

Voltage Coordinated Control Technology

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How to cite this paper: Pritam Kumar Sen | Rahul Rajora | Gaurav Srivastava "Voltage Coordinated Control Technology" Published in International Journal of Trend in Scientific Research and Development (ijtsrd), ISSN: 2456-6470, Volume-3 | Issue-3, April 2019, pp.339-340, URL: <http://www.ijtsrd.com/papers/ijtsrd21736.pdf>



IJTSRD21736

ABSTRACT

As of late, as disseminated age, new loads and new FACTS gadgets generally utilized, the current voltage control innovation of network have been not able meet the new necessities under the new circumstance on the control goals, control methodology and control implies. In part of control targets, it just satisfy the responsive power equalization and voltage qualified rate of control transport, doesn't viably mirror the client end need of fantastic power supply, in this way it is hard to accomplish the worldwide ideal. In voltage control implies, it have not secured the Reactive Power gadget of circulation and request side. In voltage control system, it centres on the transmission arrange advancement. Thus, this article advances the planned control framework that dependent on the current three-level voltage control, expanding receptive voltage control of dispersion and request side and completely meet the necessities of the client end.

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Keywords: Automatic voltage control (AVC), Voltage facilitated innovation, Coordination layer, Reactive power control, Transmission Network and Distributed Network

INTRODUCTION

By and by, the voltage control level has incredibly created as AVC and VQC programmed control advancements have been broadly received. In any case, existing programmed voltage control innovation of urban lattice can't meet the new prerequisites. Subsequently we need to comprehend the controlling procedure for example examined underneath:

1. Control implies:

The voltage does not cover different receptive compensator on the system. In the part of control, the fundamental framework and dissemination arrange are having their own control independently. The whole voltage control covers age, transmission, dissemination and utilization side voltages.

2. Control objective:

The fundamental target of voltage control is to meet the receptive power balance and keeping up transport voltages. Be that as it may, the power nature of shopper side is hard to check. The best - to-base voltage control conspire isn't qualified. In the requirements of shoppers, the last goal of voltage control is to give the top notch control supply to the purchaser side. So the new down-to-top control idea ought to be set up.

3. Control methodology:

This focuses on the examination and foundation of control system of transmission organize. Notwithstanding, the entire lattice structure of dissemination arrange is very

extraordinary, in this way their control techniques are additionally unique. In this way, it is important to examine the distinctive control systems dependent on contrasts of transmission and dissemination arrange.

Interconnection and voltage control

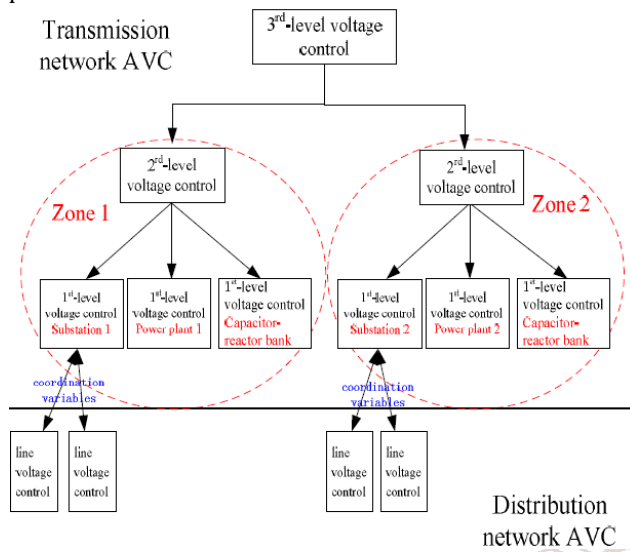
Alongside the improvement of input innovation and the electronic power advances, receptive power in dissemination organize expanding and their prerequisites on the power supply dependability and quality end up ever more elevated. Hence, so as to adequately meet the powerful quality prerequisites of purchaser, alongside responsive power control, it is important to set up receptive voltage control arrangement of dispersion organize. Interconnection of transmission and dispersion organize straightforwardly influence the voltage quality, receptive controls and voltage controls of conveyance arrange. So as to keep away from the irrational receptive stream and voltage circulation, it is important to arrange the transmission and dissemination organize.

In this manner, in view of existing 3-level AVC arrangement of transmission organize, it is recommended to build up the voltage control of appropriation and utilization sides. The receptive voltage control system should pursue the given standards:

1. The voltage ought to be made a decision from base to top, controlled through and through;

- The receptive asset ought to be made a decision through and through, and controlled from base to top.

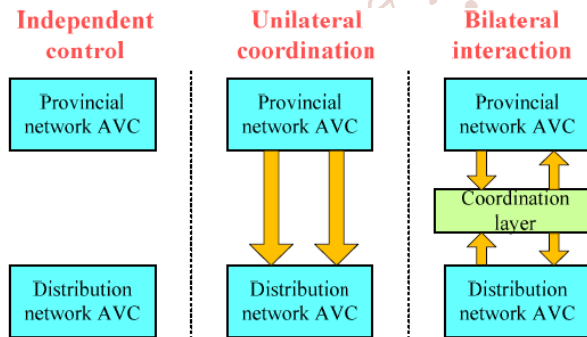
Its fundamental idea is as appeared in the accompanying picture:



Voltage control coordination technology

For better voltage control and power quality improvement, an appropriate correspondence is set up among transmission and conveyance framework. There are three kinds of plans presented as:

- Independent control
- Unilateral control
- Bilateral control

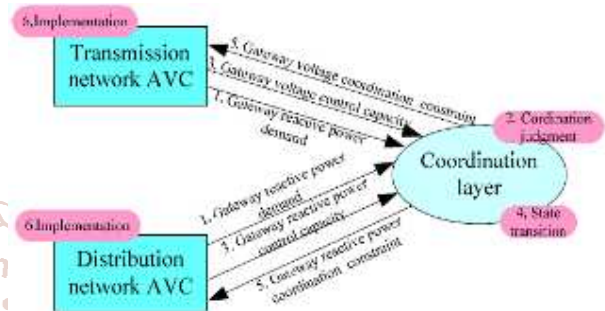


- Independent control: In free control mode, there is no data stream among transmission and conveyance AVC
- Unilateral control: In one-sided control mode, transmission organize AVC sends control focus to dissemination system and dispersion arrange AVC is in charge of following this objective
- Bilateral control: Transmission and dispersion organize AVC both are in charge of control. Both transmission and conveyance arrange AVC will impart through coordination layer to keep away from impacts on control methods of one another.

The motivation behind facilitated voltage control is to acknowledge accessible assets utilization and shared correspondence among upper and lower level system. Consequently, it is basic to connect with one another for two sorts of key data "control limit" and "control request".

Coordination factors are imperative to keep up the nonstop collaboration among transmission and dissemination organize AVC. There is a movable range to keep up coordination factors. Control limit and voltage prerequisites by the circulation AVC chooses the coordination factors and its requirements.

The planned control process is appeared in the accompanying figure and can be separated into the accompanying advances:



- Transmission network AVC calculates reactive power demand and distribution network AVC calculates voltage demand, both sides send demand to coordination layer;
- The coordination layer produces coordination state according to transmission and distribution demands to judge coordinated state of the port;
- Transmission network AVC calculates control capacity for voltage and distribution network AVC calculates control capacity for reactive power and sends the control capacities to coordination layer;
- The coordination layer generates the feasible coordination state exchanging path according to the control capacities sent by transmission and distribution networks.
- The coordination layer distributes voltage coordination limits to transmission network AVC and sends reactive power coordination limits to distribution network AVC;
- Transmission and distribution network AVC implements the coordination constraints send by coordination layer into the existing control model leading to the coordinated control.

Conclusion

This article proposes a voltage control system for both Transmission and Distribution network. The research is carried out for following aspects:

- Better voltage quality on the consumer side through voltage level control.
- Reactive power control by the help of constraints.
- Coordination layer role in voltage control.