

# Utilization of Management Skills for Effective Uses of Solar Energy for 100 % Electrification of Tribal Gadchiroli District

S. R. Ladke

Assistant Engineer, MSEDCL

**Abstract:** *Now a day's electrical energy is the most essential part of society and its importance is increasing rapidly. As the major power system disturbances have a significant economic and social impact, due to this the uninterrupted availability of supply is more important issue for power system. The issue of the power supply availability in Tribal area is always plays important role. As the generation trends are changing with distribution generation, the traditional power supply system is not sufficient. Also there will be scarcity of conventional sources such as Thermal, Hydro & Gas in future. The new issue are to be handled with new and rapid action systems. For making these the Solar System techniques plays vital role. The input source Solar energy is available ample in Tribal Gadchiroli District & it is pro environmental. For effective utilization of this source the uses of Management skill is necessary.*

**Keywords:** Solar PV, Management techniques, Electrification

## 1. Introduction

Human Resource Management is the guiding source for this paper which will help in identifying the problems arise during 100% electrification in Tribal Gadchiroli District & the problems could be solved by managing systematic approach for this. The main object of Paper is to ascertain the difficulties arise due to Geographical condition of Tribal District, the hurdles of Forest & difficult to lay transmission lines in these areas. By using systematic approach the same could be channelized in such a way that there should be available alternatives if any problem arises at any particular locations due to geographical conditions.

Human Resource Management (HRM) is a management function that helps managers to recruit, select, train and develop members for an organization to the need of its objectives.

HRM involves the principles and application of managerial functions. The functions and principles are applied to acquisition, developing, maintaining and remunerating employees in organizations. HRM functions are not confined to business establishments only. They are applicable to non-business organizations too. Obviously HRM refers to a set of programmes, functions and activities designed and carried out in order to maximize both employee as well as organizational effectiveness.

### a) HRM Objectives

The primary objective of HRM is to ensure the availability of a competent and willing workforce to an organization. Beyond this, there are other objectives too, specifically; HRM objectives are four fold-Societal, Organizational, Functional and Personal.

For implementing the objectives we should know the definition of Electrification. **Electrification** is the process of powering by electricity and is usually associated with changing over from another power source. The broad meaning of the term, such as in the history of technology and

.economic history, usually applies to a region or national economy. Broadly speaking, electrification was the build out of the electrical generating and distribution systems.

For implementing the research study in Gadchiroli district the Geographical condition of the district should be well known to us. The Gadchiroli district is spread from Korchi to Sironcha i.e. about 350 Km. away from each other. There is thick forest in most of the area. Due to huge, tall trees & bamboo bushes the breakdown occurs frequently on electrical lines causing interruptions in supply of electricity. This is the main hurdle in 100 % electrification of Gadchiroli District. To overcome on this problem at some places the electrification of village could be done with the help of solar system, but it has also some limitations. The systematic approach to overcome on limitations could be achieved through implementation of Management tactics.

### b) Aim & Objectives of the Study

The aim of this research is Systematic Management approach for effective use of solar energy for 100% electrification of Gadchiroli District with the help of available resources which can withstand in the Geographical condition of Gadchiroli District.

The moto behind this study is that the every village situated in every part of the District should get the electric supply throughout the year in any adverse climatic condition or geographical condition. In the study it is emphasised on the problems of communication of road in some part of area throughout the year. In some part of area the conventional electrification is not possible hence there the non-conventional Source such as Solar can be utilised. For this the large group of trained & skilled human resource is required. The skilled human resource can be developed by giving necessary trainings to them with the help of agencies which are working in this field. By applying this method the local people also got the employment & this will improve their living standard. Also due to availability of electric supply throughout the year the rural industry could be grow

up. This will definitely helpful to the Tribal people in the surrounding area.

**Objectives**

To study the human Resource Management practices for speed up of 100 % Electrification.

- 1) To study the Human Resources Management practices in elements causing hurdles in Electrification.
- 2) To study the Human Resource management practices in non- conventional method of Electrification.
- 3) To Study the problems & issues in current scenario.
- 4) To suggest ways & means for effective Human Resource Management skill in the 100% electrification of Gadchiroli District.

The Gadchiroli District is identified as backward district & included in main 35 Tribal & naxal-affected Districts in India. The most of the population of Gadchiroli District is living in dense forest area where main amenities such as food, clothes & shelter are not available or provided as per need. Also now-days the 4<sup>th</sup> & main factor which is essential is electricity. It is the part & parcel of daily routine life. The man could not live without the electricity.

Day by day the world is become “Global Village”. In the Global Village the main source of information is T.V., mobile & Internet. For the healthy operation of these equipments the source of supply is electricity. The electricity should be available throughout the year for proper functioning of all above equipment.

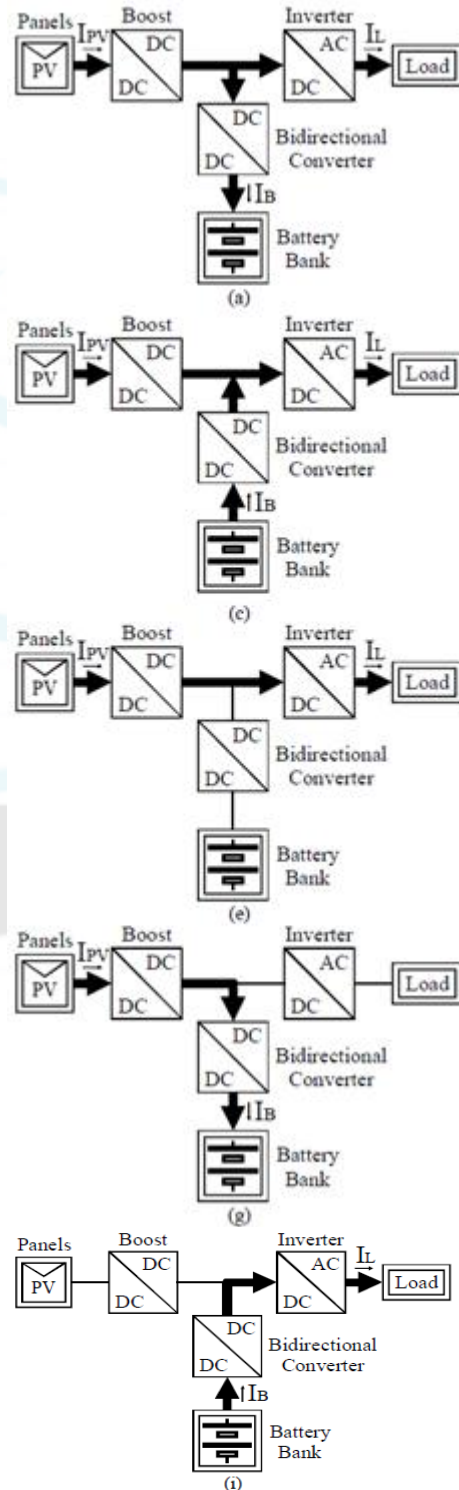
The Gadchiroli district is having total 1671 villages & 2 Nagar Parishad. Out of above still in 268 villages the electricity is not available throughout the year. The Maharashtra State Electricity Distribution Company & the State Government had already taken a programme of 100% electrification of Gadchiroli District & in this direction they have already started the working. The main hurdle in implementing the scheme is thick forest. The most of the electrical lines are going through this forest. During rainy season the huge trees, bamboo trees fall on electric line causing breakdown. Due to unapproachable roads the breakdown could not be attended in rainy season. The part of area is affected for nearly 4-5 months. This phenomenon is continued year by year.

In last decade in dense forest area it is decided to do electrification by using non-conventional means on Solar with the help of MEDA (Maharashtra Energy Development Authority) but results are not fruitful. The problems are observed in battery used in solar panel. The object of this research is to develop manpower at local level so that they can maintain the battery & the solar equipment could be utilised with 100% efficiency. If any problem arises the same can be resolved immediately with the help of trained manpower available in that village.

The most of the part of Gadchiroli District is covered by forest. The bio-mass fuel such as regenerative fuel obtained from forest is available in huge quantity. This can be utilised for bio-mass plant for generation of electricity in a small scale village wise.

By using Solar & Bio-mass plants the area where conventional means are not effective, the non-conventional means are useful. Also this will give employment to the local people in large scale & they will improve their life style.

The concern of the society regarding environmental problems and the shortage of fossil fuels have led to an increased interest in alternative ways for solving the issue of the growing global energy demand, where ecologically correct solutions are highly desired. Among all alternative energy sources, photovoltaic (PV) energy has the advantage of being one of the primary sources that produces less pollution. Also, it is r renewable, silent, and



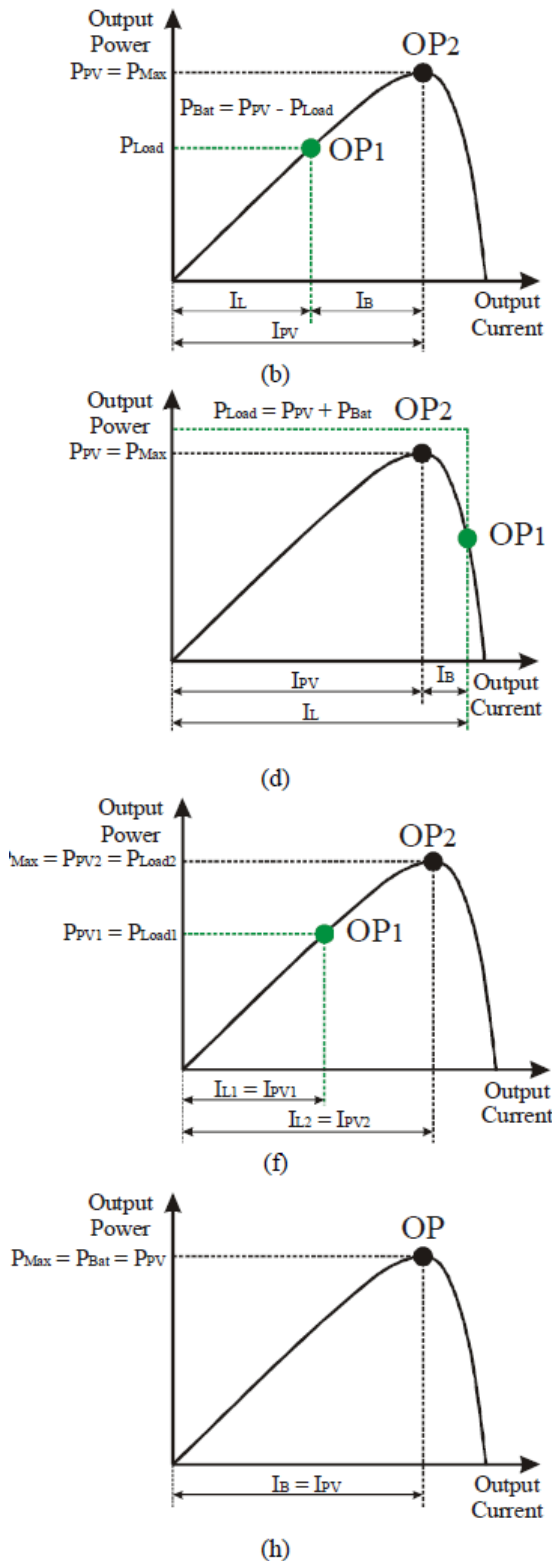


Fig (a-i) - Operational mode of stand-alone Photovoltaic systems

Operation mode of stand-alone photovoltaic systems modular and has a short period of installation. Another feature which makes PV energy more attractive is linked with the fact that this system can generate energy locally, without the need of long transmission lines, reducing the losses, and causing low environmental impact.

PV systems can be classified as: grid-connected systems and stand-alone systems. Grid-connected systems are characterized by the absence of an energy storage system. These systems directly deliver the generated/excess energy to the grid, being considered as a complementary power source to the utility.

On the other hand, stand-alone photovoltaic systems make use of an energy storage system, usually implemented by a battery bank. In these systems the load is supplied only by the energy generated from the photovoltaic panels. These systems are considered as an alternative ecologically attractive and economically viable of electrical energy generation for remote communities and isolated residences, distant from grid distribution lines. However, in such systems, the battery bank is one of the most expensive components of the whole system representing up to 15% of the initial costs for the installation of a photovoltaic system, or even up to 46% when maintenance costs are considered. This cost increase is mainly due to ineffective charge and discharge management techniques of the battery bank, what can lead to a larger number of replacements of the batteries.

Concerning the possible configurations of PV systems, the centralized topology is so far, the most widely used. Due to the employment of a single converter to perform the maximum power point tracking (MPPT), the generation capability of the PV array is not fully utilized in situations in which the panels are shaded, damaged and/or aged, contributing to decrease the efficiency and to increase the costs of the energy generated by such systems. As an alternative to this configuration, this paper proposes a stand-alone photovoltaic system which uses in the input stage a distributed energy configuration. This configuration provides a better utilization of the energy generated by the panels by means of individualized maximum power point tracking, as well as a better management of the energy stored in the battery bank, aiming at an increased life cycle and a reduction in the maintenance costs.

## 2. Idea Behind the Selection of Topic

The reason for selecting this subject for the research is that though the Maharashtra Government & Maharashtra State Electricity Distribution Company is giving its full efforts for 100% electrification of Gadchiroli District, they have not succeed so far. In the dense forest area it is difficult to maintain supply through transmission lines in rainy season as above lines are passing through huge trees & bamboo bushes the breakdown occurs frequently on electrical lines causing interruptions in supply of electricity, which remains for 4 to 5 months in some part of area where communication facilities are rare.

The Government authority is doing there level best with the help of other agencies such as MEDA to achieve the goal. In addition to above the help of other agencies such as Forest department, a local person is essential.

For the development of Tribal community residing in inner part of dense forest, the electricity is most essential amenity.

The main aim of our Government is to provide electricity in the hut of every poor population which is residing in the rural & inner part of India. The central Government had launched **Gramin Vidhyutikaran Yojana** throughout the country. Also the work of electrification is started from the year 2008. Near about 90% electrification work is carried out successfully in rural area, but due to local geographical condition the 10% electrification is still remain in inner rural area.

Though the electrification is carried out by non-conventional means with the help of MEDA still the problem is persist. To overcome this problem various remedial possibilities are to be implemented.

With the help of Photovoltaic Cell arrangements the basic difficulties can be solved. The commercial stand-alone PV systems are traditionally based on centralized structures. In these cases, when one or more photovoltaic panels are shaded or damaged, the system cannot deliver the maximum. A stand-alone photovoltaic system which uses in the input stage a distributed energy configuration. This configuration provides a better utilization of the energy generated by the panels by means of individualized maximum power point tracking, as well as a better management of the energy stored in the battery bank, aiming at an increased life cycle and a reduction in the maintenance costs.

Government has given so many facilities such as electric pumps for Agriculture, BPL connection to poor under RGGVY scheme, but same could not be utilised effectively under these circumstances.

### 3. Summary

In present scenario the 100% electrification could not achieved by way of available conventional systems of electrification. People in rural area are doing manual labour & hereditary craftsmanship but this is not done in globally accepted way. With the help of Solar System such as standalone photovoltaic which is cost effective can bring huge some of income to the country & to the individual also.

The opportunities available for Tribal people in Gadchiroli District but these classes are not equipped to be chosen for the same. Due to lack of electrical facility in tribal area large number of population is not compatible in the modern habitation. With the help of solar systems in the near about 268 villages where the conventional energy is not available throughout the year they can be allowed to participate in main stream & could give their contribution to the nation.

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