

## CHAPTER 60

### TECHNOLOGY ELECTRICAL ENGINEERING

#### Doctoral Theses

627. BHOWMICK (Suman)  
**Investigation on the Development of Newton Power Flow Modeling of Voltage-Source Converter based FACTS Controllers.**  
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#### *Abstract*

Attempts to investigate systematically the development of a new modeling strategy which minimizes the revision of the original software codes requires to incorporate the VSC based FACTS controllers in an existing Newton-Raphson power flow algorithm. In the proposed strategy, an existing power system network installed with VSC based FACTS device(s) is transformed into an equivalent augmented network, without any FACTS device.

#### *Contents*

1. Introduction and literature review. 2. Newton power flow model of the SSSC. 3. Newton power flow model of the UPFC. 4. Newton power flow model of the IPFC. 5. Newton power flow model of the GUPFC. 6. Newton power flow model of the STATCOM. 7. Conclusions. Bibliography and appendix.