SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

COIMBATORE-35

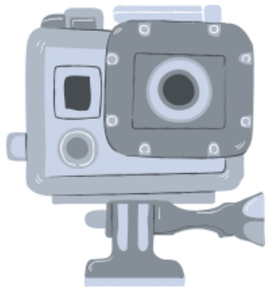
Accredited by NBA-AICTE and Accredited by NAAC – UGC with A+ Grade
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

UNIT I

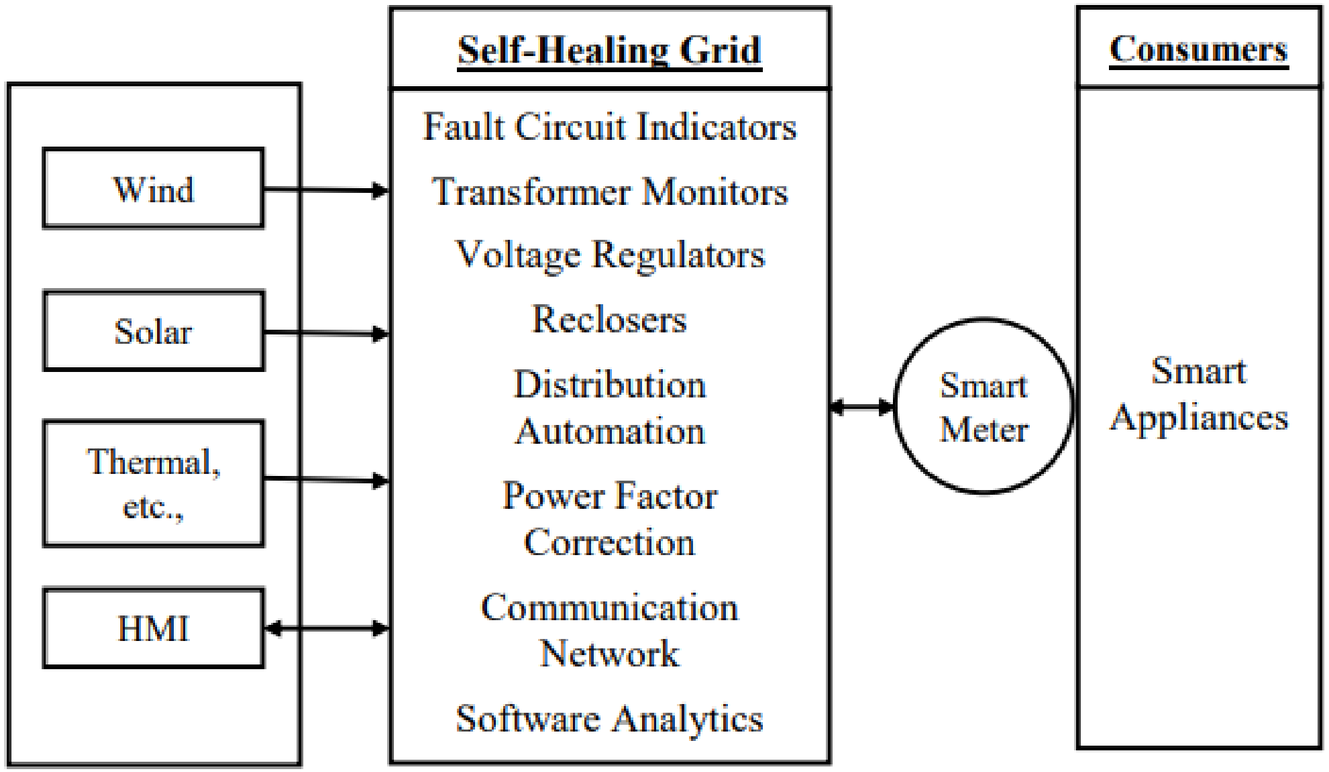
Self Healing & Resilient Grid

19EEE308 – SMART GRIDS
III year / VI Semester



- A smart grid automatically detects and responds to routine problems and quickly recover if they occur, minimizing downtime and financial loss.

- Self-healing concept important to the Energy Infrastructure A secure —architected‖ sensing, communications, automation (control), and energy overlaid infrastructure as an integrated, reconfigurable, and electronically controlled system that will offer unprecedented flexibility and functionality, and improve system availability, security, quality, resilience and robustness


Self-Healing Grid
Consumers
Wind
Solar
Thermal, etc.,
HMI
Fault Circuit Indicators
Transformer Monitors
Voltage Regulators
Reclosers
Distribution Automation
Power Factor Correction
Communication Network
Software Analytics
Smart Meter
Smart Appliances

Requirements of Self-HealingGrid:

System topology representation

- Feeders with single restoration path, generally open "tie switch"

Pre-fault system status

- Switch status (upstream and downstream information for devices)
- Pre-fault system loading (capacity check for the restoration)

Fault detection

- Based on recloser lockout status and reclosing counter value change, or substation breaker trip signal
- Downstream node of the lockout switch is the fault location

Fault isolation

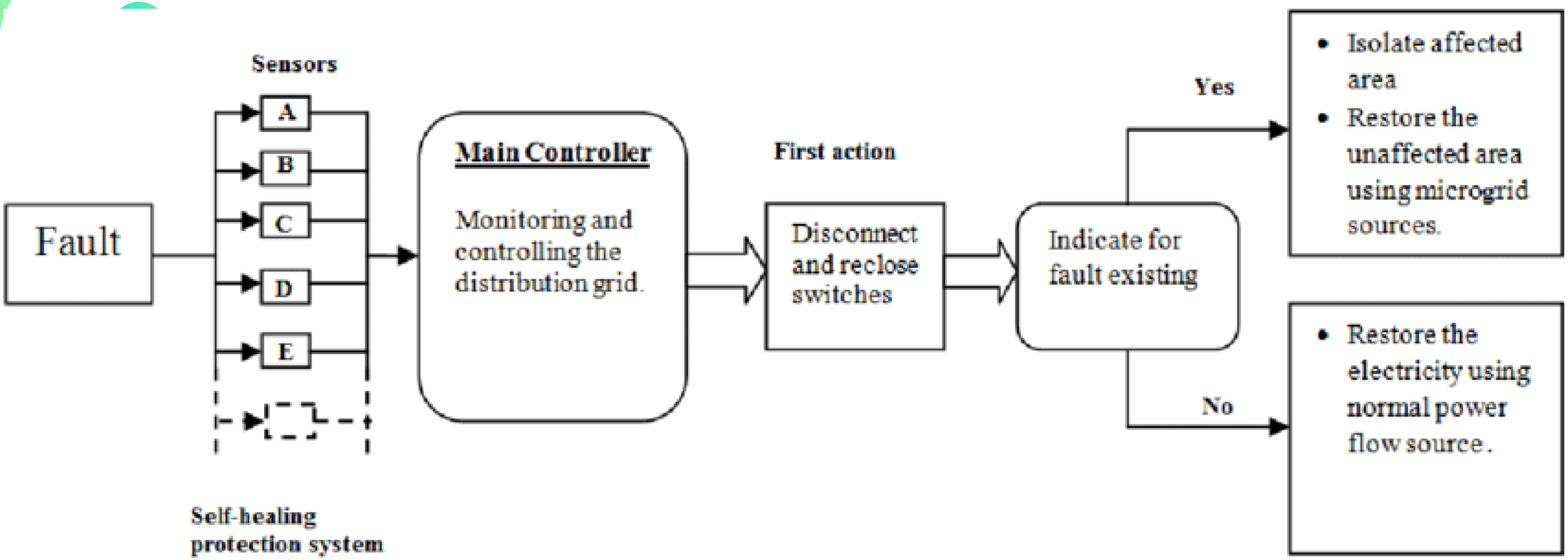
- Downstream switch(es) of the fault location

Load restoration

- Start from the downstream node of the isolation switches

Benefits

- Allows utilities to focus investments on feeders that experience the most outages
- Fast implementation
- Initial low capital investment
- Target solution appropriate for problem feeders


Sensors
A
B
C
D
E
Fault
Main Controller
Monitoring and controlling the distribution grid.
First action
Disconnect and reclose switches
Indicate for fault existing
Yes
Isolate affected area
Restore the unaffected area using microgrid sources.
No
Restore the electricity using normal power flow source.
Self-healing protection system

Summary

Activity

KEEP
LEARNING..

Thank u

SEE YOU IN NEXT CLASS