

HVDC & FACTS (3:1:0)

Module-I(15 hours)

Introduction: Comparison of AC-DC Transmission, Description and application of HVDC transmission, DC System components and their functions

Analysis of HVDC Converters: Pulse number, Converter configuration, Analysis of Graetz circuit, Bridge characteristics, 12 pulse converter

HVDC Control: Principles of DC Link control-Converter control characteristics- System control, Firing angle control- Current and extinction angle control, DC link power control, Reactive power control and VAR sources, MTDC system- types- control and protection- DC circuit breakers

Module-II(15 hours)

FACTS Concept and General System:

Transmission interconnections, Flow of power in AC system, Power flow and dynamic stability considerations of a transmission interconnection, Relative importance of controllable parameters, Basic types of FACTS controllers, Benefits from FACTS Technology, In-perspective: HVDC or FACTS

Module-III (15hours)

Compensators: Objective of series and shunt compensation, SVC and STATCOM, GCSC, TSSC, TCSC, and SSSC, UPFC, IPFC, Generalized and Multifunctional FACTS Controllers

Books Recommended

- 1.Padiyar K.R., "HVDC Power Transmission System", Wiley Eastern PVT Limited
- 2.Kimbark, "Direct Current transmission", Vol.1, John Wiley, New York, 1971
- 3.Understanding FACTS: Concepts and Technology of Flexible AC Transmission Systems. By N. G. Hingorani & L. Gyugi, Standard Publisher Distributors, IEEE Press, Delhi
- 4.Flexible AC Transmission Systems. By J. Arillage