



SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107

An Autonomous Institution

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A' Grade
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

UNIT – V

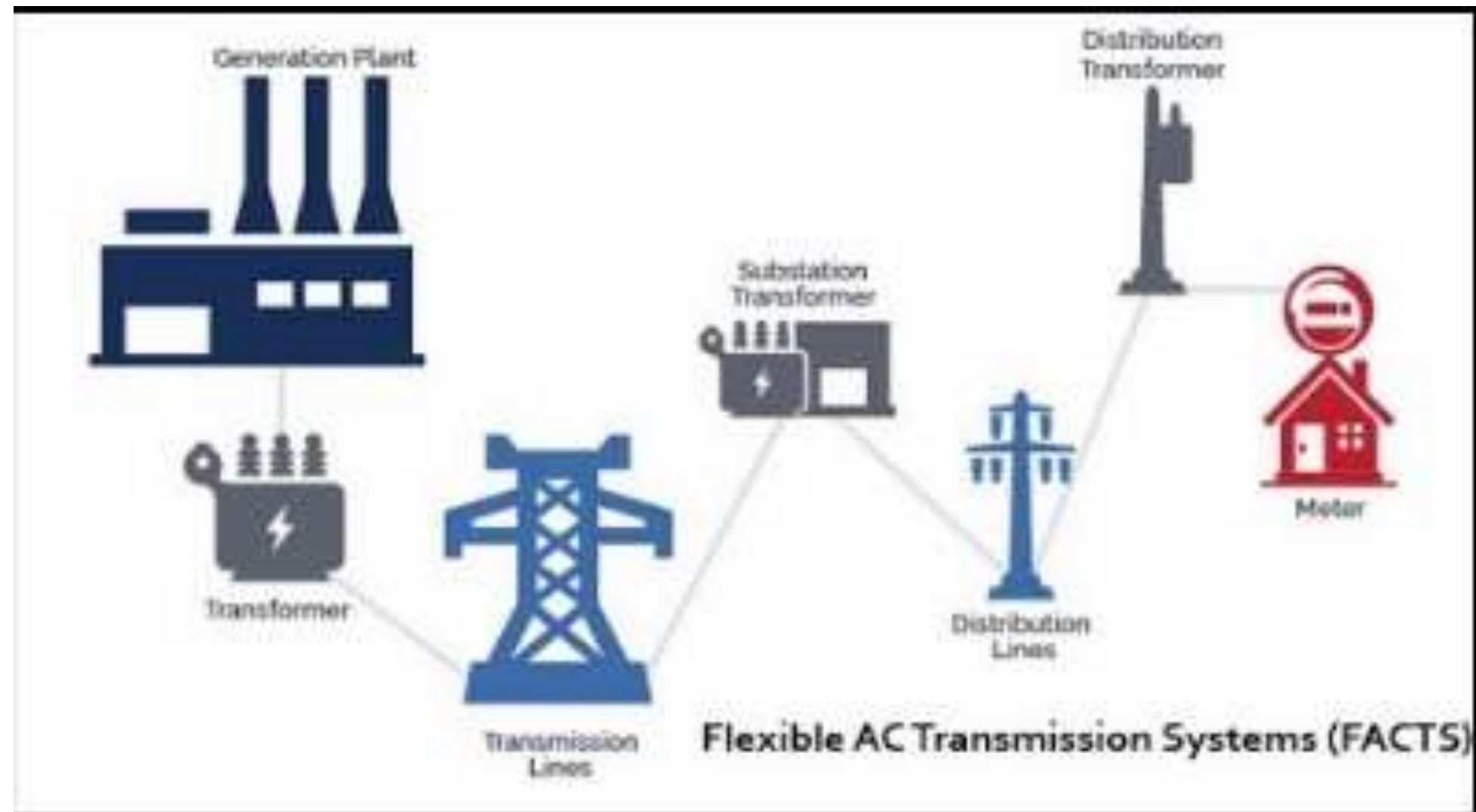
Stability Studies and Reactive Power Compensation
FACTS Devices





CONTENTS

- What is FACTS?
- Objective of FACTS
- Types of FACTS controllers
- Advantages of FACTS controller
- Application of FACTS





WHAT IS FACTS?

- Flexible AC Transmission System is a newly integrated concept based on power electronic switching converters and dynamic controllers.
- To enhance system utilization and power transfer capacity.
- Stability, security, reliability and power quality of AC system interconnections.



WHAT IS FACTS?

- FACTS uses solid state switching devices to control power flow through transmission network.
- The transmission network can be loaded to full capacity.



HISTORY OF FACTS DEVICES

- First proposed by Dr.Narain.G.Hingorani in 1988 of Electric Power Research Institute , USA.
- The first FACTS devices installation was at the C.J Slatt Substaion near Oregon.
- That was 500kV,3 phase 60 Hz substation and was developed by EPRI.



OBJECTIVE OF FACTS



- To increase power transfer capability of transmission system.
- To keep power flow over designated roots.
- Secure loading of transmission lines nearer to their thermal limits.
- Damping of oscillations that can threaten security or limit the useable line capacity.

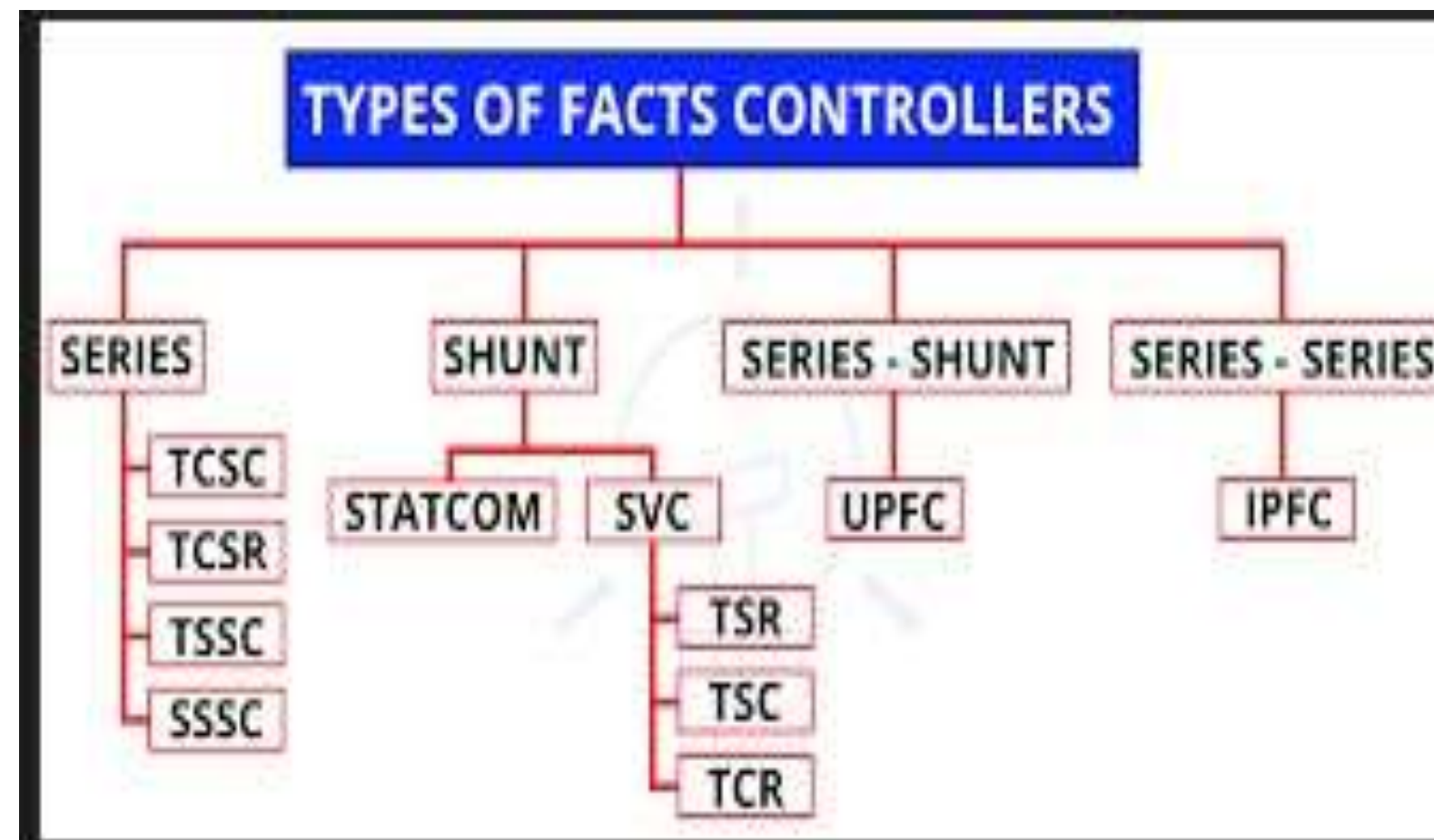


TYPES OF FACTS COMPENSATION

- Series Compensation
- Shunt Compensation
- Combined Series - Series Compensation
- Combined Series - Shunt Compensation

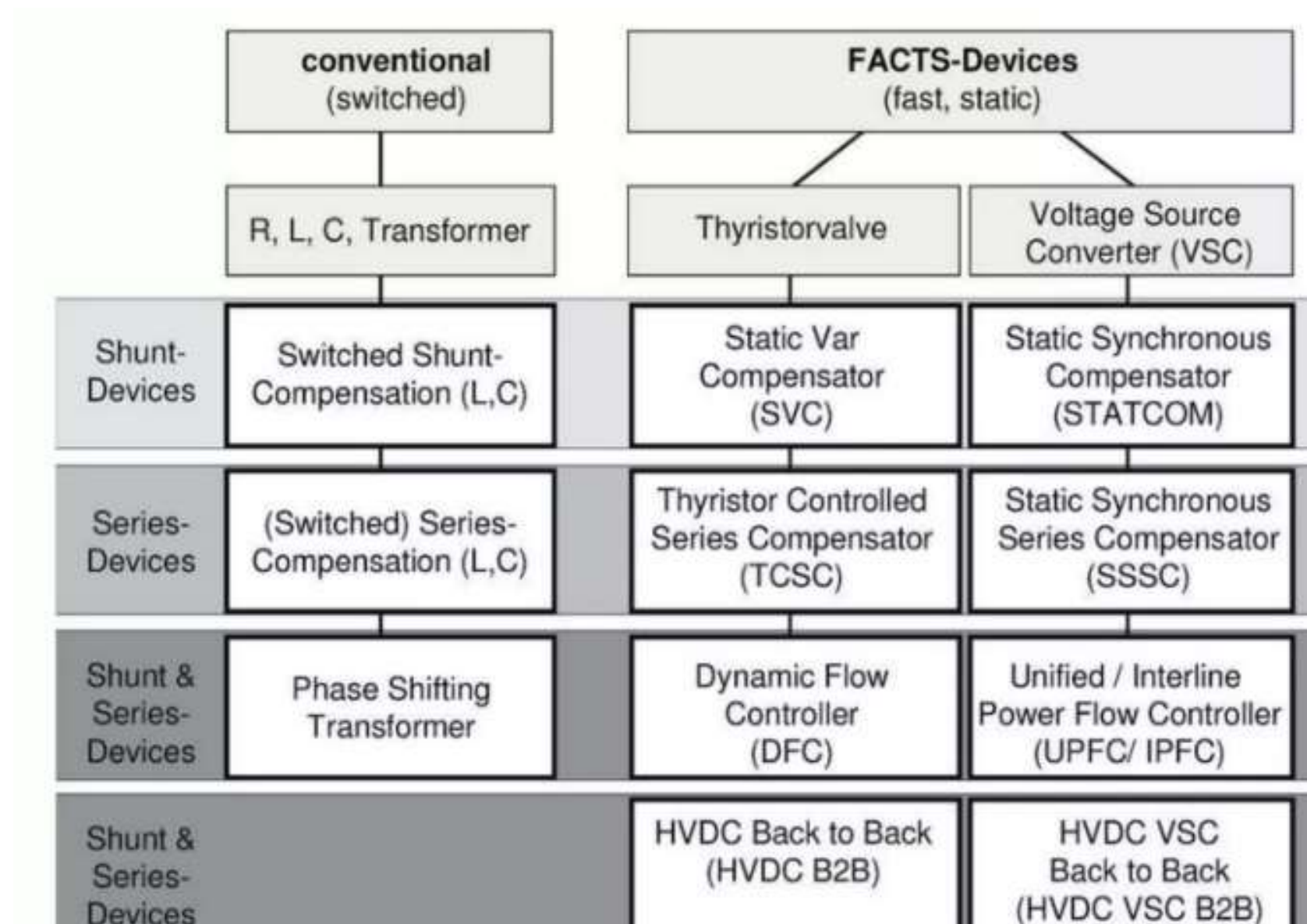


TYPES OF FACTS COMPENSATION





TYPES OF FACTS COMPENSATION





ASSESSMENT

1. FACTS devices are used in
 1. Generation
 2. **AC transmission**
 3. DC Transmission
 4. None



ASSESSMENT

2. Voltage control means
- Boosting the feeder voltage
 - Reducing line voltage under over voltage conditions
 - **Keeping the voltage level within the limits**
 - None



ASSESSMENT

3. Line drop compensation corrects for
- Line drop lagging power factor
 - Voltage at leading power factor
 - **Transformer voltage drop**
 - Voltage drop in feeder limits

