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Substation 33/11kv

Abhinav Sakhalkar¹, Sahil Gaikwad², Soham Sawant³, Runesh Gaikwad⁴, Kunal Patil⁵, Uday Vhankande⁶, Shubham Vhankhande⁷, Mahesh Melage⁸

Electrical Department, Sanjay Bhokare Group of Institute, Maharashtra

Abstract

This research focuses on the design of an effective 33/11 kV modelled injection substation that conforms to an appropriate standard for equipment. This is to provide a solution to one of the major problems industries in due to sudden voltage fluctuations in the power system which results in damages to equipment and thus outage of power supply and damages to substation equipment. In our Project deals with the simulation of 33/11kV substation. The analysis is done by using advance software Electrical Transient Analyzer Program (ETAP) and MI POWER with detailed load flow analysis. Also, and study of 33/11 kV substation. Substation provides the energy supply for the local area in which the line is located. The main function of the substation is to collect the energy transmitted at high voltage from the generating station and then reduce the voltage to an appropriate value for local distribution and gives facilities for switching. The substation is of two types one is the simple switching type where the different connection between transmission line are made and the other is the converting stations which convert AC to DC or vice versa or convert frequency from higher to lower or lower to higher.

Keywords: substation 33kv 11kv

INTRODUCTION

According to the demand of people we have to reduced and increase the supply voltage in our project increase or decrease the voltage with the help of substation. The protective device are used for protects the system e.g Voltage Fluctuation, Frequency changes, Current changes, In this period, how do you identify the fault? That time we are used programmable system to detect the Fault. By using ETAP and MI POWER programmable system. Basically 33 kV / 11 kV is used for distribution of power at the substation and 66 kV / 11 kV is also used for the distribution. But whether to use 66/11 kV or 33/11 kV depends on many factors. Following are some of the factors which are taken care for the selection of voltage of substation. The substation has an additional function like they provide points where safety devices may be installed to disconnect equipment or circuit in the event of the fault. The synchronous condenser is placed at the end of the transmission line for improving the power factor and for measuring the operation at the various part of the power system. Street lighting, as well as the switching control for street lighting, can be installed in a substation.

- Load up to 150 MVA – voltage rating of 132 kV.
- Load up to 80 MVA – voltage rating of 66 kV.
- Load up to 5 MVA – Voltage rating of 33 kV.

LITERATURE REVIEW

- The power supply network are the advantages over the fault and the associated load overcoming the components. It reaches from the loading to other transformers in appropriate proportions. The life of the transformer can be determined. The research is reviewed to increase the life span. The percentage of transformer loading must be taken.
- If you want to grow it, it has 33 kv and 11 kv substation. In this we have voltage, demand for different supply voltage in an industrial railway platform and also in factory place, but we can't supply everyone with different supply demand every time, so we use this substation. Each can be preceded by a step up and a step down voltage.
- In our system Transformer is 33/11kv rating are used. And also other important devices are used in this system. Circuit breaker, Isolators, Relay, Insulator Bus bar Earthing Switch, C.T., P.T., Series Reactors, Shunt Reactors, Series Capacitor, Shunt Capacitor, ASCR Conductor Fuses. Etc.

Working

Substation 33kv 11kv:-

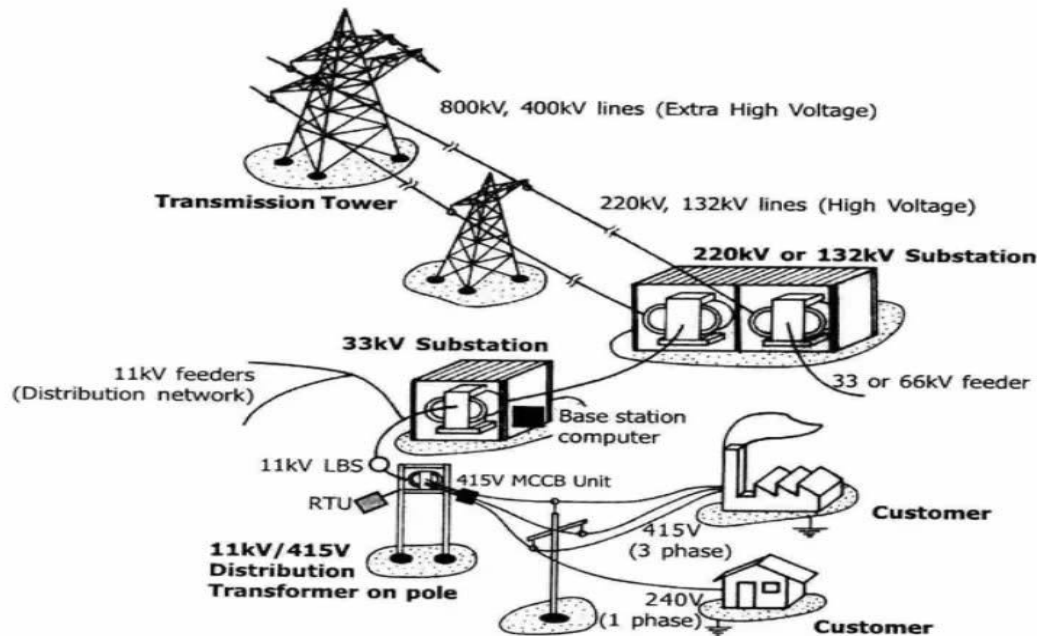


Fig. 1 Block Diagram of substation 33kv 11kv

WORKINGPRINCIPLE

Above fig shows block diagram 33kv is converted in to 11kv by using Secondary Distribution system In these system 33kV to 11kV transformers steps down the voltage to a safe level, which is then distributed via 11kV feeders to homes and businesses. Many people question why the voltage is as high as 33kV in the first place. The reason is that the higher the transmission voltage, the lower the transmission losses will be. the longer the distances that the power needs to be transferred, a higher voltage is used to reduce the transmission losses. The 11kV lines are used in residential areas and is what feeds the local transformers, which then distributes power to the buildings in the area. 33kV lines on the other hand involve much higher voltages and are used to distribute power from one small sub-station to another.

In 33kV Substation to 11kV Feeders system 11kV transformers with services such as cable jointing, transformer testing, fault finding, maintenance, installation and repairs carried out on a daily basis. However, over the last few years we have been performing maintenance work with 33kV transformers that convert the power down to 11kV. This power can then be safely distributed in order to power a town near the transformer. adding our very own capacitors to in order to improve the power factor correction of the transformer.

ADVANTAGES

- Space is much more Maintenance is easy and therefore safer.
- All equipment can be viewed and with help of Software program we can help to find the fault easy.
- Cost of installation is less, less time required fir installation.
- Between bus-bars and lines air can be used as insulation.

Applications

- It is used in residential area and the local transformer which thendistribute power in building area, Industries, Factories.
- Spacing between equipment's can be kept more it is suitable for high voltage say 66kv.

RESULTS

The steps needed to achieve the desired goal of the project and successfully run it will be explained.

Design the primary Concept

Collection of parts needed for the Project
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Create the model

CONCLUSION

This research recommends that for high-quality power supply, injection substations should be designed for parts with high energy consumers for reliable power quality

References

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