- Identify management strength and weakness
- Analyze stakeholders' needs
- Anticipate barriers to implement
- Estimate the future trend

4) Selecting EC Measures/Projects
   - Selecting EC Measures
   - Selecting EC Projects
   - Make out a plan/program
5) Prioritizing
6) Developing an Action Plan
7) Training the related members
8) Awareness-raising and Motivation
9) Implementing the Action Plan (including monitoring and controlling
10) Evaluation (Management review)
11) Analysis for future planning (Standardization and Dissemination)

The following figure shows these Key Steps for implementing Energy Conservation activities.

Steps of the Key Step Approach.

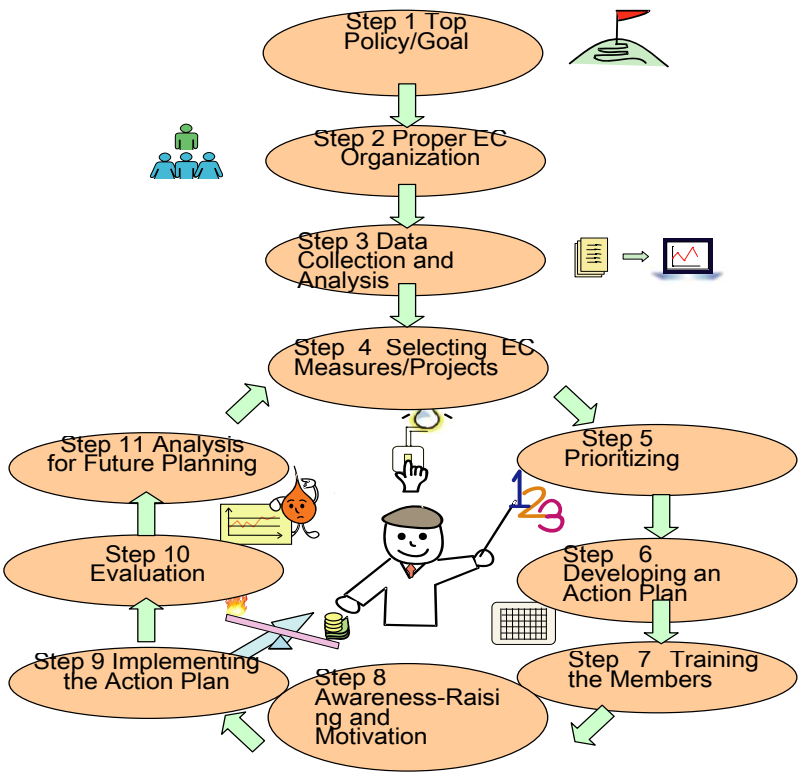

Figure 14: Key Step Approach

Each step is explained in this order as below:

Step 1: Top Management policy/Goal

It is the most important for the success of Energy Conservation activities within companies or factories to have clear and official commitment of top management – either the corporate top (senior) management or factory managers. The top (senior) management shall announce explicit commitment to the Energy Management (or Energy Conservation) and behave along this line – for example, participate in EC (Energy Conservation) events and encourage the people there for EC promotion.

This Handbook is primarily meant for Energy Managers for the use of EC promotion within factories, on the assumption that top management has already committed to that. However, there may be cases where top management would learn about Energy Management (or Energy Conservation) by this Handbook, or Energy Managers would make efforts to persuade top management to support or commit to Energy Management (or Energy Conservation) with the help of this Handbook.

(1) Develop a policy statement

It is desired that the top (senior) management announces the "Energy Policy Statement". This is very effective to let people inside and outside the company clearly knows the management's commitment to Energy Management (or Energy

Conservation). The format of the energy policy statement is various, but it usually includes the goal or objective of the company and the more concrete targets in the field of Energy Management (or Energy Conservation). It often shows the major measures and timetables. The statement shall match the company's mission statement or overall management strategy plan.

(2) Set targets

The targets shall be concrete and specific so that everyone can understand it.

Step 2: Proper EC Organization including Assignment of Energy Manager

In some countries, where the EC Promotion Act is in force, the designated factories have obligation of assigning Energy Managers. In relation to Energy Management, however, the word "Energy Managers" is here used as a Manager or a Coordinator, separate from the above-said legal obligation, who works exclusively for Energy Management (or Energy Conservation) purposes, ranging from gathering energy-related information to drafting EC plans/programs and promoting or coordinating during implementation. To the proper Energy Management, this type of Energy Manager is indispensable. How to position this Energy Manager within the company organization is also an important issue and needs careful decision. In some cases, Energy Committee, with members from the major departments, may be formed to assure the company-wide or factory-wide cooperation, as shown in the following figure.

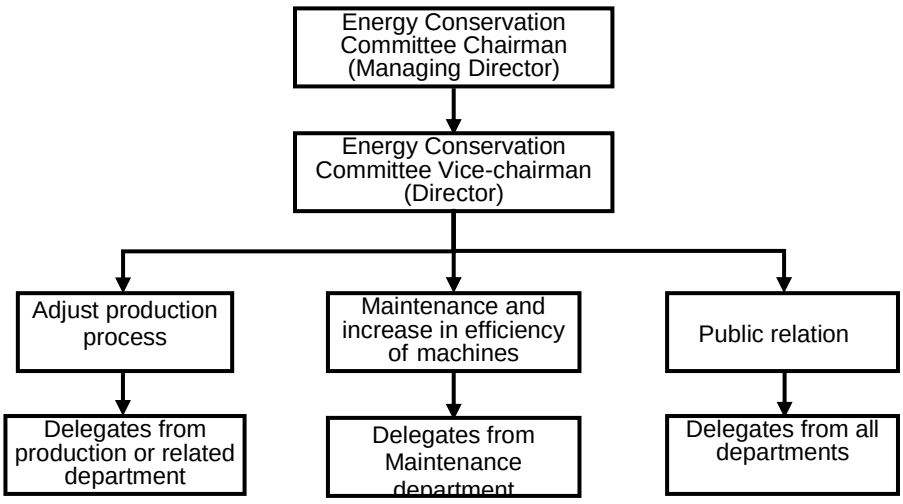

Figure 15: Example of energy conservation committee's organization

Actually there are many ways of forming EC organization, depending on the situation of factories or institutions, such as the size, kind of business, etc. In any case, it is very effective to utilize SGA (Small Group Activities) and there are also many ways to do that. The important thing is to design and make out the organization carefully to meet the purpose. In practical sense to do that, there may be the following five widely applicable ways of establishing the organization.

(1) Utilize Line (Formal) Job-related Organization for TEM purpose

(2) Use TPM Organization for TEM purpose

(3) Use TQM Organization for TEM purpose

(4) Add Employee Suggestion System to Energy Conservation Organization for TEM purpose

(5) Utilize another organization for TEM purpose

The easy and practical way may be starting from easy form of TQM, or QCC (Quality Control Circle) activities.

Furthermore, because TPM is closely related to job-related organization, (1) and (2) may be often give the same kind of results. (An example of this form is shown in Part 3, 2 “How is SGA related to Energy Conservation?” (page 21).

Step 3: Data collection and Analysis

Before trying to make out any future programs or action plans, it is essential for the company or factory management to understand the current situation in a proper and accurate manner. This includes not only the status of their own operation but also other relevant information such as competitors’ operation, circumstances around the company and their trend in future, positioning the company itself in the local and global markets, and so on.

The key steps for this purpose are shown below:

(1) Collect data on current energy use and analyze them

The current data of energy consumption shall be obtained by measurement, calculation or estimation for the individual operation units (energy cost centers) with classification of kinds of energy (fuels types, utility types, etc.). The data shall be gathered regularly and arranged/summarized daily, weekly, monthly, by seasons or annually. Then the data shall be checked for the past historical trend and interpreted with relation to operational modes and production scales. That shall also be utilized for the forecast of future trends.

(2) Identify Management Strength and Weakness

Then the data shall be compared with the best practice data or benchmarks in the industry. If such reference data are hardly available, the historical data of their own operation and estimated data for the competitors would be utilized for this purpose. At the same time, the strength and the weakness of the company shall be evaluated considering the competitors’ situations in the local and global markets. This would serve the purpose of making out a realistic Energy Management plan later.

(3) Analyze stakeholders' needs

Stakeholders are top (and senior) management, middle managers, staff/engineers and workers/operators. Other stakeholders in the normal business sense, such as the shareholders and lenders, need not be considered here for the moment. The needs and intention of those stakeholders shall be summarized and taken into consideration.

(4) Anticipate barriers to implement

Making out a realistic and practical program also needs consideration of anticipated barriers for the implementation of Energy Management program or action plan.

Some possible examples of such barriers are:

- Insufficient understanding and support by top management
- Insufficient understanding and cooperation of managers within factories
- Insufficient awareness of people to get successful results
- Insufficient capability of people due to lack of training
- Insufficient available technology due to lack of information
- Insufficient availability of manpower for EC activities within factories
- Insufficient budget for EC activities due to the company's financial status

(5) Estimate the future trend

The future trend of energy supply-demand balance is estimated based on checking and analysis of the historical data. That data of future trend would also be a basis of the program of excellent-Energy Management.

In analyzing the collected data and developing ideas of Energy Conservation, it is very often useful to think of the following techniques of finding problems and solutions:

Suppress: Using during the time in which it is not necessary to use. Examples include using electricity before or after working hours or when there is no one working.

Stop: Using equipment when it is not necessary. Examples include using all lightings during break time.

Reduce: Amount, pressure, temperature, speed, or brightness, or quality that exceed requirement. Examples include reducing intensity of lighting if not necessary.

Prevent: Prevent leakage or loss of energy. Examples include reducing space that leads to outside in order to prevent the leakage of heat into air.

Improve: Improve or repair machines to increase efficiency or modify manufacturing process to the one which enables us to conserve energy more. Examples include changing transparent sheet over the roof.

Store: Re-use the discarded energy. Examples include re-using heat from exhaust fume in order to reduce use of electric heater to warm heavy oil.

Change: Change how to use, type of energy, or energy sources to a suitable one from technical or economic point of view. Examples include changing the grade of heavy oil to an appropriate one or changing furnace systems or welding machines to the ones that use gas.

Increase Production

Examples include improving production process. This will lead to the reduction of energy usage per production amount.

Step 4: Selecting EC Measures/Projects

Based on the aforesaid understanding of the current status and position of the company (factory), various EC measures are studied and many EC Projects are proposed. Comparison among these measures and projects are made with consideration of a lot of factors, such as technical, economic, intangible, and so on.

Then a plan/program is developed based on these study results. To do this, it is very important to consider the following issues:

The plan/program shall be realistic, practical and attainable with due consideration of many related elements and management resources of the company or factory. It also shall be expressed in terms of the measurable or quantifiable parameters, including Fuel Usage Index, Electricity Usage Index, Energy Usage Index, etc. It usually includes a lot of managerial measures of Energy Management (or Energy Conservation) promotion activities such as motivation techniques, means to improve awareness, training, and so on. In other words, the following items are often useful in comparing and selecting alternative plans:

1. Effects of energy conservation: Activities that can conserve energy more than others are more promising.
2. Investment amount: Activities that require less investment are more promising.
3. Pay-back period: Activities with short pay-back period for investment amount in equipment are more promising because all energy conservation will be profits after pay-back period.
4. Length of implementation: Activities that can be performed in a short period are more promising because they do not influence production process of the factory.

5. Number of personnel required: Activities that require a large number of personnel tend to be burdensome.
6. Importance to executives and reputation of the company: Some activities provide little financial benefit but cause good image or reputation.
7. Risk of the project: Some activities bring about big financial benefits but involve high risk from various factors. In this case projects have less importance.

Step 5: Prioritizing

Many EC measures and projects are prioritized based on the internal studies including comparison among their alternatives, in the manner explained in the above.

Step 6: Developing an Action Plan

The priority consideration then gives birth to the Action Plan. The plan shall be clear, practical and comprehensive with proper schedule and budgeting.

Shown below is an example of such a plan.

Table 4.1: Example of energy saving plan

Detail of the plan	Length (Months)						Person in charge	Budget	Inspected by
	1	2	3	4	5	6			
1. Turn off electricity when there is no one around							Mr. Prayat		
2. Turn off air-conditioner 30 minutes before stop working							Miss Aom		
3. Reduce welding machine's current according to the specification of the metal used for welding							Mr. Matthayas		
4. Close welding machine after working							Miss Thanom		

Step 7: Training the related members

This issue is very important to secure the success of project Implementation, because the people are the most important resources that determines the success of the plan.

Step 8: **Awareness-raising and Motivation**

To have the total power of "all members' participation" combined together, it is also very crucial how to raise awareness and motivation of related people within the company (or factory).

Shown below is an example of awareness raising plan.

Table 4.2: Example of awareness raising campaign

Detail of the plan	Length (Months)						Person in charge	Budget	Inspected by
	1	2	3	4	5	6			
1. Display the results of energy conservation every month	*	*	*	*	*	*	Mr.Prayat	-	Mr. Laaied
2. Evaluate every month	*	*	*	*	*		Miss Aom	-	Mr. Laaied
3. Perform energy conservation activity every 6 months	*					*	Mr. Matthayas	-	Mr. Laaied
4. Perform "Finding measures" activity in order to make energy conservation plan	*					*	Miss Thanom	-	Mr. Laaied
5. Provide rewards to sections that have achieved high efficiency						*		-	

Step 9: Implementing the Action Plan (including monitoring and controlling)

The organizational force established in the said planning step shall be utilized fully to ensure smooth implementation of the program. Energy Manager and/or the committee shall continue working to promote the activities and report to top management on the status quo.

The actual records of implementation shall be closely watched and monitored. If some problems arise, or some variance between the planned figures and the actual record is observed, then necessary actions shall be taken immediately.

Step 10: Evaluation (Management Review)

After the program is completed, the report shall be submitted to the top (senior) management. The results shall be assessed and analyzed for any good and bad points. The lesson shall be utilized as a feedback in the subsequent plan/program.

Thus the activities are repeated to form a cyclic movement.

The result of evaluation must be announced on the board in order to inform employees, so that they will be given motivation for the next activities. Evaluation can be divided into 2 types as follows.

- Short-term evaluation for the follow-up of the performance
- Long-term evaluation for the evaluation of the whole project that will be used for the future planning

Evaluation can be made in the following 3 levels.

1. **Self Audit:** Self evaluation that is made in a small group or a department based on the predefined form. (Inspection may be made every month).

2. Upper **Manager Audit:** Evaluation that is made by the section/department manager intended to raise performance of the activity. (Inspection may be made every 3 month).
3. **Top Management Audit:** Evaluation made by the executives of the organization that will be used for the evaluation of annual bonus. (Inspection may be made every 6 month).

In some cases, top management could think of adopting external people (outside consultants) to evaluate the results of Energy Conservation activities. Even in those cases, internal evaluation should be made to gain the fruits as much as possible.

Step 11: Analysis for future planning (Standardization and Dissemination)

The successful results and the lessons learned are to be analyzed and arranged into the standard form which can be easily utilized by anyone in the factory. The standardized documents or information are to be disseminated all over the company.

Moreover, Energy Conservation should be incorporated as a part of daily jobs and performed continuously in a systematic manner. For this purpose, activities for energy conservation must be incorporated as a part of company's basic or business plan. If a problem is found as a result of evaluation, improvement or modification will be done and the objectives will be achieved. If the results reach or exceed the objective, information must be gathered in order to set it as a "Work Standard," which will be used in setting a new activity plan.

4.4 Small Group Activities (SGA)

Small Group Activity (SGA) gives employees the problem solving tools they need to eliminate obstacles to Total Productivity, the cumination of zero break-downs, zero defects, and zero waste. Enterprising employees identify the problem, be it in "man, material, method, or machine," and develop cost-effective and practical methods for solving the problem.

4.5 Importance of SGA

SGA are activities by group of employees at operator (working Group) level. They aim to solve problems that occur at the place taken care of by each employee and put emphasis on participation and team work. Factories can apply small group activities to many kinds of work along with normal work or other measures that are already underway. The burden on employees will not increase because of small group activities. They are not only bringing benefits to factories but also boosting the knowledge and ability in performing jobs of employees, improving communication among employees, increasing creativity, and make it possible to express their own proposal with less hesitation to management. As a result,

employees will start to think "This is our problem." This SGA can be applied to Energy Conservation, too, with successful results, as shown in Figure 28.

4.6 How SGA leads to Energy Conservation?

An excellent example of organizational structure that promotes energy management emphasizing participation is that they form overlapping small groups as in figure 14. The feature of this structure is that a small group for energy management is distributed to various sections as in figure 15, which is a recipe for success of Total Energy Management (TEM) and makes various communications and management of activities more efficient and effective.

Small group activities for total energy management (TEM) are the activities in which employees of all levels in production or management, starting from the top to the bottom, participate in order to reduce loss related to their own job by improving their job. In order for the activities to succeed, management of all levels must provide support in necessary training and equipment, communication of policies, and the setting of problems to solve

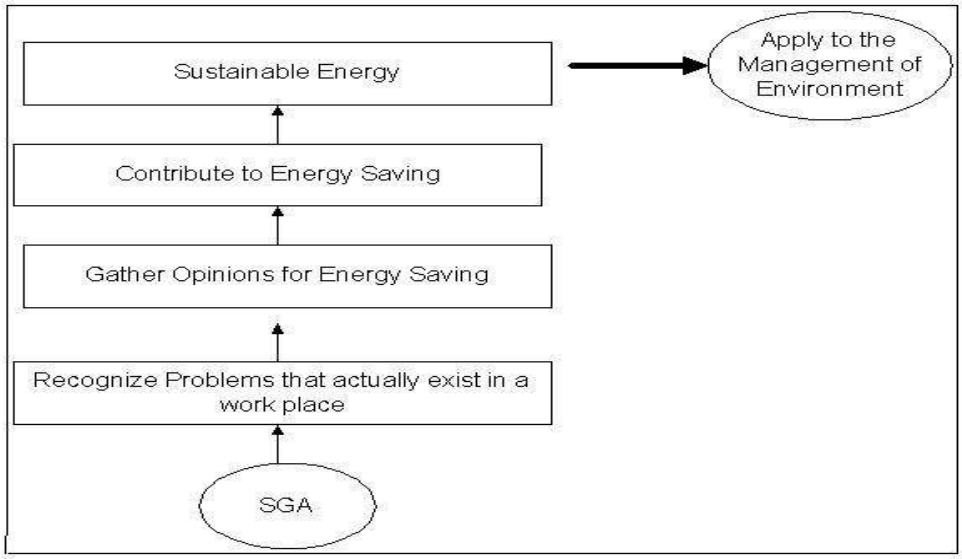

Figure 16: Relationship of SGA and energy saving

Small group activities for TEM can be divided into 4 or 5 levels depending on the scale of the organization. This division is in order to emphasize the fact that everyone must improve in their job under the responsibility to each other. It also enables us to make improvement without overlapping. The following example shows utilizing the existing job-related organization as much as possible, as already mentioned in Part 2, 2."Strategy for Improving the Efficiency of Energy Usage further", Step 2 Proper EC Organization including Assignment of Energy Manager.

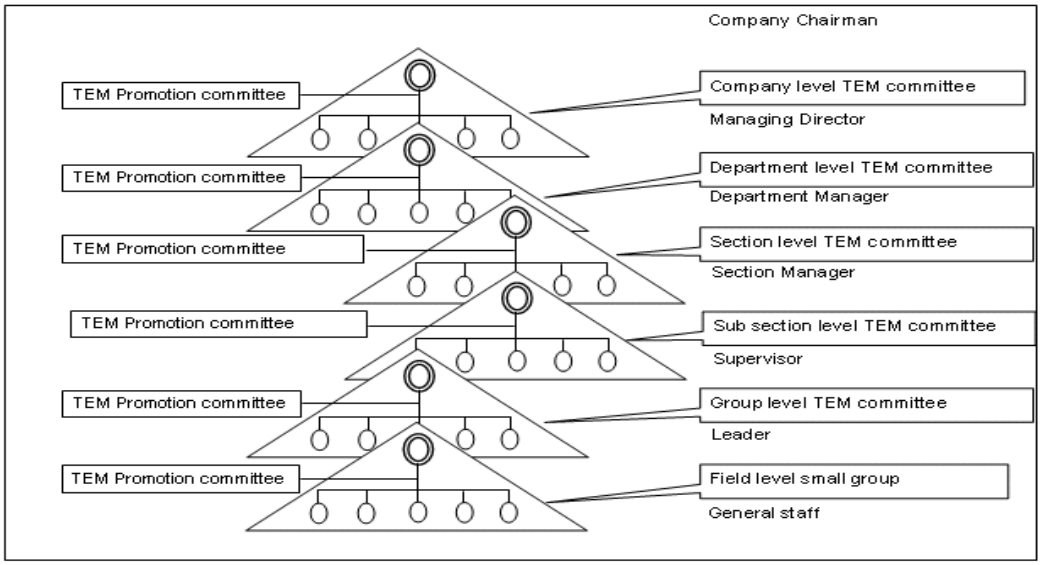

Figure 17: Positioning of SGA in Main Job Structure

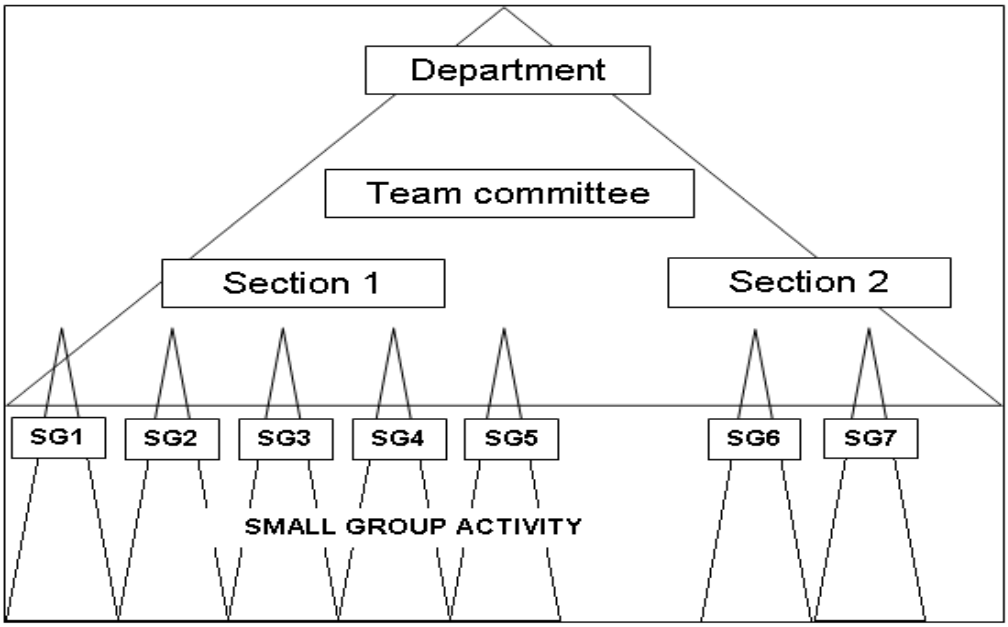

Figure 18: Positioning of SGA in Main Job Structure

4.7 Executives level

- Define the policy and target for Total Energy Management
- Follow-up and manage activities to make sure that activities are implemented according to the policy
- Consider opinions and suggestions from the promotion office
- Consider reports from promotion committee from various levels

4.8 Level of Total Energy Management promotion office

- Make sure that whole activities are done in the correct direction, without delay and smoothly
- Find a suitable method that makes it possible to implement activities continuously and without slowdown
- Listen to opinions and suggestions from small groups in order to use for improving
- Provide advice for Total Energy Management to various groups
- Persons in charge of the office must be those with good personal relationship, friendly, and with spirit of good service

4.9 Medium level

- Define the policies of each department that are consistent with the policy of the Total Energy Management and the target of the company
- Define numerical targets to sub-groups apart from the target of the company as a whole
- Follow-up the progress in order to provide to sub-groups
- Report the progress along with suggestions and opinions to upper level committee periodically

4.10 Workers/Operators level

- Implement small group activities with various themes and achieve target
- Report progress and problems encountered during implementation to upper level committee periodically
- Ask for support, suggestions, and opinions from upper level committee

4.11 Responsibility of Energy Conservation committee

- Gather and analyze information on costs related to energy every month
- Analyze and solve problems related to energy
- Find a method for energy conservation
- Prepare energy conservation plan
- Follow-up the result of implementing the plan
- Perform activities such as public relationship for encouraging employees to participate
- Offer training to small group in each department

4.12 Steps of Small Group Activities for Energy Conservation

Small group activities for Energy Conservation can be done by using “10 Stages for Success”, based on “PDCA Management Cycle”, as shown below and in pictorial forms

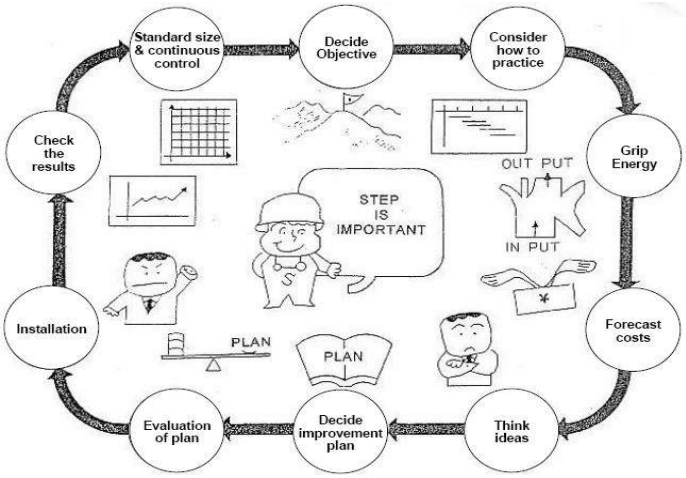

Figure 19: Steps of Small Group Activities

- Plan: Make an efficient plan in order to improve operation
- Do: Implement according to the plan
- Check: Check if implementation was according to the plan
- Act: Judge what to improve, what to learn and what to do from what we have checked

Please note that these stages are substantially the same as “Key Steps” explained earlier, but put more stress on utilization of SGA. So readers could read and use either method up to their preference.

Figure 20: SGA CIRCLE

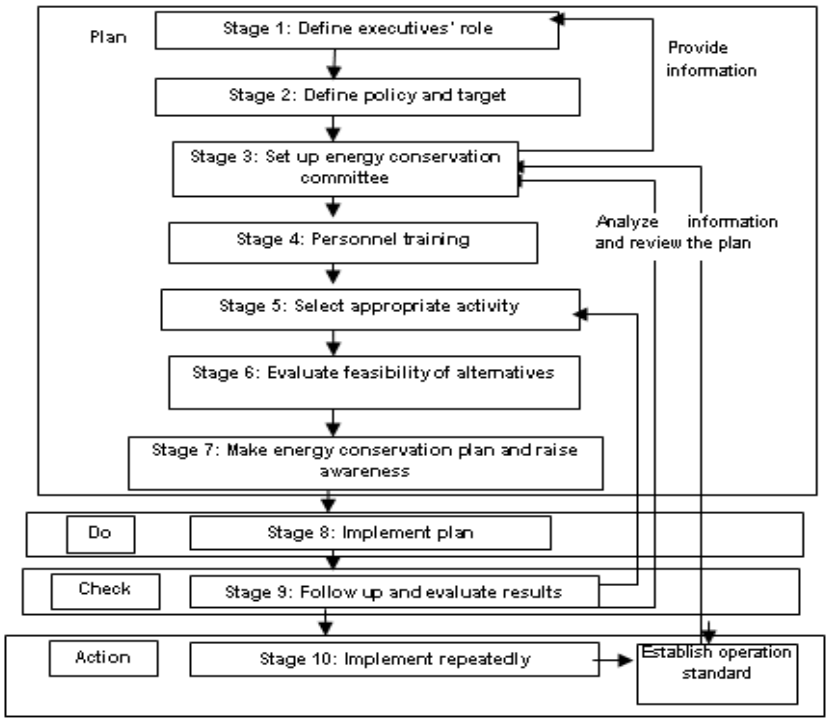

Figure 21: 10 STAGES

Stage 1: Define Executive's Role

In promoting small group activities, support must be provided such as basic environmental support. Therefore, executives must provide follow up support to employees of their companies.

- Establish a special unit that provides support to small group activities
- Prepare a system for managing small group activities in the company
- Prepare annual plan for small group activities
- Prepare a venue for meeting, consultation, advice or suggestion
- Establish a system for giving rewards to high achieving employees
- Establish a reporting system starting from informing what to do until reporting of the results
- Establish a fair system for evaluating results
- Establish a system for providing support and training to employees

Stage 2: Define Policy and Target

- Executives must announce a policy of supporting small group activities.
- Energy conservation committee must act as an advisor in order to set a numerical target that is consistent with total energy management (TEM) policy and the target of the organization. Specific targets must be set for each group.

We can see that responsibilities in stages 1 and 2 are mainly those of executives and committee. Responsibility of employees will become clearer from stage 3 and afterwards.

Stage 3: Set up Energy Conservation Committee

The principle of small group activities (SGA) is to divide into groups based on the scope of responsibility. The size of the group will depend on the size of organization. However, size of the group should not be too large. Usually a size of 5 to 10 persons is considered appropriate. It is important to define responsibilities clearly so that every member of the group can have their responsibility and participate in the activities.

Stage 4: Personnel Training

This stage will help employees to have more knowledge and understanding, have new ideas, and have more belief in their own responsibility.

Stage 5: Select Appropriate Activity

In doing small group activities, each member must be able to think, express their own ideas, and make decisions based on reality and by investigating electrical equipment, machines, and office equipment that exist in the area of their responsibility. Items to consider include size, number, where to use, situation of usage, current situation, and the number of hours usage per day.

By this we can evaluate the current situation of energy usage. Also by judging if there are more machines than needed, we can choose suitable activities and real problems for the organization.

Stage 6: Evaluate feasibility of alternatives (Analyze problems and decide on the measures and activities in each point)

Each group will gather ideas on the reasons for the problems, obstacles, and how to solve problems in order to decide on the problems, measures, and importance of activities and thus evaluate on the feasibility of activities to do based on advice from department manager. Basically, the following activities are not suitable for small group activities.

- Highly technical issues
- Issues that require a long time or many people to implement

  We have identified the following problems through small group activities.
- Issues on material quality or production that influence energy usage
- Behavior on energy usage
- Efficiency of machines or equipment that uses energy
- Awareness toward environment and energy usage
- Safety costs for energy conservation

Stage 7: Make Energy Conservation Plan and Raise Awareness

Each group must prepare its activity plan. Generally, implementation for small group activities takes 6 months to 1 year. Activities to be implemented should correspond to the objectives of each group. Besides, it might help to listen to opinions of all organizations in order to receive support from all other organizations.

Stage 8: Implement Plan

Implement according to the plan of each group.

Stage 9: Follow Up and Evaluate Results

After implementing the plan, each member of small groups will follow up and evaluate the result by analyzing result, search for strong and weak points of activities, find a way to improve the activities and report on general achievement.

Stage 10: Implement Repeatedly

Energy conservation is an activity that must be implemented repeatedly. Therefore, it is necessary to implement each activity repeated and make improvement to each activity. If we are satisfied with the results, by achieving the objectives of activities, we should provide rewards in order to give motivation for continuing the small group activities and implement creative activities.

4.13 Dos and Don'ts in Energy Conservation

- Don't Emphasize the mistakes in the past. It is better to talk about the present.
- Don't Be worried about the theory or principles. Don't spend too much time in discussion or analysis of problems in meeting rooms.
- Don't Think that an activity can be done perfectly from the beginning. It is necessary to do the job continuously by having experiences and judging by ourselves.
- Do Start with an activity that requires small amount of investment.
- Do Raise awareness so that all employees understand the necessity and importance of energy conservation and participate in it.
- Do Start the activity now without postponing to tomorrow.

4.14 Tools that are Used Often for Small Group Activities for Energy Conservation

4.14.1 5S

5S is a contraction derived from the Japanese words **Seiri, Seito, Seiso, Seiketsu,** and

Shitsuke. It is simple methodology that is also extremely useful in practical and realistic life. 5S is a set of actions to be followed through every day activities to advance the operational surroundings and circumstances. 5S is made in order to provide fortification to every personage in diverse profitable and industrialized fields. 5S is an extremely practical contrivance and skill set for anyone who wants to generate a more prolific environment within the workplace or who wants to make it their profession to make other people's businesses more proficient and productive. 5S occupy a list of products including eyewear, ear protectors and safety gears. Look into these different products that make up the significance of an industrialized security supply.

Lean Six Sigma experts promise or guarantee for the efficiency of 5S as an enlightening enhancement to better working surroundings in an association. If you dig up Six Sigma guidance that is paid for by your company, you will be in a position to work for your company and make things better for you as well as for everyone. 5S is very useful in lots of industries and job markets, but can often fail simply because of the lack of recognition concerning changes in the office.

5S consists of five steps that are crucial for the completion of 5S. The 5S steps are described as follows-

Figure 22: Five steps

1) Seiri / Sort: This is very logical term in, which identification of the contents take place, data base of the products have been created and, then any kind of sorting take place just to arrange the products and removal of unwanted items. Classification of the products is

necessary, which is called Red Tagging. It is important just to identify factors, right from whether it is needed, existing amount obligatory amount, occurrence of necessity, and so on.

2) Seito / Systemize: This step in 5S process consists of removal of unwanted items permanently and one more task that to be take place is decision that means you have to decide that what is required to be in what place. Place the items in such manner that you could retrieve them within 30 seconds of requirement.

3) Seiso / Brush away/ Sweep- Examine al the items on the daily basis. The process is not that much time consuming, but essential to clean up your workplace and most required in 5S. The conscientiousness to keep the office clean should be circulated between everyone in the group.

4) Seiketsu / Homogenize- This important step of 5S involves the visual control, which is important to keep your organization well- organized and clean. It is a complete evaluation to improve the working conditions.

5) Shitsuke / Self Control- This step is quite essential, but critical because it involves all the discipline to ensure the 5S standards, it also takes charge of dedication and commitment.

4.15 QCC (Quality control circle)

QCC (Quality control circle) means controlling quality through group activities. For this, it is necessary to work hand in hand and achieve objective quality or customers' request. With this, we can find weak points, find the cause of problems, gather ideas for problem solving and systematically prepare quality and thus, solve problems such as material loss, production costs, working hours, or productivity. This is also a very useful tool to tackle with Energy Conservation problem. So many factories or institutions are encouraged to utilize this tool.

CHAPTER 5
CONCLUSIONS

5.1 Summary of Energy saving measures identified for the Cluster

The summary of the energy saving proposals identified for Ganjam Rice Mill Cluster units is furnished below in Table 30:

Table 5.1: Summary of energy saving proposals identified for Ganjam Rice Mills Cluster

S. No	Energy Saving Proposals
1	Individual Drive System
2	Paddy Cleaner
3	Separator
4	Plastic buckets for elevators
5	Voltage stabilizers
6	Energy efficient motors

5.2 Technology gap assessment for Energy saving proposals Identified for the Cluster

The technology gap assessment had been carried for each of the energy saving proposal recommended and is furnished below.

Table 5.2: Technology gap assessment for the suggested energy saving proposals

S.No	Technology Identified	Gap Assessment
1	**Common shaft drive system to Individual driven motors**	• High transmission losses due to long belt drive system. • High power consumption
2	**Separator**	• Separators are of local make and inferior design consuming more power than the separators available in the market
3	**Paddy Cleaner**	• Paddy Cleaners are of local make and inferior design consuming more power than the paddy cleaners available in the market.
4	**Plastic buckets for elevators**	• High power consumption due to more weight of iron and MS buckets
5	**Voltage stabilizers**	• Poor voltage supply due to overloading of the EB electricity distribution transformers.

6	**Energy efficient motors**	• Old and rewinded motors and hence low efficiency and more power consumption.

5.3 Techno–Economic analysis for suggested Energy saving proposals

The techno economic analysis of various energy saving proposals identified for **Ganjam Rice Mill Cluster units** is furnished below

Table 5.3: Techno – Economic analysis for various energy saving proposals suggested

S.No	Energy saving proposal	Techno economic analysis	Remarks
1.	**Individual Drive System**	• The technology will reduce transmission losses and electricity consumption due to avoid of long belt drives	Technically and financially viable
2	**Separator**	• The technology will reduce electricity consumption due to efficient separator.	Technically and financially viable
3	**Paddy Cleaner**	• The technology will reduce electricity consumption due to efficient paddy cleaner.	Technically and financially viable
4	**Plastic buckets for elevators**	• The technology will reduce electricity consumption due to less weight of plastic buckets.	Technically and financially viable
5	**Voltage Stabilizers**	• The technology will improve voltage supply.	Technically and financially viable
6	**Energy Efficient Motors**	• The technology will reduce electricity consumption due to high efficiency.	Technically and financially viable

5.4 Barriers in Implementation of identified Energy saving proposals

Table 5.4: Barriers in implementation for various energy saving proposals suggested

S.No	Energy saving proposal	Barriers identified	Steps to overcome barriers
1	**Individual Drive System**	• Lack of awareness on the losses and benefits. • High initial investment	• Training programs, Demonstration and motivation • Providing soft loans may motivate the unit owners for implementation
2	**Separator**	• Lack of awareness on the losses and benefits.	• Training programs, Demonstration and motivation

		• High capital investment.	• Providing soft loans may motivate the unit owners for implementation
3	**Paddy Cleaner**	• Lack of awareness on the losses and benefits. • High capital investment.	• Training programs, Demonstration and motivation. • Providing soft loans may motivate the unit owners for implementation.
4	**Plastic buckets for elevators**	• Lack of knowledge on the benefits and economics	• Training programs
5	**Voltage Stabilizers**	• Lack of awareness on the losses and benefits. • High capital investment.	• Training programs, Demonstration and motivation. • Providing soft loans may motivate the unit owners for implementation.
6	**Energy Efficient Motors**	• Lack of awareness on the losses and benefits. • High capital investment.	• Training programs, Demonstration and motivation. • Providing soft loans may motivate the unit owners for implementation.

5.5 Short listed Technology/Products for DPRs

The following technologies were identified for preparation of detailed project reports for **Ganjam Rice Mills** Cluster:

- Replacement of common drive system with individual drive system.
- Energy efficient separator
- Energy efficient paddy cleaner
- Voltage stabilizers
- Energy efficient motors

5.6 Summary of level of awareness on Energy savings and Energy saving Technologies in Ganjam Cluster

The level of awareness on energy saving among the SME owners in the cluster is poor. About 5% of the unit owners have good conscious on energy saving technologies and is limited. The owners are more concerned about the market and procurement of paddy at competitive rates rather than on energy, as energy cost share as a percentage of cost negligible.

The energy saving technologies are implemented based on success stories in the cluster units and practical demonstration of the energy saving technologies in the units.

Though the clusters units are in operation since last 4 decades, the achievement on energy efficiency in the cluster units is poor and same old technologies are continued.

Some of the demonstration projects in the cluster may motivate the SME owners in implementation of the energy saving technologies.

LIST OF ANNEXURE

ANNEXURE – 1

1. Common Shaft Drive System by Individual Drive System

Details	Value	Units
Total power consumption per annum	28,857	kWh
% savings expected	30	%
Power savings per annum	8,657	kWh
Monetary savings per annum(@Rs.4.20 per kWh)	0.36	Rs.in lakh
Investment required	1.00	Rs.in lakh
Income due to dispose of old machinery	0.25	Rs.in lakh
Net investment required	0.75	Rs.in lakh
Payback period	25	Months

2. Reputed make energy efficient separator

Details	Value	Units
Total power consumption of the present separator per annum	6,480	kWh
% savings expected	50%	%
Power savings per annum	3,240	kWh
Monetary savings per annum(@Rs.4.20 per kWh)	0.14	Rs. in lakhs
Investment required	0.40	Rs. in lakhs
Income due to dispose of old machinery	0.10	Rs. in lakhs
Net investment required	0.30	Rs. in lakhs
Payback period	26	Months

3. Reputed make energy efficient paddy cleaner

Details	Value	Units
Total power consumption of the present Paddy Cleaner per annum	9,600	kWh
% savings expected	50%	%
Power savings per annum	4,800	kWh
Monetary savings per annum(@Rs.4.20 per kWh)	0.20	Rs. in lakhs
Investment required	0.40	Rs. in lakhs
Income due to dispose of old machinery	0.10	Rs. in lakhs
Net investment required	0.30	Rs. in lakhs
Payback period	18	Months

4. Plastic buckets for elevators

Details	Value	Units
No. of elevators	15	nos
No of hrs	15	hrs
No of days	300	days
Total power consumption of elevators	50,625	kWh/year
% Savings expected	10	%
Power savings per annum	5,062	kWh
Monetary savings per annum(@Rs.4.20 per kWh)	21,263	Rs.
Investment required	30,000	Rs.
Payback period	17	months

5. Lighting

S.No	Particulars	Existing	Proposed	Unit
1	Type of lamp	40W/4ft FTL	T5 Lamp	-
2	Wattage of lamps	40	28	W
3	Watt loss per ballast	12	2	W
4	No. of lamps to be replaced	8	8	No.
5	Average Operating Hours per day	12	12	Hours/Days
6	Energy consumption	1747.2	1008	kWh/year
7	Energy savings		739.2	kWh/year
8	Energy cost savings		3881	Rs./ year
9	Initial cost / lamps		500	Rs.
10	Initial investment cost		4000	Rs.
11	Payback period		12	Months

6. Voltage Stabilizer

Details	Value	Units
Total power consumption of voltage stabilizer per annum	44,862	kWh
% savings expected	15%	%
Power savings per annum	6,729	kWh
Monetary savings per annum(@Rs.4.20 per kWh)	0.28	Rs. in lakhs
Investment required	0.50	Rs. in lakhs
Payback period	21	Months

7. Energy Efficient Motors

Details	Value	Units
Total power consumption of energy efficient motors per annum	79,200	kWh
% savings expected	10%	%
Power savings per annum	7,920	kWh
Monetary savings per annum(@Rs.4.20 per kWh)	0.33	Rs. in lakhs
Investment required	0.50	Rs. in lakhs
Payback period	18	Months

ANNEXURE – 2

Details of technologies/services providers for the cluster

1. **R.K Associates**

   Manufacturer of all types of rice mill machinery.
   Address: Padhuanpada, Proof Road, Balasore,
   Orissa-756001,India.
   Mobile/CellPhone: +(91)-9438286089/9337749353
   Website**: http://www.indiamart.com/kalingaassociates/**

2. **Suri Engineering Works**

   Manufacturer of all types of rice mill machinery.
   4/4, IDA, Nacharam,
   Hyderabad, Andhra Pradesh, India.
   Contact number:040-27150282/27177726
   Contact person: K.Rameshwar Reddy

3. **Rice-tec Machinery**

   57/p, phase-1, IDA, Jeedimetla,
   Hyderabad, Andhra Pradesh, India.
   Contact number:040-23195938, 9440624435/9246373477
   Contact person: Bhanu Prakash

4. **Nitin Enterprises**

   6-17-7, pandhirivari street, t-nagar,
   Rajahmundry, Andhra Pradesh, India.
   Contact number:0883-2449496/2449497/9493338285/9989996265
   Contact person: Soma Raju

5. **Padmasree Mill Store**

   5-5-79, ground floor, 9A, srinivasa commercial complex,
   Ranigunj, Secunderabad, Andhra Pradesh, India.
   Contact number:040-66323236/9440074447

6. **Baba Auto Mechanical Works**

   c-12/b, IDA, Hyderabad, Andhra Pradesh, India.
   Contact number:040-27207565/9985455770
   Contact person: Ravi Shankar

7. **Sree Srinivasa Enterprises**

   5-5-76/F-8, 1st floor, srinivasa commercial complex, ranigunj,
   Secunderabad, Andhra Pradesh, India.
   Contact number:040-66494488/9396624488
   Contact person: srinivas

8. **Milltec Machinery Pvt Ltd**

   51-A, 1st phase, bommasandra industrial area, banglore-560099,
   Karnataka, India.
   Contact number:9845390091/9437078798/9845528431
   email: marketing@milltecmachinery.com

9. **Voltage Stabilizers**

   Astor Golden Electronics and Communications
   292/4264 Sriguru kalyanmandapam lane,
   Bhubaneshwar-751013, Orissa, India.
   Contact number:0674-2360310/9861090335
   Contact person: B.K.Sharma
   Mail id: rtnbksharma@gmail.com, astorbbsr@yahoo.com,

ANNEXURE – 3

Financial schemes (if any) available with local banks for improving energy efficiency in the cluster

1. Credit linked capital Subsidy scheme (CLCSS).

Under this scheme, the ministry of MSME is providing subsidy to upgrade technology (Machinery/plant equipments). Subsidy limit per unit is Rs. 15 lakh or 15% of investment in eligible machinery/Plant equipments whichever is lower. For more details of the scheme visit: www.laghu-udyog.com/scheme/sccredit.htm

2. SIDBI Financing Scheme for Energy Saving Projects in MSME sector under JICA Line of Credit

The Japan International Corporation Agency (JICA) has extended a line of credit to SIDBI for financing Energy Saving projects in Micro, Small and Medium Enterprises (MSMEs). This project is expected to encourage MSME units to undertake energy saving investment in plant and machinery to reduce energy consumption, enhance energy efficiency, reduce CO_2 emissions, and improve the profitability of units in the long run.

3. Eligible Sub Projects/ Energy Saving Equipment List under JICA line of Credit:

- Acquisition (including lease and rental) of energy saving equipments, including newly installing, remodeling and upgrading of those existing
- Replacement of obsolete equipments and/or introduction of additional equipment which would improve performance
- Equipments/ Machinery that meets energy performance standards/Acts
- Introduction of equipments that utilize alternative energy sources such as natural gas, renewable energy etc., instead of fossil fuels such as Oil and Coal etc.
- Clean Development Mechanism (CDM) projects at cluster level that involves change in process and technologies as a whole, duly supported by technical consultancy will be eligible for coverage.

Financial parameters:

The financial parameters for appraising the project are:

Parameter	Norms
Minimum Assistance	Rs. 10 lakh
Minimum promoters contribution	25% for existing units; 33% for new units
Interest rate	The project expenditure eligible for coverage under the line will carry a rate of interest rate of 9.5-10% p.a
Upfront fee	Nonrefundable upfront fee of 1% of sanctioned loan plus applicable service tax
Repayment period	Need based. Normally the repayment period does not extend beyond 7 years. However, a longer repayment period of more than 7 years can be considered under the line if necessary

Eligibility criteria for units (Direct assistance):

- Existing units should have satisfactory track record of past performance and sound financial position.
- Projects will be screened as per Energy Saving List, which is available in SIDBI website.
- Units should have minimum investment grade rating of SIDBI.
- Projects which may result environmental impacts and negative social impacts are also not eligible under this scheme.

For further details eligible energy saving equipments/machinery, projects can be financed under this scheme and details of scheme, please contact the nearest SIDBI branch office or refer to SIDBI website (**www.sidbi.in**)

TECHNOLOGY UPGRADATION FUND SCHEME (TUFS)

A scheme devised by Govt. of India, Ministry of Power, to enable SSI units (Rice mill unit) to induct State-of-the-art technology in which technology levels are bench marked in terms of specified machinery for each sector of **rice mills** industry. Machinery with technology levels lower than that specified will not be permitted for funding under the TUF scheme.

Eligible Borrowers Sole Proprietorships, Partnerships, Co-operative Societies, private / public limited companies.

- Existing units with or without expansion and new units
- Existing units proposing to modernize and/or expansion with state-of-the-art-technology
- New units which are being set up with appropriate technology

Quantum Of Loan & Mode Of Assistance Assistance shall be need based and NO CEILING on project cost/amount of loan. Assistance shall be by way of Term Loan.

Margin 15 to 25% of the project cost

Security 1st charge on fixed assets financed under the scheme Additional security such as personal guarantees, pledge of promoters share holdings as determined by Bank on merits of the case

Incentive Available Under The Scheme

Interest Reimbursement at the rate of 5% of the interest payment made by the unit to Bank on the loan outstanding. No Interest Reimbursement will be available for the extended period of loan or during the NPA status of the loan.

Repayment Within 7 years including moratorium up to 1 year

ANNEXURE – 4

Name and address of units in the cluster

Name of Rice Mill	Contact Person	Address
Ambika Rice Mill	Munna Babola Patro	Gurumurthy Pentho, Aska Road, Berhampur, Ganjam Dist
Bajarangi Rice Mill	Biranjani Biswal	Sukunda, Ganjam Dist
Balaji Traders	E.T.Rao	Sundarada, Nuapada(p.o), Ganjam Dist
Banamali Rice Mill	Tapan Kumar Panda	Hinjilicut, Ganjam Dist.
Bibudatta Rice Mill	Bibudatta Panigrahi	Hinjilicut, Ganjam Dist
Chandra Sekhar Rice Mill	Sri Ram Murthy	Chatrapur, Ganjam Dist
Dandakali Rice Mill	Dandapani Dalai	Kaudia, Konkarada(p.o), Ganjam Dist
Debraj Choudary Rice Mill	Debraj Choudary	Khajuria Road, Berhampur, Ganjam Dist
Devi Rice Mill	Nirmani Patro	Sihala, Ganjam Dist
Durg Rice Mill	Bansanidhi Sahoo	Humber, Chatrapur (p.o), Ganjam Dist
Ganapathi Rice Mill	Bijay Chandra Sahu	Lathi, Ganjam Dist
Ganesh Rice Mill		Kalashandhapur, Aska(p.o) Ganjam Dist
Ganesh Rice Mill	Gouranga Sahu	Digaphandhi, Ganjam Dist
Gopinath Rice Mill	Manoj Kumar Sahu	Beside FCI godowns, Jagnathpur, Ganjam Dist
Gouri Shankar Rice Mill	Mahendra Kumar Patro	Sanakhasthuli, Badakhasthuli(p.o), Ganjam Dist
Hare Krishna Rice Mill	Nilkanta Chowdary	Dumdumi, Padmapur(p.o), Ganjam Dist
Jagateswar Rice Mill	Bhimasen Sahu	Mahjigaon, Padmapur(p.o), Ganjam Dist
Jagnath Rice Mill	Satyanaryan Basantha	Purshottampur, Ganjam Dist
Jagnath Rice Mill		Bananai, Ganjam Dist
Janatha Rice Mill	Raghaval Raju	Near Busstand, Digaphandhi, Ganjam Dist
Kartikeswar Rice Mill	Rajendra Prasad Patro	Sihala, Ganjam Dist
Kartyani Rice Mill		Sapuapalli, Hinjilicut (p.o), Ganjam Dist
Kothari Rice Mill	Koti Patro	Patrapur, Ganjam Dist
Kumareswar Rice Mill		Kumari, Purushottampur(p.o), Ganjam Dist
Laxmi Nurisungnath Rice Mill	Kishore Chandra Sahu	Lathi, Ganjam Dist
Loknath Rice Mill	Bhagawan Sahu	Sukunda, Ganjam Dist
Maa Kalua Rice Mill	Jithendra Kumar Sahu	Ballipada, Kukudakhandhi(p.o), Ganjam Dist
Maa Laxmi Rice Mill	Parmanand Patro	Ankuli, Berhampur(p.o), Ganjam Dist
Maa Mahuri Kalua Rice Mill	Bipin Bihari Patro	Anantai, Ganjam Dist
Maha Bahu Rice Mill	Pradhan	Konkarada, Ganjam Dist
Maruthi Rice Mill	Krishna Chandra Sahu	Chikiti Pentho, Ganjam Dist
Narayani Modern Rice Mill	Prabhat Kiran Subhudhi	Chikiti Pentho, Ganjam Dist
Padhy Rice Mill	Umakanth Padhy	Radhadeipur, Pattapur(p.o), Ganjam Dist
Padmalaya Rice Mill	Udaynath Pal	Aska Road, Berhampur, Ganjam Dist
Panda Rice Mill	Manoj Kumar Panda	Chikiti Pentho, Ganjam Dist
Parbati Rice Mill	Balaji	Kukuakhandhi, Ganjam Dist
Patro Rice Mill	Kailashnath Patro	Haldiapadar, Berhampur(p.o), Ganjam Dist
Pratap Chandra Rice Mill	Pratap Chandra Sahu	Sihala Road, Konisi, Ganjam Dist
Radha Krishna Rice Mill	Ambika Prasad Sahu	Sihala Road, Konisi, Ganjam Dist
Radha Raman Rice Mill	Jithendra Padhy	Pattapur, Ganjam Dist
Sadhana Rice Mill	Manoj Kumar Sahu	Narendrapur, Ganjam Dist
Sathyabhama Enterprises	Amiya Ranjan Sabat	Aska Road, Berhampur, Ganjam Dist

Name of Rice Mill	Contact Person	Address
Shankar Rice Mill	Amar Kumar Sahu	Sanakhasthuli, Badakhasthuli(p.o), Ganjam Dist
Shiva Shankar Chuda and Rice Mill	Sadananda Sahu	Konisi, Berhampur (p.o), Ganjam Dist
Sidha Bhairabhi Rice Mill	Santhosh Kumar Sahu	Amapur, Daspur(p.o), Ganjam Dist
Somnath Rice Mill	Chitta Ranjam Padhy	Gosaninuagaon, Berhampur, Ganjam Dist
Sri Ganesh Rice Mill	Tarun Kumar Patro	Sihala, Ganjam Dist
Sri Ganesh Rice Mill	Madhav Charan Das	Khajuria Road, Berhampur, Ganjam Dist
Sri Krishna Rice Mill	Balaram Sahu	Hinjilicut, Ganjam Dist
Sri Raghunath Rice Mill	Dipak Kumar Jena	Patrapur, Ganjam Dist
Sri Sai Rice Mill	Jithendra Kumar Patro	Hinjilicut, Ganjam Dist
Subash Rice Mill	Subash Chandra Mahapatro	Mahjigaon, Padmapur(p.o), Ganjam Dist
Subram Rice Mill	Subram Sahu	Konisi, Berhampur (p.o), Ganjam Dist
Suman Rice Mill	Mangulu Sahu	Chikiti Pentho, Ganjam Dist
Suprabha Rice Mill	Pradeep Kumar Panda	Hinjilicut, Ganjam Dist
Tara Tarini Rice Mill	Subash Chandra Panigrahi	Nuapalli, Purushottampur(p.o), Ganjam Dist
Trupthi Traders	Surat Chandra Sahu	Haldiapadar, Berhampur(p.o), Ganjam Dist
Trirupathi Venkateswara Rice Mill	Rajendra Kumar	Sundarada, Nuapada(p.o), Ganjam Dist
Urmilla Rice Mill	Jithendranath Das	Purushottampur, Ganjam Dist
Vyshnavi Rice Mill	Gopi	Nimakhandhi, Ganjam Dist

ANNEXURE – 5

Quotations

MILLTEC

QUOTATION BOOK FORM/CONTACT REVIEW

SL. NO.		DATE	16-11-2010
M/S.VENKATARAMANA RICE MILL CHEVELLA Dist : RANGA REDDY		MILTEC MACHINERY PVT.LTD. NO.51-A, IST PHASE, KIADS INDL. AREA, BOMMASANDRA, BANGALORE - 560 099 080-27831128 FAX : 080-27831129	
C.PERSON	Mr.K.Kishor	C.PERSON	'-DO-
PH. NO.		PH. NO.	
FAX NO.		FAX NO.	
MOBILE NO.	95026-88949	MOBILE NO.	
E-MAIL ID		E-MAIL ID	
KST. NO.		KST. NO.	
CST NO.		CST NO.	
TIN NO.	Applied	TIN NO.	

MACHINE DETAILS

SL. NO.	ITEMS	SPECIFICATION	QTY	UNIT RATE	TOTAL AMOUNT	REMARKS
'01	SHEL-N1	Pneumatic Sheller	ONE	2,70,000-00	2,70,000-00	RAW / BOILED
02		10 HP,1000 RPM Motor	ONE	25,000-00	25,000-00	
03.	STAR-N2	Rice Whitener	ONE	2,00,000-00	2,00,000-00	
04.		30 HP,1500 Motor	ONE	49,000-00	49,000-00	
05.	POLY-M2	Supern Glazer	ONE	1,50,000-00	1,50,000-00	
06.		25 HP,1500 Motor	ONE	44,000-00	44,000-00	
07.		Water pump	ONE	42,500-00	42,500-00	
08.		7.5 HP, Air Blower	ONE	44,000-00	44,000-00	
09.		950 mm Cyclone	ONE	28,000-00	28,000-00	
10		Airlock with G.Motor	ONE	45,500-00	45,500-00	
'11.		Magnet	ONE	11,000-00	11,000-00	
'12.						
'13.						
'14.						
'15.						
'16.						
'17.						
'18.						
19						
20						
21						
22						
23						
24						
25						
26						

POLISHING SECTION

NEW RICE MILL

PROPOSED SET UP :

TOTAL	9,08,600-00
P & F	10,000-00
5% SALES TAX	45,930-00
E & C	20,000-00
3%PROVISION TAX	
CESS 2% ON SERVICE TAX	
GRAND TOTAL	9,84,530-00
ADVANCE RECD	
BALANCE	

Payment Conditions:
Delivery Committed :
Payment Terms :
Short Supply :
Road Permit :
Agent :
Remarks :

MACHINES HAS TO BE DESPATCHED ON RECEIPT OF FULL PAYMENT

APPLICABLE | NOT APPLICABLE

Sri Srinivasa Marketing, Secunderabad. Cell No.9396624488

PREPARED BY

AUTHORISED BY

TIN NO. 28165210932

☎ (O) 040-66494488
Cell : 93966 24488

Sree Srinivasa Enterprises

5-5-76/F-8, 1st Floor, Srinivasa Commercial Complex, Ranigunj, Secunderabad.

Ref. : SE/

Date : Dt / 16-11-2010

QUOTATION

To,
M/s.VENKATARAMANA RICE MILL
C H E V E L L A
Dist : RANGA REDDY

S.no.	MACHINE DESCRIPTION	QUANTITY	RATE	PRICE
1	Paddy Cleaning Service with Aspirator with 2 Motor	ONE	90,000-00	90,000-00
2	Paddy Cleaner with De-Stoner with 3 Motor	ONE	1,10,000-00	1,10,000-00
3	Husk Separator with 3 HP Motor	ONE	65,000-00	65,000-00
4	Paddy Separator with 2 HP motor	ONE	1,25,000-00	1,25,000-00
5	Multi Grader (Brokens) 1 HP Motor	ONE	1,25,000-00	1,25,000-00
6	Double Elevator's - with 1 HP Motor	4 Nos.	85,000-00	85,000-00
				8,55,000-00
		4%Vat Tax		34,200-00
	Loding & Transportation Charges Extra	TOTAL		8,89,200-00

(Rs : Eight Lakhs Eighty Nine Thousands Two Handred only)

Thanking You

for SREE SRINIVASA ENTERPRISES

Prop :
(K>SRINIVAS)

DEALERS : RICE MILL MACHINERY AND SPARE PARTS

QUOTATION

S. No	Model	Description	Capacity	Unit Price	Qty.	Quoted Price
1	CPC-80	Combined Paddy Cleaner with 5Hp/1440rpm Blower with 7.5Hp/1440rpm motor	4.0 MTPH On Paddy Capacity	2,06,250/-	1 No	2,06,250-00
2	Shell-3A	Pneumatic Sheller Plus with imported Vibro feeder without motor	3 MTPH On Paddy Capacity	3,00,000/-	1 No	3,00,000-00
3	Ps-8T	Paddy Seperator-8Tray with 2Hp/960rpm motor	2.5 MTPH On Paddy Capacity	1,32,812/-	1 No	1,32,812-00
					Sub Cost :	6,39,062 -00
					Forwarding charges @ 1%:	6,390 -00
					Total: Cost:	6,45,452-00
					CST : @ 2% against Form 'C'/ @ 4% Without Form 'C' :	25,818 -00
					Commissioning Charges Rs.5000/- for each machine (5000 x3 No):	15,000-00
					Grand Total:	**6,86,270-00**

(Rupees Six lacs eighty six thousand two hundred and seventy only)

MOTORS REQUIRED FOR THE ABOVE MACHINES

S No	Description	Unit Price	Qty	FINAL RATES
1	Motor 10 HP/960 rpm suitable Rubber Sheller	23,546/-	1 No	23,546-00
	Grand Total			**23,546-00**

QUOTATION

S. No	Model	Description	Capacity	Unit Price	Qty.	Quoted Price
1	Ps-10T	Paddy Seperator-10Tray with 2Hp/960rpm motor	3.0 MTPH On Paddy Capacity	1,43,750/-	1 No	1,43,750-00
					Sub Cost :	1,43,750 -00
					Forwarding charges @ 1%:	1,437 -00
					Total: Cost:	1,45,187-00
					CST : @ 2% against Form 'C'/ @ 4% Without Form 'C' :	5,807 -00
					Commissioning Charges Rs.5000/- for each machine (5000 x1 No):	5,000-00
					Grand Total:	**1,55,994-00**

(Rupees One lac fifty five thousand nine hundred and ninety four only)

Baba Auto Mechanical Works

Plot no: c-12/b, IDA, Uppal, Hyderabad-500 039

30 years of Excellence in customer satisfaction

TIN: 28790212598 DATE: Wednesday, November 24, 2010

NAME : **ZENITH ENERGY SERVICES PVT LTD**

VILLAGE : HYDERABAD

DISTRICT :

STATE : ANDHRA PRADESH

PHONE : 9502688948

We thank you for enquiry and have pleasure on Quoting as follows. We trust the same meets with you approval and look forward to receive your valued order.

QUOTATION/ PERFORMA INVOICE.AP-214-2010

S.No.	DESCRIPTION	QTY.	UNIT RATE	AMOUNT
	Sri Laxmi paddy milling machinery 2ton capacity per hour on paddy			Indian Rupees
1.	PADDY CLEANER	ONE	80000=00	80000=00
2.	PADDY PRE CLEANER	ONE	54000=00	54000=00
3.	PNEUMATIC RUBBERSHELLER	ONE	150000=00	150000=00
4.	HUSK ASPIRATOR	ONE	45000=00	45000=00
5.	PADDY SEPARATOR- 5TRAY	ONE	115000=00	115000=00
6.	RICE WHITENER	ONE	145000=00	145000=00
7.	GLAZE MASTER	ONE	105000=00	105000=00
8.	AIR LOCK SYSTEM		125000=00	125000=00
9.	PLAIN SIFTER 100x5	ONE	115000=00	115000=00
10.	6" DOUBLE ELEVATOR	4NOS	54000=00	216000=00
11.	6" SINGLE ELEVATOR	ONE	30000=00	30000=00
	TOTAL			**1170000=00**
	VAT@	4%		**46800=00**
	TOTAL			**1216800=00**

NOTE: THE ABOVE MENTIONED MACHINERY ARE WITHOUT ELECTRICAL MOTORS, AIR COMPRESSOR & PANNEL BOARD

NOTE: ERECTION CHARGES RS 45000/- EXTRA WILL BE CHARGED, TRANSPORT AND TRANSIT INSURANCE EXTRA

NOTE: HANDLING CHARGES OF 3500/- EXTRA.

Customer's signature

For Baba Auto Mechanical Works

Authorized signature

Manufacturers of *Sri Laxmi* Brand Modern Rice mill machinery
FIND US: www.srilaxmiengineers.com , www.babaauto.com, Email:babaautomechanicalworks@gmail.com
Contact us: +91-40-27207565(Off phone & Fax), +91-9440050172, +91-9246150172(mobile)
OUR BANKERS: BANK OF INDIA, AZAMABAD BRANCH, CC A/C NO: 862630100033001
STATE BANK OF INDIA, RAMANTHAPUR BRANCH, CURRENT A/C NO: 30281208834

Baba Auto Mechanical Works

Plot no: c-12/b, IDA, Uppal, Hyderabad-500 039

REQUIRED MOTORS:-

PADDY CLEANER	2HP,960 RPM
PADDY PRE CLEANER	2HP ,1440 RPM
PNEUMATIC RUBBER SHELLER	10 HP, 1440 RPM
HUSK ASPERATOR	3 HP 1440 RPM
PADDY SEPARATOR	2 HP, 960 RPM
RICE WHITENER	25 HP, 960RPM (FLANGE)
GLAZE MASTER	20HP, 960RPM
AIR LOCK SYSTEM	10HP, 2800, 1 HP ROTARY VALVE, 2HP, 1440RPM (ELECTRICAL MOTORS ARE SUPPLIED FOR AIR LOCK SYSTEM)
100x5 PLAIN SIFTER	1.5HP, 1440RPM,1 HP 2800 RPM (ELECTRIC MOTORS FOR PLAIN SIFTER ARE SUPPLIED)
6"DOUBLE ELEVATORS	4nos x1HP, 1440 RPM
6"SINGLE ELEVATOR	1HP, 1440 RPM
AIR COMPRESSOR(10 KG PRESSURE)	2HP 1440 RPM

Note: 2 HP BLOWERS SUPPLIED WITH THE MACHINERY APART FROM THE ABOVE LIST

GENERAL TERMS AND CONDITIONS

THE PRICE	The confirmation of price is exclusive of electrical, packing, forwarding. Transit insurance, transportation, erection & trial run etc.
TAXES & DUTIES	TIN / CST Excise and other Govt. Levies Extra as applicable at the time of Delivery
FIRM ORDER	(a) The price confirmation is valid for the Firm order only (b) 40 % of the value as advance is treated as firm order; payment should be made in the form of demand draft of cheque only (c) in case, if the customer fails to pay 40% within in two weeks from the date of order the price confirmed is not valid and the rates will be applicable as the time at the time of delivery
DELIVERY ('X' GODOWN)	Delivery will be effective within 2 to 3 weeks from the date of receipt of full payment (a) For inter state transaction, 'C' Forms should be arranged (b) Customer should arrange their TIN / CST Registration certificate for effective delivery (c) Company is not responsible for the delay in delivery schedule effect by natural calamities strikes lock – outs, shortage of raw materials and power – cuts etc.
TERMS & PAYMENT	Balance payment should be arranged before the delivery of the machinery.
RISK IN TRANSIT	Company is not responsible for the loss or damage of goods of their documents in transit.
CANCELLATION NOTE	Orders once placed will not be cancelled, ALL THE LEGAL MATTERS ARE SUBJECT TO HYDERAABAD JURISDICTION ONLY

I / We accept all the above terms & conditions

Customer's signature

For Baba Auto Mechanical Works

Authorized signature

Manufacturers of *Sri Laxmi* Brand Modern Rice mill machinery
FIND US: www.srilaxmiengineers.com , www.babaauto.com, Email:babaautomechanicalworks@gmail.com
Contact us: +91-40-27207565(Off phone & Fax), +91-9440050172, +91-9246150172(mobile)
OUR BANKERS: BANK OF INDIA, AZAMABAD BRANCH, CC A/C NO: 862630100033001
STATE BANK OF INDIA, RAMANTHAPUR BRANCH, CURRENT A/C NO: 30281208834

Baba Auto Mechanical Works

Plot no: c-12/b, IDA, Uppal, Hyderabad-500 039

30 years of Excellence in customer satisfaction

TIN: 28790212598 Wednesday, November 24, 2010

NAME : ZENITH ENERGY SERVICES PVT LTD

VILLAGE : HYDERABAD

DISTRICT :

COUNTRY : ANDHRAPRADESH.

PHONE : 9502688948

We thank you for enquiry and have pleasure on Quoting as follows. We trust the same meets with you approval and look forward to receive your valued order.

QUOTATION/ PERFORMA INVOICE-AP-212

S.No.	DESCRIPTION	POWER	AMOUNT
	Sri Laxmi paddy milling machinery 1ton capacity per hour on paddy		Indian Rupees
1.	PADDY CLEANER	2HP, 1440 RPM	60000=00
2.	6" RUBBERSHELLER	5HP, 1440RPM	45000=00
3.	DE- HUSK ASPIRATOR		30000=00
4.	PADDY SEPARATOR- 3 TRAY	2HP, 960 RPM	95000=00
5.	RICE WHITENER- 4 STONE	15HP, 960RPMFLANGE	125000=00
6.	BRAN PROCESSING SYSTEM	2HP,1440RPM	40000=00
7.	SIEVE ASPERATOR	2HP, 1440 RPM	40000=00
8.	DOUBLE ELEVATOR (3 HEIGHTS)	1HPx3NO1440RM	144000=00
	TOTAL		**579000=00**
	VAT @	4%	**23560**
	TOTAL		**602160=00**

NOTE: THE ABOVE MENTIONED MACHINERY ARE WITHOUT ELECTRICAL MOTORS AND PANEL BOARD

NOTE: ERECTION CHARGES EXTRA WILL BE CHARGED, TRANSPORT AND TRANSIT INSURANCE EXTRA

Customer's signature

For Baba Auto Mechanical Works

Authorized Signature

Manufacturers of *Sri Laxmi* Brand Modern Rice mill machinery
FIND US: www.srilaxmiengineers.com , www.babaauto.com, Email:babaautomechanicalworks@gmail.com
Contact us: +91-40-27207565(Off phone & Fax), +91-9440050172, +91-9246150172(mobile)
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STATE BANK OF INDIA, RAMANTHAPUR BRANCH, CURRENT A/C NO: 30281208834

Authorized Dealer

KSB INDUSTRIAL PUMPS

AODD PUMPS & TOOLS

SIEMENS MOTORS & DRIVES

ABB FLP MOTORS

FOURESS ENGINEERING (INDIA) LIMITED INDUSTRIAL VALVES

GEA PHE SYSTEMS

Atlas Copco AIR COMPRESSORS

SMC BUSINESS ASSOCIATE PNEUMATIC PRODUCTS

KLUBER LUBRICATION

3M ADHESIVES & TAPES

DERAZ ENGINEERS
Excellence in every endeavour
www.derazengineers.com

Our Ref No – 2K1101252/KKB/RB, Dated –03-02-2011

M/s. Zenith Energy.
10-5-6/B, My home plaza
Masabtank, Hyderabad
Ph: 040-23376630/23376631, Fax: 23322517
E-mail: krishna@zenithenergy.com

Kind Attn – Mr. Krishna - 9440234294

Dear Sir,

Sub –Quotation for SIEMENS make Motors.
Ref – Your mail Enquiry , Dt:02.02.2011

With reference to the above, we are pleased to submit our offer as given below

TERMS & CONDITIONS:

1. **PRICES** – F.O.R. OUR WORKS.
2. **DUTIES** – E.D@10.30% Extra.
3. **TAXES** - VAT@14.5% extra or CST@2% extra against form C
4. **DELIVERY** –Within 12 weeks after receipt of the same
5. **PAYMENT** – 25%Advance balance against Performa invoice prior to dispatch Documents through bank. In case of delayed payment OD Interest@18%p.a will be charged
6. **VALIDITY** - 15 days.
7. **DISCOUNT** - @50% on quoted price

We now request you to kindly place your valuable order on us.
Thanking you and assuring you of our best services at all times.

Yours faithfully,
For DERAZ ENGINEERS

03/02/11

(K.A.ABDUL RAZAKH)
CHIEF EXECUTIVE OFFICER

Note: For Further clarification Please contact to Mr.Kishore Babu (Manager-sales)
Cell: 9948353615

HO: Hyderabad 6-3-1177/90, "Deraz House", BS Maktha, Begumpet 500 016
Ph: 23402442, 23406843, 23404732. Fax: 040 - 23412165. Cell: 9948353601 e-mail: deraz@deraz.in, sales@deraz.in
BO: Vijayawada P-2, Navrang Apartments, Khanna Nagar 520 010. Telefax: 0866 - 2488330. Cell: 9948353611 e-mail: vja@deraz.in
BO: Visakhapatnam Flat No. 208, Sreemithra Heights, Opp: Bus Depot, Gopalapatnam 530 027. Cell: 9948353610 e-mail: vizag@deraz.in
BO: Tirupathi 19-7-97b, Gopalraju Colony, RC Road 517 501. Telefax: 0877 - 2246378. Cell: 9948353614 e-mail: tpt@deraz.in

SIEMENS MAKE, 415V, IP 55, CLASS F INSULATION, 50Hz SQUIRREL CAGE INDUCTION MOTOR - EFF2									
SL NO	KW	HP	RPM	FRAME SIZE	MLFB	Mounting	QTY IN NOS	UNIT PRICE IN RS	TOTAL PRICE IN RS
1	22	30	1440	180L	1LA0 186-4YA80	Foot	1	91740	91740
2	30	40	1440	200L	1LA0 207-4YA80	Foot	1	123805	123805
3	37	50	1440	225S	1LA0 221-4YA80	Foot	1	158895	158895
GRAND TOTAL									123805

SIEMENS MAKE, 415V, IP 55, CLASS F INSULATION, 50Hz SQUIRREL CAGE INDUCTION MOTOR - EFF1									
SL NO	KW	HP	RPM	FRAME SIZE	MLFB	Mounting	QTY IN NOS	UNIT PRICE IN RS	TOTAL PRICE IN RS
1	22	30	1440	180L	1SE0 186-4YL80	Foot	1	100850	100850
2	30	40	1440	200L	1SE0 207-4YL80	Foot	1	136160	136160
3	37	50	1440	225S	1SE0 221-4YK80	Foot	1	176550	176550
GRAND TOTAL									136160

SERVOMAX
SINCE:1982 AN ISO 9001: 2000 COMPANY

Servomax India Limited

- Distribution Transformers LT / HT - Up to 3Mva
- Industrial Voltage Stabilizers - L.T & H.T UPTO 5000Kva.
- Panel Boards - A.P.F.C and all types
- Isolation Transformers - up to 5000Kva
- K-1 Transformers
- K-20 Transformers - up to 2000kVA
- Surge Protection equipments
- Energy Saving Equipments and Solutions.
- Turnkey electrical solution - H.T & L.T.

All the above are backed by responsive customer support system, State of the art technology developed by R&D team and ISO quality system. This reflects our providing total solutions that enable our client to get the benefits of innovation, high savings, Quality power

Product Recommended :

50, 75 & 100 KVA Servo controlled Voltage Stabilizer - Air cooled		
Model	:	PS 50K, 75K & 100K 3P

Features of Servo Stabilizer

Protections :

- Low Voltage Protection
- High Voltage Protection
- Over load Protection
- Short Circuit Protection
- Single Phase preventer

High Reliability

Use solid state control circuits, No relays, No warm up time, Synchronous motor drive, Professional grade ICs and components are used

Trouble Free Operation

- Every unit is 'soak tested' for 48 hours
- Quick response time 10 Milli Sec (Half a Cycle)
- All transformers are copper-wound on CR laminations and double vacuum impregnated for high efficiency

Corporate Office : #206, Meridian Plaza, Beside Lal Banglow, Ameerpet , Hyderabad **Page 3**

SERVOMAX
SINCE:1982 AN ISO 9001: 2000 COMPANY

Servomax India Limited

- Excellent regulation as high as +/- 0.5%
- Zero wave-form distortion
- Plug-in type fiberglass PCBs with gold-plated fingers for better contacts to ensure excellent reliability and minimum down-time
- Unaffected by load power factor
- No Load losses are very low
- Very wide input operating ranges
- Reset - Manual / Auto reset with time delay
- Control Switch - Phase control- Individual phase control is provided
- Provision of cabling : Input / Output cable termination with provision for fixing cable glands
- Servo Motor Drive : Rugged AC step synchronous motor
- Enclosure - IP 32
- Mounting - floor mounted / Free on wheel

Technical Specifications:

Input Voltage	:	300-460 V 3 Ph AC
Out Put Voltage	:	415 V 3Ph AC
Line Frequency	:	47-53Hz.
Output Voltage Regulation	:	+/- 1%
Type	:	Unbalanced supply and Load conditions
Efficiency	:	≥98%
Speed of Correction	:	60 V per sec. (Air cooled)
Wave form distortion	:	Nil
Effect of Load power factor	:	Nil
Ambient Temperature	:	0-40°C
Duty Cycle	:	Continuous
Mode of System	:	Fully Automatic / Manual
Indications on	:	Input on
		Input Low
		Input High

Corporate Office : #206, Meridian Plaza, Beside Lal Banglow, Ameerpet , Hyderabad **Page 4**

SERVOMAX
SINCE:1982 AN ISO 9001: 2000 COMPANY

Servomax India Limited

		Output On
		Output Cutoff
Controls on each Phase	:	Auto/Manual Selector Switch
		Increase/Decrease Selector Switch
		Volts adj. Potentiometer.
Metering	:	Voltmeter to read Input and Output
		Voltages with selector switch.
		Ammeter to read the Output Current in each ph with selector Switch(from 15 KVA 3 Ph onwards)
Panel Control	:	Input / Output Select Switch
		Auto / Manual select switch
		Increase / Decrease switch to control the output
		voltage in manual mode
		Volts adjust to set required output in auto mode
System Construction	:	As per IS : 9815 -1994

Price Schedule/Scope of supply

S.No	Product Descriptions	Basin Price in Rs	Quantity in No's	Total basic Price in Rs
01	50 KVA 3 Ph SCVS	84, 000/-	01 No's	84,000.00
01	75 KVA 3 Ph SCVS	1,22,000/-	01 No's	1,22,000.00
01	100 KVA 3 Ph SCVS	1,49,000/-	01 No's	1,49,000.00

SERVOMAX
SINCE:1982 AN ISO 9001: 2000 COMPANY

Servomax India Limited

Note: Purchase order raised on below address

Servomax India Limited
Plot no : 16 , 17 & 18 , Ida ,Phase – II ,
Cherlapally , Hyderabad-51

Commercial Terms

PRICES QUOTED IS	:	EX-WORKS BASIS.
PACKING & FORWARDING	:	**NIL.**
DUTIES	:	**EXTRA AS APPLICABLE** TO YOUR ACCOUNT CURRENT RATE OF EXCISE DUTY IS @ **10.3% EXTRA**; EDGP SHALL BE ROVIDED.
TAXES	:	EXTRA AS APPLICABLE TO YOUR ACCOUNT CURRENT RATE OF VAT @ **14.5%** WILL BE CHARGED EXTRA OR **2% AGAINST** FORM "C". IF ANY OTHER TAXES LIKE ENTRY TAX, OCTROI, ETC., SHALL BE EXTRA AT ACTUAL TO YOUR ACCOUNT.
DELIVERY PERIOD	:	**3-4 WEEKS** FROM THE DATE OF RECEIPT OF YOUR CLEAR TECHNO-COMMERCIALY PURCHASE ORDER.
WARRANTY PERIOD	:	**1 YEAR** FROM THE DATE OF INVOICE AGAINST ANY MANUFACTURING DEFECTS ONLY.
VALIDITY	:	**30 DAYS.**
PAYMENT	:	**50% ADVANCE** ALONG WITH PURCHASE ORDER AND BALANCE PAYMENTS AGAINST **PROFORMA INVOICE**
UNLOADING	:	SHALL BE IN **YOUR SCOPE.**
Transportation	:	Extra If Delivery is out of Hyderabad.

Yours Sincerely
For Servomax India Limited

T. Srinivas
Marketing Dept
98489 10144
E mail : tsrinivas@servomax.net; Servomax_srinivas@rediffmail.com.