

CASE STUDY

- Name of a company - M/S SHRINATHJI RASAYAN PVT. LTD.
(Unit of M/S KANDLA ENERGY GROUP OF INDUSTRIES.)
- Type of company - Manufacturing of Formaldehyde
(Water soluble organic Compound used in Industrial applications)
- Location of site - Village-RAJPUR,Tal-KADI, AHMEDABAD, GUJARAT
- Type of Load - Motors, Pumps, Lights, Borewell , Blowers,Cooling Towers, etc.
- Transformer Rating - 630 KVA, 11KV H.T. / 433V, 3 phase with Neutral
- Max. Demand - 275 KVA, 3 phases, 440 VAC
- Energy Saver Capacity- 300 KVA, 3 phase, 440VAC
- Working hours - 24 Hours in 3 shifts
- Energy Saving Target - Minimum 8%
- Type of Billing - Monthly
- Reference - KWH consumption, Billing amount, Unit rate
- Comparison - Before installation of Energy Saver Fifteen Days
After installation of Energy Saver Fifteen Days
- Observation - 2 Months

AREAS / LOCATION COVERED FOR ENERGY SAVING

The site survey of the premises M/S Shrinathji Rasayan Pvt. Ltd. was done on DECEMBER, 2013 by our audit team for the purpose to act as planner for the implementation of **ENERGY SAVING** to achieve saving of Min. 8 %.

Based on earlier Six Months Electricity Bills received to us summary and Payback details worked out towards budgetary offer.

SR. NO.	MONTH	KWH	CURRENT MONTH BILL(RS.)	UNIT RATE	ACTUAL MD (KVA)	CONTRACT DEMAND	PF
1	JUN-13	42,732	255,910	5.98	208	275	0.999
2	JULY-13	72,567	414,513	5.71	188	275	0.999
3	AUG-12	26,802	169,438	6.32	200	275	0.999
4	SEP-13	122,862	675,287	5.49	205	275	0.998
5	OCT-13	102,900	568,964	5.52	214	275	0.999
6	NOV-13	109,239	614,721	5.62	204	275	0.999

Saving potential criteria decided and projected monthly savings submitted for commercial acceptance.

Annual saving projection in Rs (Lacs)

(Ref. ELECTRICITY BILLS SUMMARY & PAYBACK)

% SAVING	8 %	10 %	12 %	15 %
AMOUNT IN (LACS)	5.4	6.7	8.1	10

Detailed energy audit conducted in the month of JANUARY, 2014 as per request by M/S Shrinathji Rasayan Pvt. Ltd. to understand connected Load.

The distribution system observed as:

Transformer of rating 630 KVA (11/0.433 KV) connected between G..E.B
11 KV supply and the main distribution panel.

MCC Load Measurement (Ref. Audit conducted)

Sr. No.	MCC Name	Measured Parameters						
		VOLT	AMP	KW	PF	KVAR	KVA	HZ
1	MCC -1 & 2	424	147	94.0	0.87	47.7	93.1	49.9
2	MCC – 3	425	92.7	61.0	0.93	24.8	65.9	49.9

Based on this MCC load data Locations of Energy saver also decided as per load distribution of panels in the premises are as follows

- 1) **MCC – 1 & 2** - **150 KVA Energy saver**
- 2) **MCC - 3** - **150 KVA Energy Saver**

Total KVA Installed = 300 KVA

Order confirmed to us in the Month of Feb,2014. Against order we have started the manufacturing and supplied the material in the Month of March, 2014.

Installation work completed in the Month of March, 2014. During shutdown. Full load trials conducted and taken on Saving mode by 10, April,2014.

Metering system used -

- 1) Storage Data loggers ‘ Trinity’ make
- 2) On line Data Monitoring / Remote data monitoring

Advantages, Benefits, Features of Energy Saving System

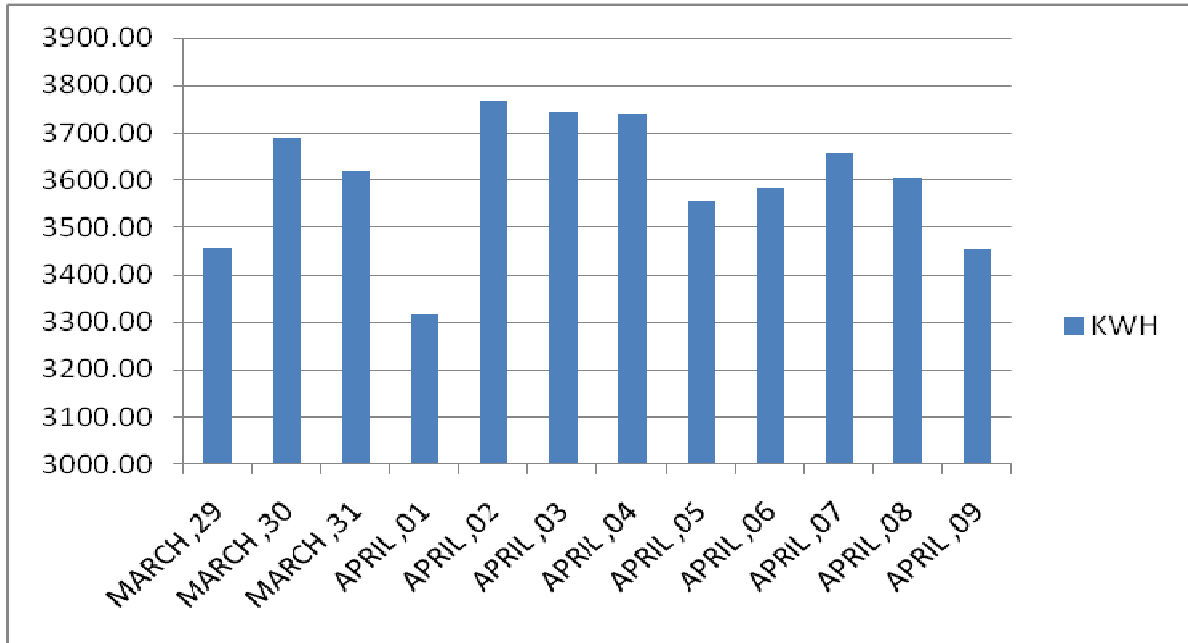
- 1) Balanced control of voltage & current
- 2) P.F. improvement with auto tuning to existing P.F.correction Bank
- 3) Elimination of voltage imbalance incase of 3 phase motors by virtue of our phase angle balancing method
- 4) Removal of heat losses in case of motors & compressors
- 5) Reduced cable burdon
- 6) Reduction in motor self losses
- 7) No effect on Motors Torque, Speed and Pressure
- 8) No reduction in voltage
- 9) Max. Efficiency of Energy saver
- 10) Lowest possible payback period less than one year
- 11) Max. Possible Energy Saving above 10%
- 12) Continuous saving from Min. to Max. Loading condition.
- 13) Maintenance free
- 14) No Reduction in intensity of lamps
- 15) System caters to a Life of 10-12 years
- 16) Work for any kind of load
- 17) Cope up with increased Loading
- 18) No additional manpower required to maintain or operate.
- 19) Easy to understand
- 20) Reduces Maintenance cost
- 21) Increases life of equipments
- 22) Harmonics free
- 23) Rugged in construction
- 24) Add up company profit
- 25) MD reduced by 10%
- 26) Reduces motor burning problems
- 27) Micro controller based user settable front panel
- 28) On screen display with
 - A) RN,YN,BN – Voltage Indication
 - B) R,Y,B - Current Indication
 - C) Real Time Clock Indication
 - D) Password protection
- 29) CRCA duly powder coated panel
- 30) IT depreciation 80 % U/S 132 of revised Income Tax act 2004
In the first year itself

COMPARISON 12 DAYS CONSUMPTION (KWH)

ONLINE STORAGE DATA OBSERVATION GRAPH (BYPASS)

DAILY KWH FROM DTD. 29 MARCH, 2014 TO 09 APRIL, 2014

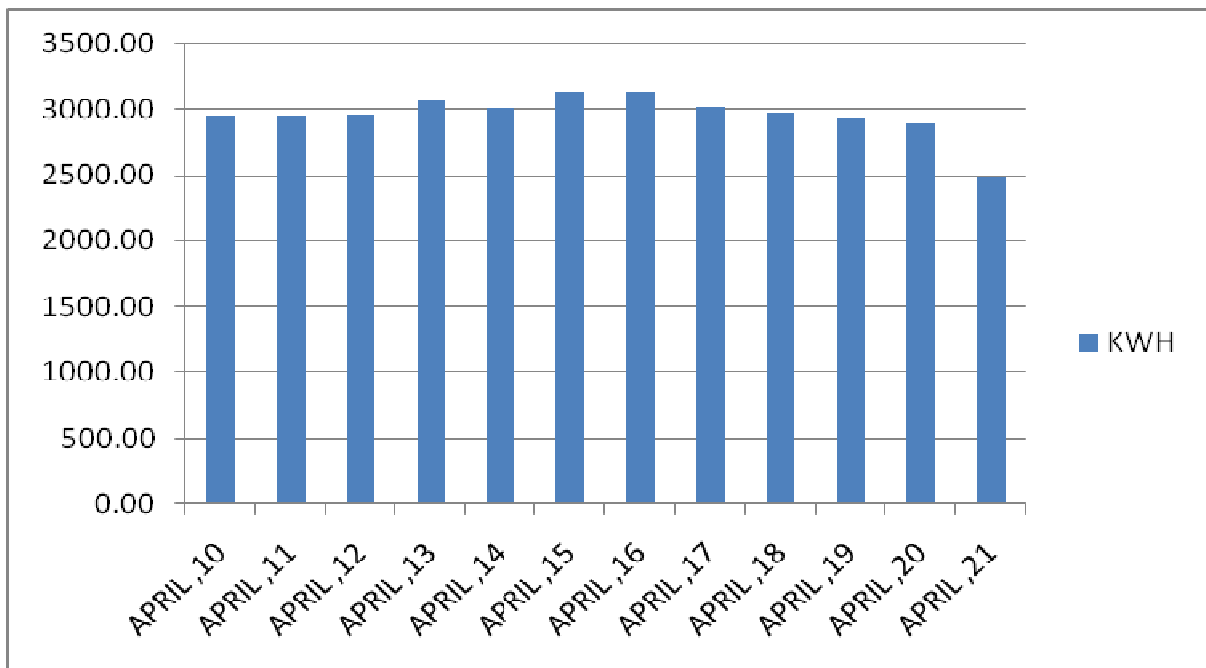
BYPASS



SAVE

ONLINE STORAGE DATA OBSERVATION GRAPH (SAVE)

DAILY KWH FROM DTD. 10 APRIL, 2014 TO 21 APRIL, 2014



DAILY CONSUMPTION CHART / PER DAY (KWH)
ONE WEEK COMAPRISON CHART FOR SIMILLAR PRODUCTION
BEFORE & AFTER INSTALLATION OF ENERGY SAVER

12 DAYS BYPASS (KWH) READING			
NO. OF DAYS	W. HRS.	DATE	KWH
1	24	MARCH ,29	3457.74
2	24	MARCH ,30	3690.67
3	24	MARCH ,31	3621.35
4	24	APRIL ,01	3316.29
5	24	APRIL ,02	3766.53
6	24	APRIL ,03	3744.19
7	24	APRIL ,04	3741.85
8	24	APRIL ,05	3557.50
9	24	APRIL ,06	3584.64
10	24	APRIL ,07	3657.32
11	24	APRIL ,08	3606.50
12	24	APRIL ,09	3455.87
TOTAL			43,200

12 DAYS SAVE (KWH) READING			
NO. OF DAYS	W. HRS.	DATE	KWH
1	24	APRIL ,10	2947.21
2	24	APRIL ,11	2947.21
3	24	APRIL ,12	2962.87
4	24	APRIL ,13	3066.62
5	24	APRIL ,14	3007.51
6	24	APRIL ,15	3126.24
7	24	APRIL ,16	3124.30
8	24	APRIL ,17	3019.63
9	24	APRIL ,18	2972.45
10	24	APRIL ,19	2930.58
11	24	APRIL ,20	2891.27
12	24	APRIL ,21	2489.40
TOTAL			32,996

SAVING ESTABLISHED BASED ON 12 DAY (KWH)

BEFORE INSTALLATION OF ENERGY SAVER (12 DAYS)= 43,200 UNITS

AFTER INSTALLATION OF ENERGY SAVER (12 DAYS)= 32,996 UNITS

DIFFERENCE = 43,200 – 32,996 = 10,205

% SAVING ESTABLISHED (KWH) = 10,205/43,200*100 = 23 %

BEFORE INSTALLATION OF ENERGY SAVER (12 DAYS) AVEARGE = 3,600 UNITS

AFTER INSTALLATION OF ENERGY SAVER (12 DAYS) = 3,000 UNITS

AVEARGE DAILY SAVING = 600 Units per Day

AVEARGE MONTHLY SAVING = 600*30 DAYS = 18,000 KWH/MONTH

SAVING PER MONTH @ RS. 5.6 = 100,000 (ONE LAC)

Annual saving at actual in Rs (Lacs)

(Ref. Daily saving comparison for last 12 days)

100,000*12 Months = Rs. 1200,000 (12 Lacs)

CONCLUSION

SAVING ESTABLISHED MORE THAN 15 %