Experimental Study of Power Quality in Transmission Line by using of FACTS Device

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Abstract

This paper presents the applications of Flexible AC Transmission Systems (FACTS) controllers such as Thyristor Controlled Reactor (TCR), Thyristor Controlled Switched Reactor (TCSR), Static VAR Compensator (SVC) or Fixed Capacitor- Thyristor Controlled Reactor (FC-TCR), The performance parameters of power systems are achieve by different FACTS controllers such as series, shunt, series-shunt, and series-series connected FACTS controllers are incorporated in power systems.
Keywords: Experimental process, FACTS Devices, UPFC

I. INTRODUCTION

Power disruptions and individual power outages are one of the major problems and affect the economy of any country. In contrast to the rapid changes in technologies and the power required by these technologies, transmission systems are being pushed to operate closer to their stability limits and at the same time reaching their thermal limits due to the fact that the delivery of power have been increasing. The major problems faced by power industries in establishing the match between supply and demand are: Transmission & Distribution; supply the electric demand without exceeding the thermal limit. In large PS, stability problems causing power disruptions and blackouts leading to huge losses.

These constraints affect the quality of power delivered. However, these constraints can be suppressed by enhancing the PS control. One of the best methods for reducing these constraints is FACTS devices. Possible Benefits from FACTS Technology Within the basic system security guidelines, the FACTS devices enable the transmission system to obtain one or more of the following benefits: Control of power flow as ordered. This is the main function of FACTS devices. The use of power flow control may be to follow a contract, meet the utilities' own needs, ensure Optimum power flow, ride through emergency conditions, or a combination of them.

Increase utilization of lowest cost generation. One of the principal reasons for transmission interconnections is to utilize the lowest cost generation. When this cannot be done, it follows that there is not enough cost-effective transmission capacity. Cost-effective enhancement of capacity will therefore allow increased use of lowest cost generation.

II. EXPERIMENTAL PROCESS

Fig. 1: Power supply with Regulator

Fig. 2: Transformer with assembly

Fig. 3: Experimental Setup

III. READING AND DISPLAY WITHOUT FILTER AND WITHOUT LOAD

Fig. 4: value of I, P display by analyzer

Fig. 5: cycle display by analyzer

Fig. 6: value of U display by analyzer

Fig. 7: value of U, f display by analyzer

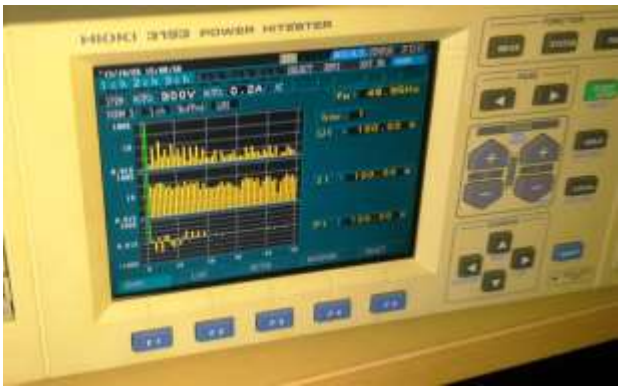

Fig. 8: value of U, I, P display by analyzer

IV. READING AND DISPLAY WITH FILTER AND WITH LOAD

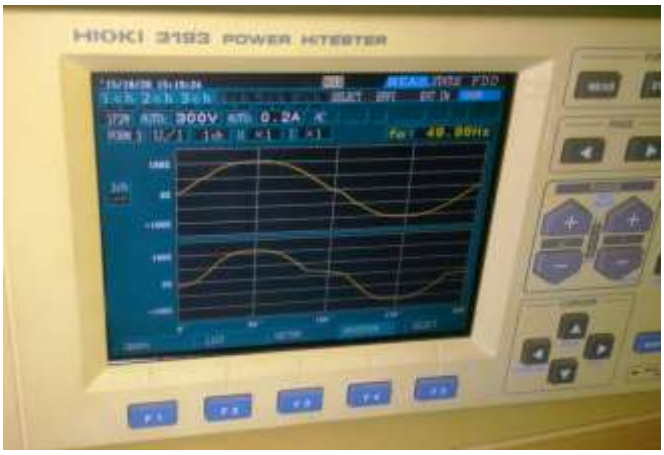

Fig. 9: cycle display by analyzer

Fig. 10: value of U display by analyzer

Fig. 11: value of U, f display by analyzer

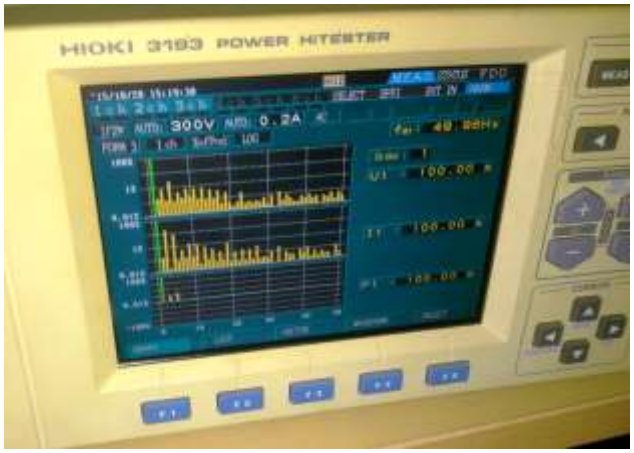

Fig. 12: value of U, I, P display by analyzer using of 4700µf capacitor

V. COMPARISON

Table – 1
Reading of Experimental setup

Sr. No.	*Reading without Filter in Hz*	*Reading with Filter in Hz*
1	*49.95 Hz*	*49.96 Hz*

Table – 2
Comparison of reading

Sr. No.	*Parameter*	*Reading without Filter*	*Reading with Filter*
1	V_1	*230.86 V*	*227.25 V*

VI. CONCLUSION

The application of FACTS controllers such series, shunt, series-shunt, and series- series connected FACTS controllers are in power system environments for enhancement of performance parameters of systems .we are find out the Reading without Filter are 230.86 V and Reading with Filter are 227.25 V .

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