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smarter grids are
more efficient



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Task: Smarter Grids are more efficient Outline i. Introduction ii. Electric energy losses iii. Percentage saved iv. Conclusion

Introduction

Smart grids refer to class of technology people use to bring ease in delivery systems of electricity into the 21st century using computer remote control.

This paper explains mechanisms of energy losses and highlights percentage reduction in saving electricity using smarter grids.

Electric energy losses

A significant proportion of energy is lost between power plants and end users, which represents world advancements of new technologies. Voltage and Var optimization (VO) are new technologies that aids in the reduction of electric energy losses and demands on electric distribution system.

Modelling of real time information and online system that provides optimized and coordinated control for unbalanced distribution networks occurs. Indeed, electricity distribution companies save energy by maximising energy delivery efficiencies. VO optimizes resources that are highly reactive and voltage control capabilities.

There is consumption of thousands of billions of kilowatt-hours as evident in 3. 1% yearly increase between 1980-2006. 10% of electric energy from power plants is lost in show and allotment processes. 40% of losses occur on developed distribution networks evident in 2006 when there was a 655 billion kWh energy loss in distribution.

Peak demand in a system lasts less than 5% of the time, therefore this potential can be utilized during peak load hours. Electricity distribution network moves energy from substations to consumers because the network includes; medium voltage power, substation transformers and pole-pad
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mounted transformers.

Most energy loss which occur on distribution is ohmic loss resulting from currents of electricity which flow through conductors. Reactive power compensation devices are designed to reduce unproductive components of current. Voltage regulating devices are usually installed at the substation and on feeders with the intent of adjusting the feed voltage. However, fixing of transformers that consist of tap changers named voltage regulator often occurs. Loss occurs due to resistance in conductors, which is determined by resistability of material used to make cross-sectional areas.

Percentage saved

In saving electric energy, regulation is achieved in accordance to measurements which are locally available. There ought to be control strategies that are comprehensively evaluated to establish feeders that could be regulated with multiple voltages. More percentages of electricity are saved when var compensation devices are used. In addition, the use of substation automation system or management systems that deal with distribution saves huge percentages of electricity. VVO is an advanced technology which operates by responding to demands keyed in by operators. The technology minimises power loss, demand and voltages and current violations and in turn saves electric energy.

According to (Feng, Peterson and Yang), energy is saved through a sensing system that matches high standards. Additionally, energy is also saved through communication and actuation capabilities which also optimizes voltage and var. The VVO technology improves efficiency of energy leading to the reduction of green house gas emission and reduction of peak

demand for costs of electric energy. ABB developed a contemporary <https://assignbuster.com/look-at-the-upload-file-the-article-title-is-smarter-grids-are-more-efficient/>

generation of VVO, which have the ability to maximize networks with great speed. There is an innovative solution methodology which enables detailed and designing of the distribution system connections. Finally. In order to accurately design a distribution networks behavior, a detailed model is used.

Conclusion

Electric energy is currently being lost due deliberate refusal to implement use of smarter grids which are more efficient. If there will be a reduction in losses of electric energy that occur during the distribution process. 10% of the electric energy could be saved translating to saving 65 billion kWh of electricity. It is therefore significant that the use of smarter grids be implemented because they are efficient in saving electric energy.

Works Cited

Feng, Xiaming. Peterson, William. Yang, Fang. Et al. Smarter grids are more efficient. N. d. web.

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