuations of energy use, we can find the points that we can save energy.

The following is an example of the daily load fluctuation and annual load fluctuation graph of electricity, but it is important to identify the factors of load fluctuation.



日負荷曲線の例



年負荷曲線の例



# The list of improving item



	Items	Measures	Cost	Effect
Policy	Establish a system for saving energy.	Personnel in charge of energy conservation	-	-
		Setting the goal and method.	-	-
	Control the amount of energy used	Manager the bills for electric power companies, etc.	-	-
		Previous years comparison	-	-
Equipment	Lighting equipment	Turn off the light when no one is using.	-	Low
	Air conditioning equipment	Adjust the temperature to the proper range	-	Low
		Turn off when no one is using.	-	Low
	General industries facility equipment	Proper workplace organization method.	-	Low
	Production equipment	Setting the SOP for the operation method.	-	Low
	Compressor equipment	Optimization of discharge pressure.	-	Medium
	Boiler equipment	Supply to the necessary equipment only.	-	Low
Feed-water and drainage equipment	Check the water leakage with water meter etc.	-	Low	
Maintenance	Production equipment	Regularly inspection for power transmission parts.	-	Low
	Boiler equipment	Regularly inspection and maintenance for the filter.	Low	Medium
	<b>Compressor equipment</b>	<b>Efficiency improvement through maintenance.</b>	<b>Low</b>	<b>High</b>
	Boiler equipment	Steam leak repair.	Low	High
New device	Lighting equipment	Installing high efficiency lighting equipment.	High	High
	Air conditioning equipment	Installing high efficiency air conditioning equipment.	High	High
	Boiler equipment	The insulation system for steam system.	Medium	Medium
	Others equipment	Installing high-efficiency equipment such as inverters.	High	High

# The measures for improving efficiency of Compressor 1



## The Power consumption of Compressor

Here is the figure of the electricity cost for the compressor in a year.

Larger ones exceed 10 million Rupee. A compressor is a machine with high power consumption.

How much energy we can save for one compressor?



KW	Electricity fee/ year INR
22	1,056,000
37	1,776,000
55	2,640,000
75	3,600,000
100	4,800,000
110	5,280,000
125	6,000,000
150	7,200,000
160	7,680,000
200	9,600,000
220	10,560,000

6 Rupees/kWh Operating 8,000h in a year.

# The measures for improving efficiency of Compressor 2

## Install a bypass filter on the compressor

### 1. Issues

The running costs of Compressor are too high (power costs, replacement oil costs, parts replacement costs)

### 2. Measure

By installing a bypass filter on the compressor and purifying the oil, it is possible to maximize its performance. As a result, after installation, the current value is reduced by 3A (actual value at 160kw class), and further, wear deterioration of parts is eliminated and maintenance can be suppressed to 1/2 or less.

### 3. Effect

(1) Formula

Current electric cost:

Power Tariff (Rupees/kwh) X consumption(kw) X Operating time (h/year)

**After installing filter.**

Power Tariff (Rupees/kwh) X consumption(kw) X Operating time (h/year) **\*6% OFF**

(2) Basis of the 6%

In a 3,300V motor, the current dropped by about 3A.

$3,300V \times 3A = 9,900W = 9.9kw$   $9.9kw \div 160kw = 0.061$



# The measures for improving efficiency of Compressor 3



## 4.Result

KW	Electric fee (Before)	Electric fee (After)	Saving (Rupee)
22	1,056,000	992,640	63,360
37	1,776,000	1,669,440	106,560
55	2,640,000	2,481,600	158,400
75	3,600,000	3,384,000	216,000
100	4,800,000	4,512,000	288,000
110	5,280,000	4,963,200	316,800
125	6,000,000	5,640,000	360,000
150	7,200,000	6,768,000	432,000
160	7,680,000	7,219,200	460,800
200	9,600,000	9,024,000	576,000
220	10,560,000	9,926,400	633,600

The above is only the example of reduction that focusing on the power costs.

The main benefit of installing MB is the maintenance of the machine.

→ No need to replace the oil-separated demister which used to need regular replacement and the period of the overhaul can extend more than doubled.

# The measures for improving efficiency of Compressor 4

## 5. Flow diagram

### Example



75KW  
Model: SRC-813

