DETAILED PROJECT REPORT
ON
ENERGY COST REDUCTION BY POWER FACTOR IMPROVEMENT
(MORBI CERAMIC CLUSTER)











Bureau of Energy Efficiency

Prepared By

Reviewed By

ENERGY COST REDUCTION BY POWER FACTOR IMPROVEMENT

MORBI CERAMIC CLUSTER

BEE, 2010
Detailed Project Report on Energy Cost Reduction By
Power Factor Improvement
Ceramic SME Cluster, Morbi, Gujarat (India)
New Delhi: Bureau of Energy Efficiency;
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Acknowledgement

We sincerely appreciate the efforts of industry, energy auditors, equipment manufacturers, technology providers, consultants and other experts in the area of energy conservation for joining hands with Bureau of Energy Efficiency (BEE), Ministry of Power, Government of India for preparing the Detailed Project Report (DPR) under BEE SME Program in SMEs clusters. We appreciate the support of suppliers/vendors for providing the adoptable energy efficient equipments/technical details to the SMEs.

We have received very encouraging feedback for the BEE SME Program in various SME Clusters. Therefore, it was decided to bring out the DPR for the benefits of SMEs. We sincerely thank the officials of BEE, Executing Agencies and ISTSL for all the support and cooperation extended for preparation of the DPR. We gracefully acknowledge the diligent efforts and commitments of all those who have contributed in preparation of the DPR.

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List of Abbreviations

BEE	Bureau of Energy Efficiency
SME	Small and Medium Enterprises
DPR	Detailed Project Report
GHG	Green House Gases
PF	Power Factor
NG	Natural Gas
APFC	Automatic Power Factor Controller
CDM	Clean Development Mechanism
DSCR	Debt Service Coverage Ratio
NPV	Net Present Value
IRR	Internal Rate of Return
ROI	Return on Investment
WHR	Waste Heat Recovery
SCM	Standard Cubic Meter
MT	Metric Tonne
SIDBI	Small Industries Development Bank of India
PGVVCL	Paschim Gujarat Vidyut Vitaran Company Limited

EXECUTIVE SUMMARY

SEE-Tech Solution Pvt. Ltd. is executing BEE-SME program in Morbi Ceramic Cluster, supported by Bureau of Energy Efficiency (BEE) with an overall objective of improving the energy efficiency in cluster units.

Morbi ceramic cluster is one of the largest ceramic clusters in India; accordingly this cluster was chosen for energy efficiency improvements by implementing energy efficient measures / technologies, so as to facilitate maximum replication in other ceramic clusters in India.

The main energy forms used in the cluster units are grid electricity, Natural Gas, Charcoal, Lignite and small quantity of Diesel oil. Natural Gas is used as fuel in roller kiln for final baking of product. In ceramic plant, electricity bill is about 30 to 40 % of total plant energy bill.

Most of the Industrial installations in the country have large electrical loads which are severely inductive in nature, such as motors, large machines, air conditioners, drivers etc which results in a severely lagging power factor. This means loss and wastage of energy and heavy penalties by electricity boards. In case of fixed loads this can be taken care by manual switching of capacitors.

However in case of rapidly varying and scattered loads it becomes difficult to maintain a high power factor by manually switching on/off the capacitors in proportion to variation of load within an installation. This drawback can be overcome by using an APFC panel (Automatic Power Factor Correction Panel) which not only maintains a high power factor but also eliminates the need for constant manual intervention.

Improvement in power factor to unity with the installation of some additional capacitors if required and the installation of APFC panel helps in reducing the electricity bill amount by availing the benefit of incentive on improving the power factor from the Paschim Gujarat Vidyut Vitaran Company Limited.

Project implementation will lead to reduction in electricity bill by Rs. 2 Lakh per year however; this intervention will not have any effect on the existing consumption pattern of electricity.

The total investment, debt equity ratio for financing the project, monetary savings, Internal rate of return (IRR), Net present value (NPV), Return on investment (ROI) etc for implementing power factor improvement project is furnished in Table below.

S. No.	Particular	Unit	Value
1	Project cost	(₹ in lakh)	2.31
2	Monetary benefit	(₹ in lakh)	2
3	Debit equity ratio	Ratio	3:1
4	Simple payback period	years	1.2
5	NPV	(₹ in lakh)	4
6	IRR	%age	51
7	ROI	%age	188
8	Process down time	hours	2 - 3

The projected profitability and cash flow statements indicate that the project implementation will be financially viable and technically feasible.

ABOUT BEE'S SME PROGRAM

Bureau of Energy Efficiency (BEE) is implementing a BEE-SME Programme to improve the energy performance in 25 selected SMEs clusters. Morbi Ceramic Cluster is one of them. The BEE's SME Programme intends to enhance the energy efficiency awareness by funding/subsidizing need based studies in SME clusters and giving energy conservation recommendations. For addressing the specific problems of these SMEs and enhancing energy efficiency in the clusters, BEE will be focusing on energy efficiency, energy conservation and technology up gradation through studies and pilot projects in these SMEs clusters.

***Major Activities in the BEE -SME Program are furnished below*:**

Energy Use and Technology Audit

The energy use technology studies would provide information on technology status, best operating practices, gaps in skills and knowledge on energy conservation opportunities, energy saving potential and new energy efficient technologies, etc for each of the sub sector in SMEs.

Capacity Building of Stake Holders in Cluster on Energy Efficiency

In most of the cases SME entrepreneurs are dependent on the locally available technologies, service providers for various reasons. To address this issue BEE has also undertaken capacity building of local service providers and entrepreneurs/ managers of SMEs on energy efficiency improvement in their units as well as clusters. The local service providers will be trained in order to be able to provide the local services in setting of energy efficiency projects in the clusters.

Implementation of Energy Efficiency Measures

To implement the technology up gradation projects in clusters, BEE has proposed to prepare the technology based detailed project reports (DPRs) for a minimum of five technologies in three capacities for each technology.

Facilitation of Innovative Financing Mechanisms for Implementation of Energy Efficiency Projects

The objective of this activity is to facilitate the uptake of energy efficiency measures through innovative financing mechanisms without creating market distortion

1 INTRODUCTION

1.1 Brief Introduction about the Cluster

Morbi SME Cluster is one of the largest ceramic clusters in India, which is famous for manufacturing of ceramic tiles. Over 70% of total ceramic tile products come from Morbi cluster. The nearest airport is at Rajkot, which is 67 KM from Morbi by road. Morbi could also be reached from Ahmedabad by Railway as well as by Road which is about 184 KM.

There are approximately 479 ceramic units in this cluster which are engaged in manufacturing of Wall Tiles, Vitrified Tiles, Floor Tiles, Sanitary Wares, Roofing Tiles and other ceramic products. There are around 50 more ceramic units coming up in Morbi. Many existing units are expanding production capacity.

Majority of the cluster units are of integrated type, where the raw material is processed in-house to the final product. Table 1.1 shows the total energy consumption scenario at Morbi cluster.

Table 1.1 Details of Annual Energy Consumption Scenario at Morbi Ceramic Cluster

S. No	Type of Fuel	Unit	Value	% contribution in equivalent energy terms
1	Electricity	GWh/year	1,200	8.23
2	Natural Gas	SCM/year	660,000,000	46.32
3	Charcoal	MT/year	165,000	8.55
4	Lignite	MT/year	1,320,000	36.84
5	Diesel	Litre/year	800,000	0.06

Energy Usage Pattern

Average monthly electricity consumption in ceramic plants ranges from 1 lakh to 2 lakh kWh depending on the size of the plant. In thermal energy, solid fuel such as Lignite, Charcoal, Indonesian Coal, Biomass Briquette, etc are used in spray dryer where as Natural Gas is used in kiln in all plants except few of them. Solid fuel consumption in spray dryer ranges from 80 to 160 kg/MT of dried powder production. Natural Gas consumption in kiln varies from 1.01 to 1.4 SCM/m^2 of tiles produced.

Classification of Units

The ceramic units can be categorized into following four types based on product manufacture

- Floor Tiles unit

- Wall Tiles unit
- Vitrified Tiles unit
- Sanitary Wares unit

Production Wise Unit Breakup

Morbi ceramic cluster can be broken into three categories viz. small, medium and large size unit. Table 1.2 shows that production wise breakup of Morbi cluster.

Table 1.2 production wise unit breakups

Type of product	*No. of Units.*				*Production (m^2/day or MT*/day)*			
Scale of Unit	**Small**	**Medium**	**Large**	**Total**	**Small**	**Medium**	**Large**	**Total**
Wall Tiles	43	100	35	178	2,500	3,500	7,500	13,500
Floor Tiles	8	38	6	52	3,000	4,000	7,000	14,000
Vitrified Tiles		22	4	26		5,760	11,520	17,280
Sanitary Wares	10	24	9	43	4	8	14	26

** In case of sanitary wares, production is measured in terms of MT.*

Products Manufactured

Different types of products manufactured in Morbi SME cluster are as shown in Table 1.3 below.

Table 1.3 Product Manufactured

S. No	*Type of Product*	*% share*	*Units (No.)*
1	Wall Tiles	37	178
2	Vitrified Tiles	8	36
3	Floor Tiles	11	52
4	Sanitary Wares	9	43
5	Spray Dryer Mud Manufacturing Units	8	40
6	Roofing Tiles (seasonal operation)	25	120
7	Third Firing Manufacturing (Producing pictures on tiles)	37	10
Total (No.)			479

Production Process of Wall/Floor/Vitrified Tiles:

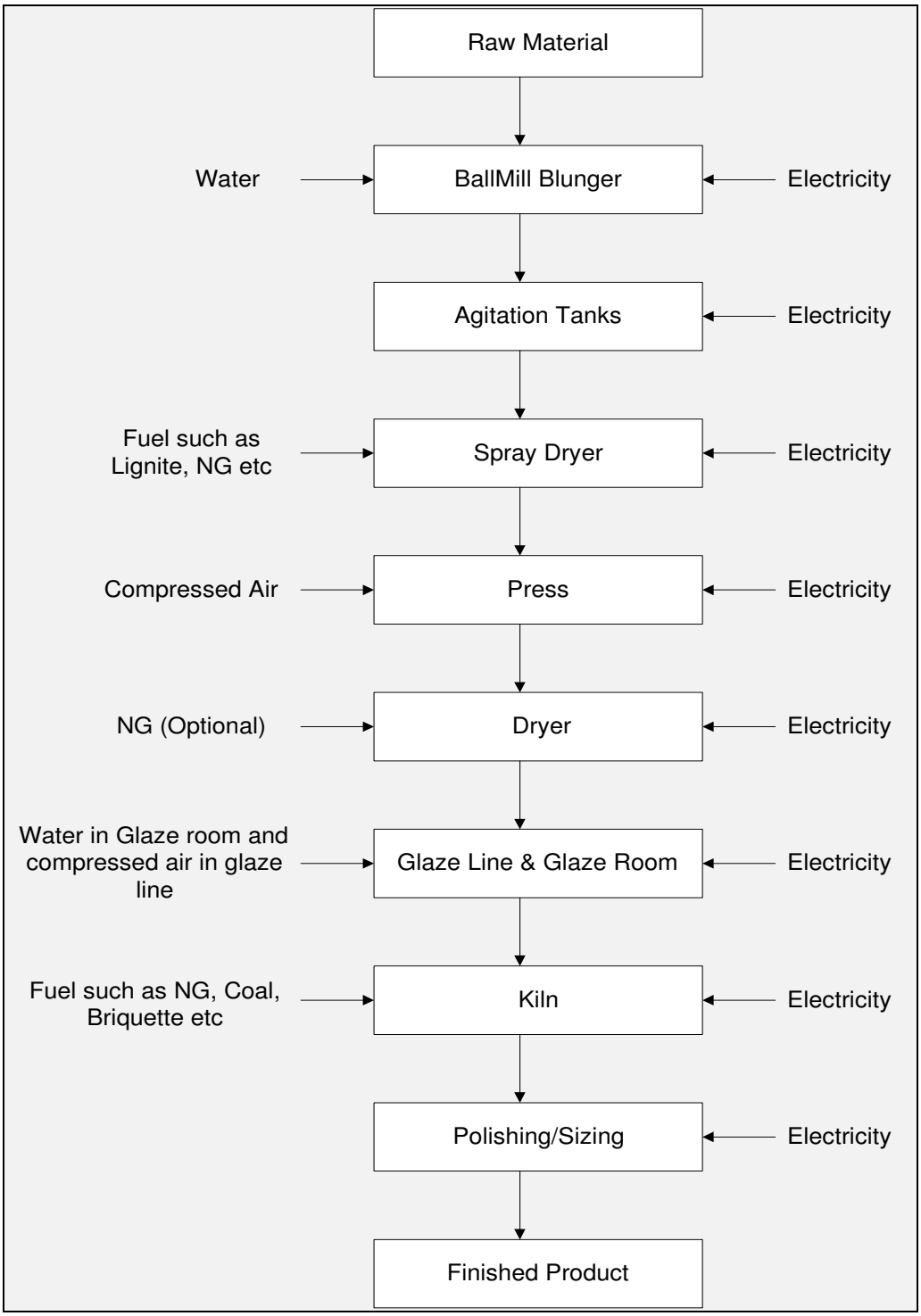


Figure 1.1 Process flow diagram of wall/floor/vitrified tiles

Wet Grinding

Raw materials such as clay, feldspar, quartz, calcite etc. are mixed with water in a proper proportion and are grinded in a ball mill/blunger to make a homogeneous mixture. It is a batch type of process. After completion of one batch, slurry is taken in to the underground tanks fitted with agitator motor in each tank to maintain the uniformity of mixture (i.e. avoiding settling of solid particles). Ball mills and blungers are used for grinding.

Spray Drying

After preparation of the slurry of required density, it is stored in underground tanks, which are continuously agitated to maintain uniformity of the slurry. Slurry is then pumped through a hydraulic pump into the spray dryer where the slurry is sprayed through nozzles. Material is dried in spray dryer, thus the moisture which is added during the grinding process in the ball mill is removed in the spray drier. Input moisture to spray drier is 35 to 40%, which is dried to 5 to 6 %. Product from the spray dryer is then stored in silos. Hot flue gases at a temperature of about 550 to 600 oC is used as heating source; hot gases are generated by combustion of variety of fuels such as lignite, Indonesian coal, saw dust, briquette, natural gas through direct combustion as well as through Gasifier.

Pressing

The product from the spray dryer is then sent to the hydraulic press where the required sizes of biscuit tiles are formed and sent to dryer through conveyer.

In press, advanced technology is available which enables 3 steps pressing to single step pressing, which improves productivity.

Drying

After press, biscuits containing about 5% to 6% moisture are sent to drier and dried to about 2% to 3% moisture level in case of vitrified tiles. In case of wall and floor tiles, biscuits are directly baked to a temperature of about 1100 to 1150 oC and after glazing, it is baked again. In some ceramic units, hot air from kiln cooling zone exhaust is used in dryers which save energy consumption in driers.

Glazing

After drying, biscuit tiles are sent for glazing on the glaze line. Glaze is prepared in ball mills. Glazing is required for designing on tiles.

Firing and Baking

After glazing, the biscuit tiles are sent for final firing in the kiln. The glazed tiles are fired at a temperature of 1100 to 1150 ^{o}C in the kiln. Natural gas as well as producer gas from Gasifier is used as fuel in the kiln.

Sizing

Tiles coming out of the kiln are sent for sizing and calibration in case of wall and Floor Tiles. The tiles are cut to proper sizes so that all tiles have same dimensions. After sizing finished product is sent for dispatch.

Polishing

Polishing is required for Vitrified Tiles. Polishing utilizes 40% to 45% of total electricity consumption in case vitrified units. After kiln the vitrified tiles are passed through polishing line. Polishing line consist of sizing, calibration and polishing machines.

1.2 Energy performance in existing situation

1.2.1 Average production

Annual production in typical unit in Morbi cluster is given in Table 1.4.

Table 1.4 Annual Production of a Typical Unit

S.No	Type of product	Production (m^2/year* or MT/Year*)		
		Small	Medium	Large
1	Wall Tiles	750,000	1,050,000	2,250,000
2	Floor Tiles	900,000	1,200,000	2,100,000
3	Vitrified Tiles	NA	1,728,000	3,456,000
4	Sanitary Wares	1200*	2400*	4200*

1.2.2 Energy Consumption

Energy consumption (both electrical and thermal) in a typical ceramic plant for different types of products is given in Table 1.5 below:

Table 1.5 Annual Energy Consumption

Energy	Electricity (GWh per year)			Natural gas (SCM per year)			Solid Fuel [lignite] (m^2 or MT* per year)		
Scale of Unit	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large
Wall Tiles	0.9	1.5	2.4	750,000	1,050,000	2,250,000	2,400	2,880	3,600
Floor Tiles	0.9	1.5	2.4	900,000	1,200,000	2,100,000	3,600	4,200	4,800
Vitrified Tiles	NA	6.0	2.4	NA	2,700,000	6,000,000	NA	6,000	9,000
Sanitary Wares	0.24	0.45	0.9	120,000	240,000	420,000	NA	NA	NA

**Annual production measured as m2/year in case of tiles and MT/ year for sanitary wares*

1.2.3 Specific Energy Consumption

Specific energy consumption both electrical and thermal energy per m^2 or MT of production for each type of ceramic industry is given in Table 1.6 below:

Table 1.6 Specific Energy Consumption in Different Ceramic Plants

Energy	Electricity (kWh/m^2) or (kWh/MT*)			Natural gas (SCM/m^2) or (SCM/MT)			Solid Fuel [lignite] (kg/m^2)		
Scale of Unit	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large
Wall Tiles	1.20	1.43	1.07	1.00	1.00	1.00	3.20	2.74	1.60
Floor Tiles	1.00	1.25	1.14	1.00	1.00	1.00	4.00	3.50	2.29
Vitrified Tiles	NA	3.47	3.47	NA	1.56	1.74	NA	3.47	2.60
Sanitary Wares	200.00	187.50	214.29	100.00	100.00	100.00	NA	NA	NA

1.3 Proposed Technology/Equipment

1.3.1 Description about the existing technology

Ceramic industries at Morbi had taken the electricity connection from the Paschim Gujarat Vidyut Vitaran Company Limited (PGVVCL). The electricity supply coming to the industries is of High Tension (HT) category. In HT connection, electricity bill is to be paid on the basis of two part tariff. This means that the industries have to pay the charges for the maximum

demand and the electricity consumption (units) for that month. Other taxes are paid as applicable. State electricity board is providing incentive on improvement of power factor. Electricity is supplied from the generating station in the form of kVA. Power factor is the ratio of active power (kW) to apparent power (kVA). If the power factor is near the unity, this means that consumers are utilizing the power receiving from the state electricity board as the active power. PGVVCL provides the incentives on the demand and energy charges to the consumers for maintaining the power factor above 0.95. The percentage of incentive increases with every increase in power factor above 0.95. . If the power factor falls less than 0.85 then consumer has to pay the penalty according to the applicable tariff.

1.4 Establishing the Baseline for the Proposed Technology

Presently all the ceramic plants at Morbi are operating at a power factor of about 0.90 to 0.94. They are not getting the benefit of incentive at this power factor from the PGVVCL. If the power factor falls less than 0.85 then they have to pay the penalty according to the applicable tariff. Now in existing scenario they are paying for the demand plus energy charges of about ₹ 6,69,534 per month which is 79% of charges of the total electricity bill.

The factor related to proposed technology are

- Effect on power factor improvement
- Maximum demand charges
- Annual kWh consumption
- Annual energy charges
- Incentive on power factor improvement

1.5 Barriers in adoption of proposed technology

1.5.1 Technological Barrier

- Lack of awareness and information of the available benefits in terms of incentives on the total electricity bill as per the tariff provided by PGVVCL
- Due to lack of technical knowledge and expertise, power factor is not properly monitored in the ceramic plants even after the installation of the required number of capacitors.
- In this cluster, like many others, there is lack of leadership to take up the energy efficiency projects in the plant.

1.5.2 Financial Barrier

- Implementation of the proposed project activity requires an investment of ₹ 2.31 Lakh, which is a significant investment and not commonly seen in the cluster for the

implementation of energy efficiency projects.

- The unit owners in the cluster are wary of approaching banks for financial assistance due to their old perception that getting loan sanctioned from Banks involves lot of paper work / documentation and needs collateral security.

1.5.3 Skilled Manpower

In Morbi ceramic cluster, the availability of skilled manpower is one of the limitations, this issue gets further aggravated due to more number of ceramic units as compared to the availability of skilled manpower. One local technical person available at Morbi takes care of about 5 to 10 ceramic units. For major equipments of ceramic units like kiln, Polishing Machine etc. maintenance or the repair works of these equipments take care by the equipment suppliers itself. Equipment suppliers like Sacmi (Italy), KEDA, Modena (China) etc. appoint their representatives at Morbi for the maintenance work.

2 PROPOSED TECHNOLOGY

2.1 Detailed Description of Technology

2.1.1 Description of Technology

Existing scenario of power factor in plants of Morbi cluster is very poor. Even they have installed some capacitors for the improvement of power factor but maintenance and monitoring of the capacitors is not good. In this cluster unit various process working under different load condition so that it is not easier to maintain power factor with the help of those installed capacitor. In different type of loading condition, improvement in power factor to unity can be achieved with the installation of some additional capacitors if required and the installation of APFC panel helps in reducing the electricity bill amount by availing the benefit of incentive on improving the power factor. In the ceramic industry, presently some capacitors are already installed during the plant setup. But with the rise in load to increase the production capacity, the plant owner has not installed the additional required capacitors. It is difficult for the technicians to maintain the power factor at unity in absence of APFC panel. If the reactive power is provided in excess than the requirement, then the plant has to pay penalty for that to state electricity board. Therefore, it is very important to provide the reactive power to the unit according to the load conditions of the plant. For that the implementation of capacitors with APFC panel is very important. APFC panel switches ON and OFF the capacitors according to the requirement and maintain the power factor to unity. So that by installing APFC panel, plant can maintain the power factor for respective lagging load. It will not require manual operation as it automatically select capacitor bank as per requirement.

2.1.2 Technology Specification

For implementation of the proposed project, additional capacitors along with the APFC panel have to be installed in the ceramic plant. Total additional capacitors of about 187 kVAr capacities will require to be installed. However, other details are given in the quotation in annexure – 6.

2.1.3 Suitability or Integration with Existing Process and Reasons for Selection

This is the simplest and widely accepted measure for energy cost reduction in all the industries.

Gujarat State Electricity Board provides incentives for good power factor (PF>0.95) and penalty for bad PF (PF<0.85). For power factor maintained at unity, incentives of 2.5% on energy and demand charges are provided. Most of the plants have scope for improving power

factor. Power factor is improved by the installation of capacitors and replacement of the existing de-rated capacitors. This technology is

- simple in monitoring
- requires less maintenance
- requires no additional manpower
- easy to installed

2.1.4 Availability of Technology

Suppliers of the capacitors along with APFC panel are easily available at the Gujarat. Local service providers are also available at Morbi. More details of service provider are given in annexure 5.

2.1.5 Source of Technology

The main source which has taken the initiative to create the awareness for implementation of this project by providing the benefit to the consumers in terms of rupees is the State Electricity Distribution Board. By providing incentive on improving the power factor to the consumers the State Electricity Distribution Board is promoting the awareness on importance of power factor improvement.

2.1.6 Terms and Conditions after Sale

Warranty period of one year will be provided from the date of invoice against any manufacturing defects.

2.1.7 Process down Time during Implementation

Technology provider will bring the complete setup for the proposed project from their site and make all the arrangements for implementation at the client's site. During the final connection with the main supply of the ceramic plant, breakdown period of 2 to 3 hours will be required.

2.2 Life Cycle Assessment

Life of the proposed capacitors will be around 1,00,000 hours which depends on the operating conditions and maintenance at client's side.

2.3 Suitable Unit for Implementation of the Identified Technology

For estimation of the saving potential on implementation of this project, here the ceramic plant engaged in manufacturing of wall tiles having present power factor of about 0.914 is considered.

3 ECONOMIC BENEFITS FROM PROPOSED TECHNOLOGY

3.1 Technical Benefits

3.1.1 Fuel savings per year

No fuel savings are considered in the proposed technology because it is not reducing the fuel consumption in the ceramic plant.

3.1.2 Electricity savings per year

Project of improvement in power factor to unity will not result in savings in electricity consumption in ceramic plant. But it helps to get the savings in the electricity bill as a rebate of about 2.5% on total demand and energy charges by improving power factor to unity.

3.1.3 Improvement in product quality

This project is not contributing to any improvement in product quality.

3.1.4 Improvement in production

This project is not contributing for increasing in production in ceramic plant.

3.1.5 Reduction in raw material consumption

Raw material consumption will be the same after the implementation of the proposed project.

3.1.6 Reduction in other losses

This project does not contribute to any reduction in any loss.

3.2 Monetary Benefits

Annual monetary savings due to implementation of APFC panel will be ₹ 2 lakh per year. Monetary benefit after implementation of this technology is shown in Table 3.1 below.

Table 3.1 Monetary Benefit due to Project Implementation

S. No.	Particular	Unit	Present Situation	Proposed Situation
1	Power Factor		0.914	1
2	Charges paid (Demand + Energy)	₹/month	6,69,534	6,52,796
3	Capacitors installed at unit	kVAr	200	387
4	Saving in electricity bill after power factor improvement	₹/month		16,738
5	Saving in electricity bill after power factor improvement	₹/year		2,00,856

3.3 Social Benefits

3.3.1 Improvement in Working Environment in the Plant

There is no significant impact of this project in the working environment in the plant.

3.3.2 Improvement in Skill Set of Workers

The technical skills of workers will definitely improve. Training on the regular maintenance and checking of the capacitors to maintain the unity power factor helps in improving the technical understanding of the workers.

3.4 Environmental Benefits

This project will not be contributing for environmental benefits.

4 INSTALLATION OF THE PROPOSED TECHNOLOGY

4.1 Cost of Technology Implementation

4.1.1 Technology Cost

Cost of the project is about ₹ 1.96 lakh which includes the cost of the capacitors along with APFC panel.

4.1.2 Other Cost

Other costs required will be ₹ 0.15 Lakh which includes taxes, commissioning, manpower cost, transportation etc and other miscellaneous costs will be ₹ 0.19 Lakh as the contingency amount.

Table 4.1 Details of Proposed Technology Installation Cost

S.No	*Particular*	*Unit*	*cost*
1	Equipment cost	₹ (in lakh)	1.96
2	Erection & Commissioning cost	₹ (in lakh)	0.20
3	Other misc. cost	₹ (in lakh)	0.21
4	Total cost	₹ (in lakh)	2.42

4.2 Arrangements of Funds

4.2.1 Entrepreneur's Contribution

Entrepreneur will contribute 25% of the total project cost which is ₹ 0.60 lakh.

4.2.2 Loan Amount

Remaining 75% cost of the proposed project will be borrowed from bank which is ₹ 1.81 lakh.

4.2.3 Terms & Conditions of Loan

The interest rate is considered at 10% which is SIDBI's rate of interest for energy efficient projects. The loan tenure is 4 years excluding initial moratorium period is 6 months from the date of first disbursement of loan.

4.3 Financial Indicators

4.3.1 Cash Flow Analysis

Profitability and cash flow statements have been worked out for a period of 5 years. The financials have been worked out on the basis of certain reasonable assumptions, which are outlined below. The cost of equipment considered is inclusive of hot water storage tanks also.

- The Operation and Maintenance cost is estimated at 10 % of cost of total project with 5 % increase in every year as escalations.
- Interest on term loan is estimated at 10 %.
- Depreciation is provided as per the rates provided in the companies Act.

Based on the above assumptions, profitability and cash flow statements have been prepared and calculated in Annexure-3.

4.3.2 Simple Payback Period

The total project cost of the proposed technology is ₹ 2.42 lakh and monetary savings due to reduction in electricity consumption is ₹ 2.01 lakh hence, the simple payback period works out to be 1.2 years.

4.3.3 Net Present Value (NPV)

The Net present value of the investment at 10% works out to be ₹ 2.71 lakh.

4.3.4 Internal Rate of Return (IRR)

The after tax Internal Rate of Return of the project works out to be 52.91%. Thus the project is financially viable.

4.3.5 Return on Investment (ROI)

The average return on investment of the project activity works out at 36.94%.

Table 4.2 Financial Indicators of Proposed Technology

S. .No.	Particular	Unit	Value
1	Simple payback period	Year	1.20
2	NPV	₹ (in lakh)	2.71
3	IRR	%age	52.91
4	ROI	%age	36.94

4.4 Sensitivity analysis in realistic, pessimistic and optimistic scenarios

A sensitivity analysis has been carried out to ascertain how the project financials would behave in different situations like when there is an increase in rupees savings or decrease in rupees savings. For the purpose of sensitive analysis, two following scenarios have been considered.

- Optimistic scenario (Increase in monetary savings by 5%)

- Pessimistic scenario (Decrease in monetry savings by 5%)

In each scenario, other inputs are assumed as a constant. The financial indicators in each of the above situation are indicated along with standard indicators.

Table 4.3 Sensitivity Analysis in Different Scenarios

Scenario	Monetary benefit (₹ per year)	IRR (%age)	NPV (₹ in lakh)	ROI (%age)
Pessimistic	190,813	48.71	2.72	36.56
Realistic	200,856	52.91	2.88	36.94
Optimistic	210,898	57.07	2.99	37.27

4.5 Procurement and Implementation Schedule

S. No.	Activity	Weeks				
		1	2	3	4	5
1	Issue of purchase order					
2	Receipt of the equipment					
3	Civil work at site for foundation and mounting of panel					
4	Commissioning and testing					

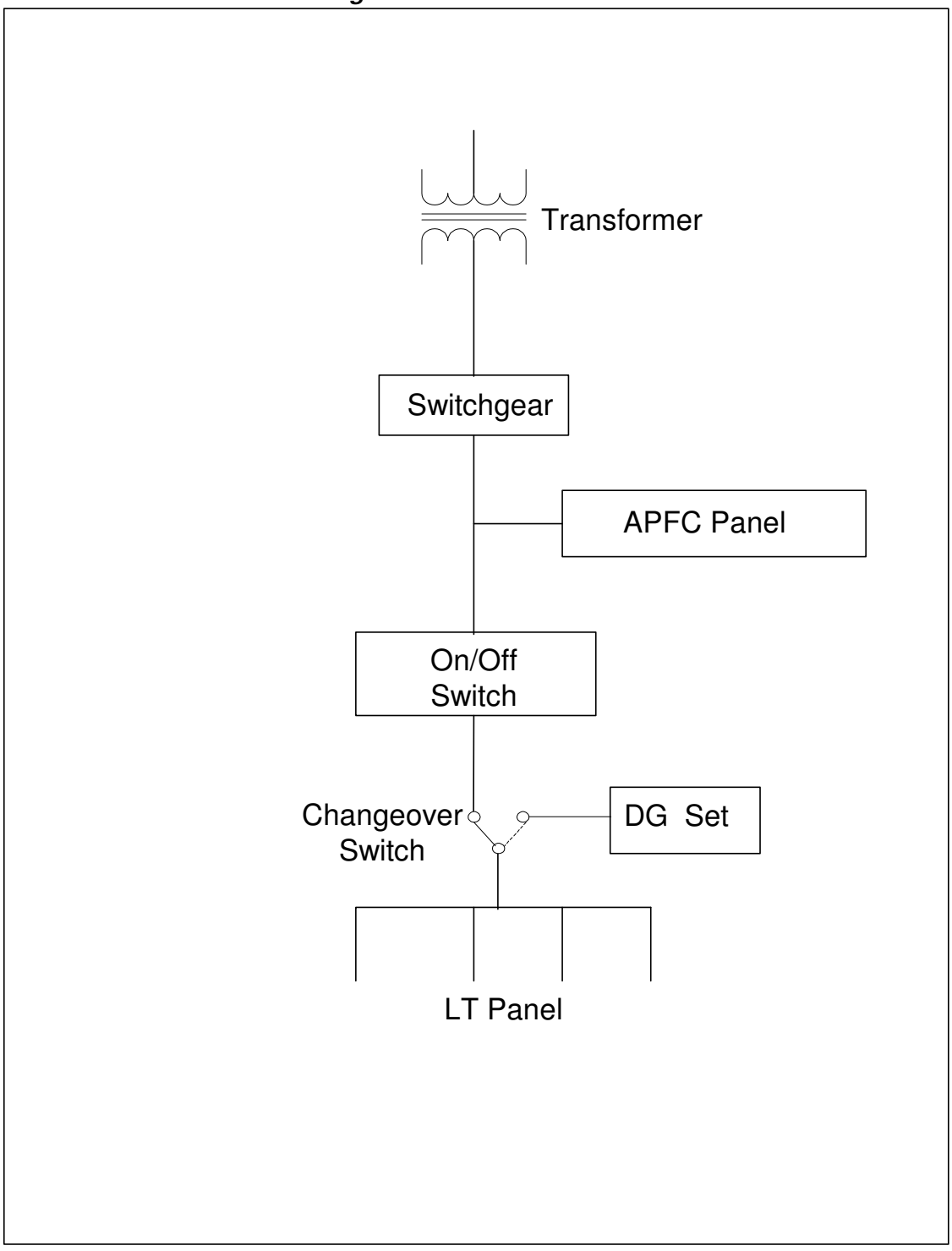
Note: During commissioning, shut down period of about 2 to 3 hours will be required.

ANNEXURES

Annexure -1: Detailed Technology Assessment Report

Sr. No.	Particular	Unit	Present Situation	Proposed Situation
1	Power Factor		0.914	1
2	Charges paid (Demand + Energy)	₹/month	6,69,534	6,52,796
3	Capacitors installed at unit	kVAr	200	387
4	Saving in electricity bill after power factor improvement	₹/month		16,738
5	Saving in electricity bill after power factor improvement	₹/year		2,00,856

Annexure -2: Schematic Arrangement for APFC Panel Installation



Annexure -3: Technical Details of APFC Panel

S. No.	Particulars	Description
1	**General**	
1.1	Applicable Indian Standards for components	IS 13340, 13341, 12672 and other relevant IS
2	**Rating**	**From 12 to 1200 kVAr**
2.1	Basic Unit Rating	3/6/9 or 5/10/25/50/60 kVAr
2.2	Bank Rating	Multiples of 3/6/9 or 5/10/25/50/60 kVAr
2.3	Mode of connection	Delta
2.4	Voltage Rating	440 volts ±10%
2.5	Phase	3 Phase
2.6	Frequency	50 Hz + 3% / - 6%
2.7	Duty	Indoor
3	**Capacitors**	
3.1	Dielectric Used	MPP / APP Type
3.2	Guaranteed Losses	Less than 0.5 Watts/kVAr
3.3	Sealing	Hermetically sealed with pressure interrupter
3.4	Ambient Temp.	Upto 50^0C
3.5	Type of Cooling	Natural Air Cooling
4	**SSR**	
4.1	PIV	1600 V
4.2	Current Rating	50/75/100/125 (as per Bank Rating)
5	**Capacitor Panel**	
5.1	Material of casing	MS – CRCA
5.2	Thickness of casing	14 SWG
5.3	Painting	Power Coating
5.4	Type of Bushing	SMC / EPOXY
5.5	Class of Protection	IP 42
6	**Bus Bar**	
6.1	Material	TP, Tinned Copper / Aluminum

Dimensions of APFC Panel

kVAr	Panel Size With APP Capacitors			Panel Size With MPP Capacitors			Steps of Capacitors (kVAr x No.)
	Width (mm)	Depth (mm)	Height (mm)	Width (mm)	Depth (mm)	Height (mm)	
100	1200	450	1800	800	500	1900	25x4
150	1200	450	1800	800	500	1900	50x2,25x2
200	1200	450	1800	1100	500	1900	50x4

kVAr	Panel Size With APP Capacitors			Panel Size With MPP Capacitors			Steps of Capacitors (kVAr x No.)
	Width (mm)	Depth (mm)	Height (mm)	Width (mm)	Depth (mm)	Height (mm)	
300	1600	450	1800	1100	500	2200	50x6
400	2000	450	1800	1200	550	2200	50x8
500	2400	450	1800	1400	550	2200	50x10
600	3000	450	1800	1500	550	2200	50x12
720	3000	450	1800	1500	550	2200	60x12

Note: Panel size & dimension with kVAr ratings can be designed as per customer rerequirements

Specification of accessories of APFC panel

1	Main Air Circuit Breaker										
Current (A)	400	630	800	1000	1250	1600	2000	2500	3200	4000	6400
Voltage (V)	660	660					1000				
Rated Voltage (V)						415					
Control Current (A)						415					
Short time (1 Sec) in KA	25	25	50	50	50	55	55	60	60	70	100
Type available	Fixed, manual draw-out, electrical draw-out										
Protection	Short circuit and overload, Release built in(under-voltage and over voltage) release at cost										

2	Fuse Switch Unit/Fuses Normally used on LT capacitor application							
Current (A)	32	63	125	200	250	315	400	630
Rated Voltage (V)	415							
Short circuit rating	80 kA With respective fuses							

3	MCCB (Triple Pole)						
Current (A)	100	125	200	250	400	630	800
Rated Voltage	415V						
Short Circuit rating (KA)	25	35	35	50	50	50	50

4	Power-Contactors Duty Type

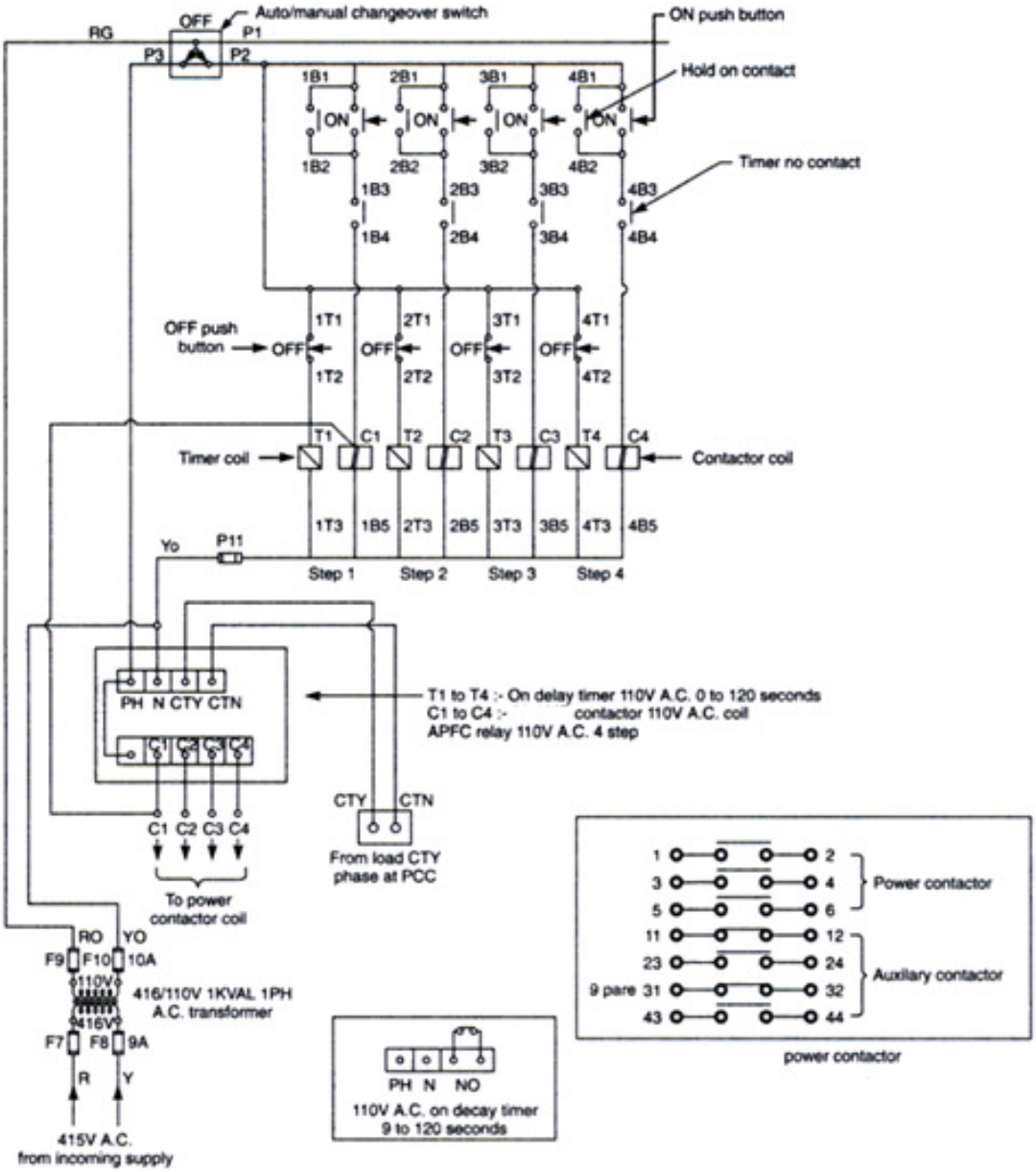
Current	25	50
Voltage	415/450 V	
KVAR	10	25
Coil voltage	110, 220, 240, 415	

kVAr ratings of APFC panel

Contract Demand (kVA)	Existing PF				
	0.9	0.91	0.92	0.93	0.94
100	45	42	40	37	35
300	130	125	120	110	100
500	220	210	200	185	170
700	300	300	275	265	240
900	400	375	355	330	310
1100	480	475	430	400	375
1300	580	540	510	480	445
1500	655	625	590	550	515
1700	750	700	665	625	580
1900	850	790	745	700	650
2100	950	875	825	775	715
2300	1000	955	900	845	785
2500	1100	1040	980	920	855
2700	1200	1120	1060	990	925
2900	1280	1200	1135	1065	990
3100	1350	1290	1215	1140	1060
3300	1450	1370	1300	1215	1125
3500	1525	1450	1375	1290	1195
3700	1625	1535	1450	1360	1265
3900	1700	1620	1530	1435	1335
4100	1800	1700	1610	1510	1400
4300	1880	1790	1690	1580	1465
4500	1980	1870	1765	1655	1535
4700	2050	1950	1845	1730	1605
4900	2200	2035	1920	1800	1675
5100	2300	2115	2000	1875	1740
5300	2380	2200	2075	1950	1805

Contract Demand (kVA)	Existing PF				
	0.9	0.91	0.92	0.93	0.94
5500	2400	2280	2155	2025	1875
5700	2490	2365	2235	2095	1945
5900	2570	2445	2315	2170	2015
6100	2700	2530	2390	2245	2080
6300	2750	2615	2470	2315	2150
6500	3000	2700	2550	2390	2220

Annexure -4: Schematic Diagram of an APFC Panel



Annexure -5: Detailed Financial Calculations & Analysis

Assumption

Name of the Technology	***Power Factor Improvement***		
Rated Capacity			
Details	***Unit***	***Value***	***Basis***
Installed Capacity	Kcal		Feasibility Study
No of working days	Days		Feasibility Study
No of Shifts per day	Shifts		Feasibility Study
Capacity Utilization Factor	%		Feasibility Study
Proposed Investment			
Plant & Machinery	₹ (in lakh)	1.96	Feasibility Study
Erection & Commissioning	₹ (in lakh)	0.20	Feasibility Study
Investment without IDC	₹ (in lakh)	2.16	Feasibility Study
Interest During Implementation	₹ (in lakh)	0.05	Feasibility Study
Taxes(CST)	₹ (in lakh)	0.71	Feasibility Study
Other charges(Contingency)	₹ (in lakh)	0.21	Feasibility Study
Total Investment	₹ (in lakh)	2.42	Feasibility Study
Financing pattern			
Own Funds (Equity)	₹ (in lakh)	0.60	Feasibility Study
Loan Funds (Term Loan)	₹ (in lakh)	1.81	Feasibility Study
Loan Tenure	years	4	Assumed
Moratorium Period	Months	6	Assumed
Repayment Period	Months	54	Assumed
Interest Rate	%	10.00	SIDBI Lending rate
Estimation of Costs			
O & M Costs	% on Plant & Equip	10.00	Feasibility Study
Annual Escalation	%	5.00	Feasibility Study
Estimation of Revenue			
Electricity consumption-Earlier	₹/Month	669534	
Electricity consumption-New	₹/Month	652796	
St. line Depn.	%age	5.28	Indian Companies Act
IT Depreciation	%age	80.00	Income Tax Rules
Income Tax	%age	33.99	Income Tax

Estimation of Interest on Term Loan ***(₹ in lakh)***

Years	***Opening Balance***	***Repayment***	***Closing Balance***	***Interest***
1	1.81	0.12	1.69	0.16
2	1.69	0.24	1.45	0.16
3	1.45	0.48	0.97	0.12
4	0.97	0.60	0.37	0.07
5	0.37	0.37	0.00	0.01
		1.81		

WDV Depreciation

Particulars / years	*1*	*2*	*3*	*4*
Plant and Machinery				
Cost	2.21	0.44	0.09	0.02
Depreciation	1.77	0.35	0.07	0.01
WDV	0.44	0.09	0.02	0.00

Projected Profitability

Particulars / Years	*1*	*2*	*3*	*4*	*5*
Revenue through Savings					
Fuel savings	2.01	2.01	2.01	2.01	2.01
Total Revenue (A)	2.01	2.01	2.01	2.01	2.01
Expenses					
O & M Expenses	0.24	0.25	0.27	0.28	0.29
Total Expenses (B)	0.24	0.25	0.27	0.28	0.29
PBDIT (A)-(B)	1.77	1.75	1.74	1.73	1.71
Interest	0.16	0.16	0.12	0.07	0.01
PBDT	1.60	1.60	1.62	1.66	1.70
Depreciation	0.13	0.13	0.13	0.13	0.13
PBT	1.48	1.47	1.49	1.53	1.58
Income tax	0.00	0.42	0.53	0.56	0.58
Profit after tax (PAT)	1.48	1.05	0.96	0.97	1.00

Computation of Tax ***₹(in lakh)***

Particulars / Years	*1*	*2*	*3*	*4*	*5*
Profit before tax	1.48	1.47	1.49	1.53	1.58
Add: Book depreciation	0.13	0.13	0.13	0.13	0.13
Less: WDV depreciation	1.77	0.35	0.07	0.01	-
Taxable profit	(0.16)	1.24	1.55	1.64	1.70
Income Tax	-	0.42	0.53	0.56	0.58

Projected Balance Sheet ***₹(in lakh)***

Particulars / Years	*1*	*2*	*3*	*4*	*5*
Liabilities					
Share Capital (D)	0.60	0.60	0.60	0.60	0.60
Reserves & Surplus (E)	1.48	2.52	3.49	4.46	5.46
Term Loans (F)	1.69	1.45	0.97	0.37	0.00
Total Liabilities D)+(E)+(F)	3.77	4.58	5.06	5.43	6.06
Assets					
Gross Fixed Assets	2.42	2.42	2.42	2.42	2.42
Less: Accm. Depreciation	0.13	0.26	0.38	0.51	0.64
Net Fixed Assets	2.29	2.16	2.03	1.91	1.78
Cash & Bank Balance	1.48	2.42	3.03	3.53	4.28
TOTAL ASSETS	3.77	4.58	5.06	5.43	6.06
Net Worth	2.08	3.13	4.09	5.06	6.06
Dept equity ratio	0.81	0.46	0.24	0.07	0.00

Projected Cash Flow: ***₹(in lakh)***

Particulars / Years	0	1	2	3	4	5
Sources						
Share Capital	0.60	-	-	-	-	-
Term Loan	1.81	-	-	-	-	-
Profit After tax		1.48	1.05	0.96	0.97	1.00
Depreciation		0.13	0.13	0.13	0.13	0.13
Total Sources	2.42	1.60	1.17	1.09	1.10	1.12
Application						
Capital Expenditure	2.42					
Repayment of Loan	-	0.12	0.24	0.48	0.60	0.37
Total Application	2.42	0.12	0.24	0.48	0.60	0.37
Net Surplus	-	1.48	0.93	0.61	0.50	0.75
Add: Opening Balance	-	-	1.48	2.42	3.03	3.53
Closing Balance	-	1.48	2.42	3.03	3.53	4.28

Calculation of Internal Rate of Return ***₹(in lakh)***

Particulars / months	0	1	2	3	4	5
Profit after Tax		1.48	1.05	0.96	0.97	1.00
Depreciation		0.13	0.13	0.13	0.13	0.13
Interest on Term Loan		0.16	0.16	0.12	0.07	0.01
Salvage/Realizable value	-	-	-	-	-	-
Cash outflow	(2.42)	-	-	-	-	-
Net Cash flow	(2.42)	1.77	1.33	1.22	1.17	1.14
IRR	52.91%					

NPV	2.71

Break Even Point ***₹(in lakh)***

Particulars / Years	1	2	3	4	5
Variable Expenses					
Oper. & Maintenance Exp (75%)	0.18	0.19	0.20	0.21	0.22
Sub Total (G)	0.18	0.19	0.20	0.21	0.22
Fixed Expenses					
Oper. & Maintenance Exp (25%)	0.06	0.06	0.07	0.07	0.07
Interest on Term Loan	0.16	0.16	0.12	0.07	0.01
Depreciation *(H)*	0.13	0.13	0.13	0.13	0.13
Sub Total (I)	0.35	0.35	0.32	0.27	0.21
Sales (J)	2.01	2.01	2.01	2.01	2.01
Contribution (K)	1.83	1.82	1.81	1.80	1.79
Break Even Point (L= G/I)	19.25%	19.20%	17.63%	14.93%	11.87%
Cash Break Even {(I)-(H)}	12.27%	12.19%	10.58%	7.83%	4.74%
BREAK EVEN SALES (J)*(L)	0.39	0.39	0.35	0.30	0.24

Return on Investment ***₹(in lakh)***

Particulars / Years	1	2	3	4	5	Total
Net Profit Before Taxes	1.48	1.47	1.49	1.53	1.58	7.54
Net Worth	2.08	3.13	4.09	5.06	6.06	20.42
						32.64%

Debt Service Coverage Ratio ***₹(in lakh)***

Particulars / Years	1	2	3	4	5	Total
Cash Inflow						
Profit after Tax	1.48	1.05	0.96	0.97	1.00	5.46
Depreciation	0.13	0.13	0.13	0.13	0.13	0.64
Interest on Term Loan	0.16	0.16	0.12	0.07	0.01	0.64
TOTAL (M)	1.77	1.33	1.22	1.17	1.14	6.73

Debt

Interest on Term Loan	0.16	0.16	0.12	0.07	0.01	0.53
Repayment of Term Loan	0.12	0.24	0.48	0.60	0.37	1.81
TOTAL (N)	0.28	0.40	0.60	0.67	0.38	2.34
Average DSCR (M/N)	2.88					

Annexure -6: Details of procurement and implementation plan with timelines

S. No.	Activity	Weeks				
		1	2	3	4	5
1	Issue of purchase order					
2	Receipt of the equipment					
3	Civil work at site for foundation and mounting of panel					
4	Commissioning and testing					

* Note: During commissioning, shut down period of about 2 to 3 hours will be required.

Annexure -7: Details of Technology/Equipment and Service Providers

S. No	Technology	Name of Service Provider	Address	Contact Person and No.	Email ID
1	APFC Panel	Crystal Controls	309, Abhishree complex, Opp. Star India Bazar, Nr. Jodhpur Char Rasta, satellite,	Mr. Dhanji Ghinaiya - 09714714192,	dghinaiya@gmail.com
2	APFC Panel	Meher Capacitors (Schenider Electric)	C/o Industrial Cares 302 Royal Comnplex Bhutkhana Chowk Debar Road Rajkot-360002	Mr Ketan Budhelia 9825216761	indcares_ad1@sancharnet.in
3	APFC Panel	Siemens Limited	Industrial Solutions and Services, Sector 2, Plot 2, Kharghar Node, Navi Mumbai - 410210	022 - 27568000	Olm.india@siemens.com
4	APFC Panel	Shreem Capacitors Pvt. Ltd.	P.B.No. 43, Industrial Estate, Jaysingpur – 416144, Dist: Kolhapur	02322 - 221021	marketing@shreemcapacitors .com
5	APFC Panel	Tech-Mark Automation & Controls	Plot No. 5, Shriman Society, Opp. Pune People's Co-operative Bank, Karve Nagar, PUNE , India 411 052	020-25423284	rahul@tech-mark.net aparna@tech-mark.net
6	APFC Panel	Shiv Engineering	PLOT NO. 976/8/4, GIDC ESTATE, MAKARPURA, Vadodara - 390010, Gujarat, India	Mr. Rakesh Mayavanshi - 0265-6451780, 09898688978	
7	APFC Panel	Standard Capacitors	No. B-70/43, DSIDC Complex, Lawrence Road, Industrial Area New Delhi, 110 035, India	Mr. Subhash C. Gupta 011-27181490/ 27101958, 09810049253	standcap@gmail.com, standcap2004@yahoo.co.in

S. No	Technology	Name of Service Provider	Address	Contact Person and No.	Email ID
8	APFC Panel	Diya Industries	PLOT NO. 7, PART-2, BILESHWAR INDUSTRIAL ESTATE, OPP. G.V.M.M., KATHWADA, GIDC ROAD, ODHAV, Ahmedabad - 382415, Gujarat, India	Mr. Mahesh Soni 079-22894286, 09725005002	diya.soni079@yahoo.co.in
9	APFC Panel	Datar Power management Pvt. Ltd.	D-35/1, MIDC Ambad, Nashik 422010 Maharashtra, India	0253-6610105 / 305	info@datarpower.com, datarservice@rediffmail.com
10	APFC Panel	MATRIX Motor Kontrol	30-A, Sector-A,Sirgitty Industrial Area Bilaspur, Chhattisgarh - 495 004, India	Mr. Anil Agrawal 07752-213581, 9752626444/ 9425219134	mail@matrixkontrol.com, matrixkontrol@gmail.com
11	APFC Panel	Rink Electronics & Electricals	54, SHREE RAM INDUSTRIAL ESTATE, ANUP ENGG. COMPOUND, B/H. CMC MILL, NEAR SONI CHAWL, ODHAV, Ahmedabad - 382415, Gujarat, India	Mr. Sanjay Patel 079-22976381, 09825012479	
12	APFC Panel	Shreenath Engineering	Plot no. 322/A, Near Asian Paint Square, Opp. Laxmi Hotel, Ankleshwar - 393002, Gujarat, India	Mr. Bipin V. Dudhat 02646-222298, 09428887650, 09925250190	

Annexure -8: Quotations or Techno-Commercial Bids for New Technology

CRYSTAL CONTROLS
309, ABHISHREE COMPLEX, OPP. STAR INDIA BAZAR, NR. JODHPUR CHAR RASTA, SATELLITE, AHMEDABAD - 15.
TELEFAX : (079) 2692 3306 **(M)** 98241 30299, 97147 14192 **E-MAIL** : crystalcontrols@gmail.com

Ref.: CC/ENE/qnt/0153/09-10 **Dt.: 25/03/2010**

To,
See-Tech Solution Pvt. Ltd.
Nagpur, Maharashtra.

Kind Attn. : Mr. Milind Chittawar
Subject : Quotation for APFC PANEL.

Respected Sir,

This has reference to our telephonic discussion for above-mentioned requirement.

We hope our product is in line with your requirement and prices quoted are attractive.

Sr. No.	Description	Qty.	Price (Rs.)
1.	CONTACTOR BASED APFC PANEL WITH MPP TYPE CAPACITOR	PER KVAR	1050/-
2.	CONTACTOR BASED APFC PANEL WITH HARMONIC FILTER & MPP TYPE CAPACITOR	PER KVAR	1200/-

Note: Above panels are with MCCB /Fixed type ACB as incomer. Rs. 125 per KVAR extra if MDO type ACB required.

Terms and Conditions:

Payment Terms	: Against proforma invoice before dispatch.
Taxes	: Excise at actual + 2 % CST (Out of Gujarat) 5% VAT for Gujarat
Packing/ Forwarding	: 1 %
Octroi	: Extra at actual (if applicable)
Delivery Period	: 3-4 weeks after receiving Purchase order.
Freight	: At actual
Validity	: 30 days

Warranty: Instruments offered by us are warranted for a period of one year from the date of invoice against any manufacturing defects.

Your prompt and positive action regarding this matter will enable us to serve you better.

Thanking You.

Yours Sincerely

For, **CRYSTAL CONTROLS**

Dhanji Ghinaiya
097147 14192

Standard application form for financial assistance to existing units
(upto and including Rs. 50 lakh)

I Applicant details

1	Name of Unit	
2	Address for correspondence	
3	Constitution	
4	SSI Registration. No.	
5	Date of Incorporation	
6	Date of Commencement of Operations	
7	Activity / Industry	

	Registered Office	Factory / Service Establishment (existing)	Factory / Service Establishment (proposed)
Full Address			
Contact Person(s)			
Tel No.			
Fax No.			
E mail address			

II Promoters/Directors

Bio-data of all the promoters/directors of the unit (Preferably make separate sheet for each promoter/director)

Promoter/Director	
Name	
Full Address(incl Tel no./ mobile no)	
Age	
Passport No.	
Father's / husband's name	
Qualification	
Experience	
Functional responsibility in the unit	
Relationship with Chief Promoter	
Shareholding in the unit	
Net worth	

Pl. furnish details of any other shareholder having more than 5% in the unit.

III. Products Manufactured

Sl. No.	Product	Installed capacity p.a.	Present capacity utilisation	End use of product	Export orientation
					Yes/ No

IV. Existing Facilities with Banks /FIs incl. SIDBI

a	Name of the Bank(s) / FI, Branch,	
b	Dealing person and contact tel. no.(s)..	
c	Dealing since (each Bank / FI)	

Facilities enjoyed :

Nature of facility (bankwise)	Amount (Rs. lakh)		Rate of interest	Nature of Security and value
	Sanctioned	Outstanding as on ___ ___		
Fund based Basedkfjdffkldkfjdfkjdfkjdfkdjfkdjf				
-Term Loan				
-Working capital				
Non Fund Based				

Are there any defaults ? Yes/No

V. Financial Position of applicant unit/ associate concern

(Rs. lakh)

	Net-worth			Sales			Net profit		
	Y1	Y2	Y3	Y1	Y2	Y3	Y1	Y2	Y3
Applicant unit									
Associate concern I									
Associate concern II									

Details of Associate concerns to be given as per **Annexure I**.

VI. Project Details

6.1. Purpose for which assistance now required :

	Purpose	
1	Indicate whether Expansion /diversification / modernisation and details	Technology Upgradation for Energy Efficiency
2	If new products envisaged give details	N/A
3	Details of expected incremental qualitative / quantitative benefits	Saving in the fuel bill to the extent of 20-25% leading to commensurate improvement in the bottom line of the applicant unit.
4	Expected month/year of implementation	10 weeks
5	No. of employees existing and additional	

Cost of Project (Rs. Lakh)

S. No	Details	Total Amount
1	Civil Works	0.00
2	Plant & Machinery (incl. installation) * -Indigenous -Imported	1.96
3	Professional charges	0.00
4	Erection & commisioning charge	0.20
5	Preliminary & pre-operative expenses [Loan syndication fee etc.] &	0.05

6	Taxes(CST)	0.21
7	Contigency	0.00
	TOTAL	2.42
** Details of Plant and machinery/ Misc. fixed assets at* ***Annexure II and III***		

Indicate details of expenditure already incurred, if any and how the expenditure was financed ?

6.3. **Means of Finance**

(Rs. Lakh)

S. No. No.	Details	Total
1	Additional share capital / Internal accruals	0.61
2	Interest free Unsecured Loans	-
3	Term Loan proposed from SIDBI / Banks inclusive of subsidy ####	1.81
	Total	2.42
# ### In terms of existing guidelines of Ministry of MSME , GoI the subsidy amount is received on implementation of the project Say within 3 months therefore the amount of subsidy is included in the term laon amount as bridge loan and funded by the bank On receipt of the subsidy from the GoI it is adjusted towards the loan amount.		

#

6.4 Whether additional Working Capital required for the unit. If yes, amount and arrangements proposed may be indicated:

6.5 **Technology**

S. No.	Item	
1	Any Technical collaboration? If yes, details	
2	Details of main technical professionals employed	
3	Any quality certification obtained ? If yes enclose certificate.	

6.6 **Raw material / Labour/ Utilities**

1	Raw material (Details, arrangement, sources and distance)	
2	Power	Connected Load Utilised load Requirement of power for Additional machines Back-up arrangement (DG)
3	Other critical inputs if any	

6.7 **Marketing & Selling Arrangements**

Items	Applicants remarks
Main Markets (Locations)	
Main buyers, Indicate clearly if the unit is relying on a single buyer	
Indicate competitors	
Whether product has multiple applications	

Distribution channels (e.g. direct sales, retail network, distribution network)	
Marketing team details, if any.	
Orders on hand (enclose copies)	

6.8 **Projected profitability** : Statement to be enclosed as per **Annexure IV**.

6.9 **Others**

Items	
Please indicate the various licenses / consents for the project / unit already obtained from the respective authorities	
Please indicate licenses / consents for the project / unit that are yet to be obtained.	
Category as per pollution control dept. If polluting, pollution control measures taken	
Whether the project is entitled for any govt. subsidy, tax exemptions. Details thereof	
Repayment period (in months) sought including repayment holiday requested, if any,	
Details of Collateral security offered and value (basis).	
List of guarantors for the proposed loan	

Enclose documents as indicated in the check list at Annexure V.

6.10 **Strengths / Weaknesses of the borrower** (such as market standing, product/ service differentiation, technical expertise, infrastructure facilities etc.)

Strengths	

Weaknesses	

DECLARATION

I/We certify that all information furnished by me/ us above and in the appendix/ annexures/ statements and other papers enclosed is true; I/we have no borrowing arrangements for the unit with any bank / FI except as indicated in the application; that there are no overdues / statutory dues/government enquiry/proceedings/prosecution against the unit/associate concerns/ promoters/directors except as indicated in the application; that no legal action has been/ is being taken against the unit/associate concerns/promoters/directors; that I/ we shall furnish all other information that may be required by SIDBI in connection with my/our application and I/ We have no objection to your furnishing the information submitted by me/ us to any agency as you may deem fit in connection with consideration of the assistance. We have no objection to SIDBI/ its representatives making suitable enquiries while considering the application.

Place : **Signature**

Date **Name & Designation**

Annexure I

Details of Associate Concerns

Name , Address & products manufactured	Existing since	Name & Address of existing Banker (s)	Facilities Enjoyed	Share holding of the main promoter(s) of applicant unit

Annexure II

Particulars of machinery proposed for the project

Name of machinery, (model / specification)	Name of manufacturer, contact person, e-mail address telephone no.	Lead time for delivery of machinery	Invoice price (for indigenous machinery) / CIF price (for imported) (Rs. lakh)	Purpose /use of machine	Basis of selection of supplier	Remarks reg. after sale service etc.
APFC Panel	309, Abhishree complex, Opp. Star India Bazar, Nr. Jodhpur Char Rasta, satellite,	4 Weeks	1.96	Controlling pow0065r factor	Crediability of the Technolgy Provider	

- Furnish competitive quotations, catalogues / invoice for each machinery proposed to be acquired
- In case of second hand /fabricated machinery, indicate the need / reasons for acquiring such machinery. Also enclose Chartered Engineer's certificate regarding residual value and life in respect of second hand machinery.

Annexure III

Details of Misc. Assets / equipment Proposed

S.No.	Name of item	Supplier	Cost (Rs. lakh)	Purpose/ use of MFA	Remarks

Annexure IV

Profitability projections for the Unit/ Company as a whole*

S.No.	Item	Actuals for previous year	Y1	Y2	Y3	Y4	Y5	TOTAL
1	Total Income		2.01	2.01	2.01	2.01	2.01	10.04
2	Raw materials							
	Power and fuel							
	Wages and salaries							
	Selling expenses							
	Other expenses		0.24	0.25	0.27	0.28	0.29	1.33
	Total Cost		0.24	0.25	0.27	0.28	0.29	1.33
3	Profit before depreciation, Interest and taxes (PBDIT) (2 - 1)		1.77	1.75	1.74	1.73	1.71	8.71
4	Interest on Term Loan		0.16	0.16	0.12	0.07	0.01	0.53
5	Interest on Working Capital							
6	Interest on unsecured loans							
7	Depreciation		0.13	0.13	0.13	0.13	0.13	0.64
8	Profit before Tax (3 - 4 - 5 - 6 - 7)		1.48	1.47	1.49	1.53	1.58	7.54
9	Tax		0.00	0.42	0.53	0.56	0.58	2.09
10	Profit after Tax (8 - 9)		1.48	1.05	0.96	0.97	1.00	5.46
11	Dividends/ Withdrawals							
12	Cash Accruals (10 - 11 + 7)		1.61	1.18	1.09	1.10	1.13	6.1
13	Repayments of all term liabilities (Principal)		0.12	0.24	0.48	0.60	0.37	1.81
14	Debt Service Coverage Ratio ((10+7+4)/(13+4))		6.23	3.35	2.01	1.74	2.98	2.83
15	Average DSCR (Total of 10+7+4 for projected period/(Total of 13+4 for projected period)		2.83					

* Please give projections for the entire tenure of SIDBI / Bank loan.

Annexure V

CHECK LIST of documents to be submitted along with the application

S. No.	Documents	Y/N	Reasons for Non-submission
1	SSI Regn. / CA certificate certifying SSI status		
2	Certified copies of Memorandum & Articles of association / Partnership Deed		
3	Audited financial results for the last three years of Applicant unit		
4	Copies of lease deed / sale deed on which the unit is situated		
5	Copies of sanction letters from commercial banks / FIs which have sanctioned assistance to the unit		
6	NOC from pollution control board/consent letter, if applicable		
7	IT Returns/Assessment orders/Sales tax returns of the Applicant Unit/ promoters/directors for 2 years		
8	List of existing plant and machinery		
9	Competitive quotations for machines and Misc. fixed assets proposed to be acquired under the scheme		
10	Duly signed latest net worth statements of promoters/directors & guarantors in SIDBI format; In case of guarantors please furnish, Name, Age, Father's/Husband's name, residential address. Details of similar guarantee, if any, given to other institutions		
11	2 sets of photographs along with signatures of all promoters/directors/guarantors duly certified by a Bank or Gazetted Officer.		
12	Audited financial results for last three years for each associate concerns. If applicable.		
13	Copy of title deed of collateral security and valuation report		

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