



# CASE STUDY

## CUSTOMER

- Ratnagiri, Maharashtra

## APPLICATION

- Two-wheeler Show room

### Introduction / Overview about Industry:

The two-wheeler showroom industry is facing a dynamic and challenging environment, which requires creativity, flexibility, and resilience to succeed. Increase in competition, changing consumer preferences, Economic fluctuations, Rising costs and regulatory challenges are keeping pressure on Two-wheeler show rooms to improve cost efficiency. Electricity cost, is major area of concern due to increase in Electricity Tariff. We have worked closely with one of the reputed Two-wheeler showroom to handle the electricity PF penalty and cost saving project.

### Challenge/ Problem statement (BEFORE):

- Power factor is less than 0.43
- Penalty on PF is charged in every electricity bill
- Average Difference between KWH and KVAH is about 3250+ units
- KVAH Billing will be applicable w.e.f. April,23 which will further attract additional charges

### Objective set:

- Power Factor to be achieved  $\geq 0.98$  and
- PF penalty shall not be Incurred
- ROI shall be less than 18 months
- Get ready for KVAH billing savings

### Various Solutions discussed

- Traditional APFC have limitations like
  - Capacitor life is affected due to switching ON & OFF of contactor
  - Leading PF cannot be corrected
  - Linear correction in PF is limited by number of steps & values chosen
  - Possibility of resonance, transients due to Switching of Capacitors
  - Response time is slow and It cannot correct the Unbalance on line
- We proposed Static Var generator (SVG) of 30kVAR rating which is 3 Level IGBT based Modular unit with TFT display. It provides stepless reactive power compensation. It works on both lagging as well as leading PF. It has superior dynamic response and fast power factor correction time.

## BEFORE: September, 2022 MSEDCL Bill:

CURRENT CONSUMPTION DETAILS						
Reading Date	KWH	KVAH	RKVAH (LAG)	RKVAH (LEAD)	KW (MD)	KVA (MD)
Total Consumption	1912.00	5162.000	151.000	3888.00	12.000	13.000
BILLING DETAILS						
						Amount in Rs.
Billed Demand (KVA)	9	@ Rs.	457.00	Demand Charges	3,843.00	
Assessed P.F.		Avg. P.F.	0.430	Wheeling Charge @ 01.35	2,581.20	
Billed P.F.	0.430	L.F.		Energy Charges	20,630.48	
Consumption Type	Unit	Rate	Charges Rs.	TOD Tariff EC		
Industrial	0	0.00	0.00	FAC@ 02.15 Ps./U	4,110.80	
Residential	0	0.00	0.00	Electricity Duty (21.00%)	6,599.46	
Commercial	1,912	10.79	20630.48	Other charges	00.00	
E.D. on (Rs)	Rate %		Amount Rs.	Tax on Sale @ 18 Ps/U	344.16	
0.00	0		0.00	P.F. Penal Chages/P/F Inc.	7,542.24	
0.00	0		0.00	Charges for Excess Demand	0.00	
31,425.98	21		6599.46	Debit Bill Adjustment	00.00	
TOD Zone	Rate	Unit	Demand	Charges Rs.	<b>TOTAL CURRENT BILL</b>	
2200 Hrs - 0600 Hrs	-01.50	171	10.00	-256.50	<b>45,910.00</b>	
0600 Hrs - 0900 Hrs & 1200 Hrs - 1800 Hrs	00.00	1139	13.00	0.00	Current Interest 02-10-2022	00.00
0900 Hrs - 1200 Hrs	00.80	484	13.00	387.20	Principle Arrears	-99.03
1800 Hrs - 2200 Hrs	01.10	118	10.00	129.80	Interest Arrears	00.00
Amount in Words - Forty Five Thousand Eight Hundred Ten Only					Total Bill (Rounded) Rs.	45,810.00
					Delayed Payment Charges Rs.	573.00
					Amount Payable 25-10-2022 After	<b>46,390.00</b>
					Amount Rounded to Nearest Rs. (10/-)	

## AFTER SOLUTION is implemented: December, 2022 MSEDCL Bill:

CURRENT CONSUMPTION DETAILS						
Reading Date	KWH	KVAH	RKVAH (LAG)	RKVAH (LEAD)	KW (MD)	KVA (MD)
Total Consumption	2284.000	2363.000	465.000	23.000	15.000	16.000
BILLING DETAILS						
						Amount in Rs.
Billed Demand (KVA)	10	@ Rs.	427	Demand Charges	4,270.00	
Assessed P.F.	0	Avg. P.F.	0.430	Wheeling Charge @ 01.35	3,083.40	
Billed P.F.	0.9800	L.F.		Energy Charges	24,644.36	
Consumption Type	Unit	Rate	Charges Rs.	TOD Tariff EC		
Industrial	0	0.00	0.00	FAC@ 02.15 Ps./U	4,910.60	
Residential	0	0.00	0.00	Electricity Duty (21.00%)	7,808.53	
Commercial	2,284	10.79	24644.36	Other charges	00.00	
E.D. on (Rs)	Rate %		Amount Rs.	Tax on Sale @ 18 Ps/U	411.12	
0.00	0.00		0.00	P.F. Penal Chages/P/F Inc.	-557.75	
0.00	0.00		0.00	Charges for Excess Demand	0.00	
37,183.46	21		7808.53	Debit Bill Adjustment	00.00	
TOD Zone	Rate	Unit	Demand	Charges Rs.	<b>TOTAL CURRENT BILL</b>	
2200 Hrs - 0600 Hrs	-01.50	229	2.00	-343.50	<b>44,850.00</b>	
0600 Hrs - 0900 Hrs & 1200 Hrs - 1800 Hrs	00.00	1341	16.00	0.00	Current Interest 02-10-2022	00.00
0900 Hrs - 1200 Hrs	00.80	556	14.00	444.80	Principle Arrears	-90.52
1800 Hrs - 2200 Hrs	01.10	158	4.00	173.80	Interest Arrears	00.00
Amount in Words - Forty Four Thousand Seven Hundred Fifty Only					Total Bill (Rounded) Rs.	44,750.00
					Delayed Payment Charges Rs.	560.57
					Amount Payable 25-10-2022 After	<b>45,320.00</b>
					Amount Rounded to Nearest Rs. (10/-)	

## RESULT AND CONCLUSION:

- ✓ Power factor improved from 0.43 to 0.98
- ✓ Power Factor penalty of INR 7,542 is saved and incentive of INR 557 received
- ✓ Total Electrical Bill savings achieved about INR 8,099.00
- ✓ KWH and KVAH difference reduced from 3250 to 72 units.
- ✓ With KVAH billing become effective additional savings is expected.

## Q Sine Energy Solutions LLP.

401, Aquila Enclave, NDA Pashan Road,  
Ramnagar Colony, Bavdhan, Pune - 411021. INDIA  
info@qsine.co.in +91 87660 43510 www.qsine.co.in

### OUR PRODUCTS

- Active Harmonic Filters
- Solar PV Systems
- Battery Energy Storage Systems
- Static VAR Generators
- Solar Inverter
- Electronic Load Bank
- Hybrid APFC
- UPS Systems
- SVCS Air / Oil Cooled