

Flexible AC Transmission Systems: FACTS

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Abstrak

This Green Book offers the outstanding expertise of CIGRE professionals about Flexible AC Transmission Systems (FACTS) in one concise handbook. FACTS are used to enhance AC power networks, by providing fast control of power flows and AC voltage and AC phase angles. They can be used to defer the need for additional power lines, by controlling the power flow on lines to achieve maximum utilisation of the existing lines, and/or by improving the power quality, e.g. when large disturbing loads are connected to the network.

This Green Book on FACTS provides comprehensive information about the use of Power Electronics for AC system control and for Power Quality Improvement in its over 1000 pages. This book has been written by experts in the field, who come from Transmission System Operators, Network owners, manufacturers, and consultants in this field.

This Green Book on FACTS covers a large range of topics in its 6 sections, as follows:

1. AC Systems Characteristics, AC network control using conventional means and AC network control using FACTS Controllers
2. Technical Descriptions of all current FACTS controllers, power electronic Topologies for FACTS, SVCs, STATCOM, TCSC and the UPFC and its variations
3. Application Examples of all FACTS controllers, which include a description of controllers using saturation of iron as well as examples of all current FACTS controllers
4. Planning and Procurement, including economic appraisals and cost benefit analysis, planning studies, environmental considerations, functional specifications
5. Implementation of FACTS controllers, including integration and design studies, equipment design and testing and commissioning
6. FACTS operation and lifetime management.