ECE 526 (Spring 2019)

Lecture 28
Handwritten Notes
wind or PV →

at transmission level

Generation – connected largely

Larger scale Non-traditional

Gens

motor Gen
University of Idaho

stator connection

energy if below \( n_s \)

energy flow if speed > \( n_s \)

variable frequency source

TYPE 3 Wind Turbine
Single Phase to Ground Fault on the Terminals of the Generator

Type 4 WTG Response to Fault

Electronics
- Fault current is limited and maintained by the thyristors
- VARs-hinge angle of inverters for Real & Reactive power control
- Synchronous or Induction Generator

Type 4 Wind Turbine Generator

By: Ross Some

4/28/2017
PV: Type 4 Wind Turbine
- Limited overcurrent
  1.1-1.2 p.u. potentially
- Unity PF in most cases
- Positive sequence current

Distance elements - POT
Distance elements tend to do ok

Transmission challenges

V, I - on lines side of substation transformer

3L

\[ A \]

\[ I \]

\[ V \]
have problems too
- fault type selection logic can
  leads V
sag
- converter supplies reactive
  power for faults with deeper
low voltage ride through requirement

angle between V, \( V.I \)
- Z0eff, Z0eff
  Directional Supervision
POTT - weak infeed
DCB - zone 2 sensitivity setting
Line current differential - minimum pickup — depends on strength of other end

 Capacitor Banks
- overcurrent for catastrophic faults
- voltage imbalances
  - Alarm

IEEE C37.99