Wind Plant Voltage Control

Nicholas W. Miller
GE Energy Consulting

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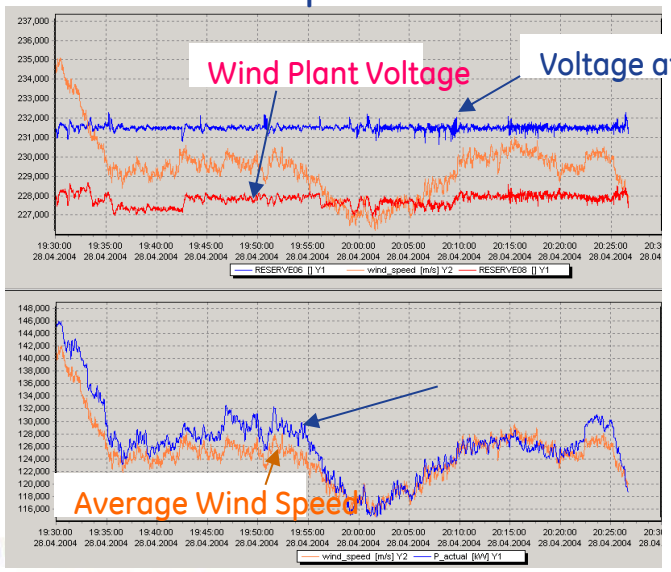
imagination at work

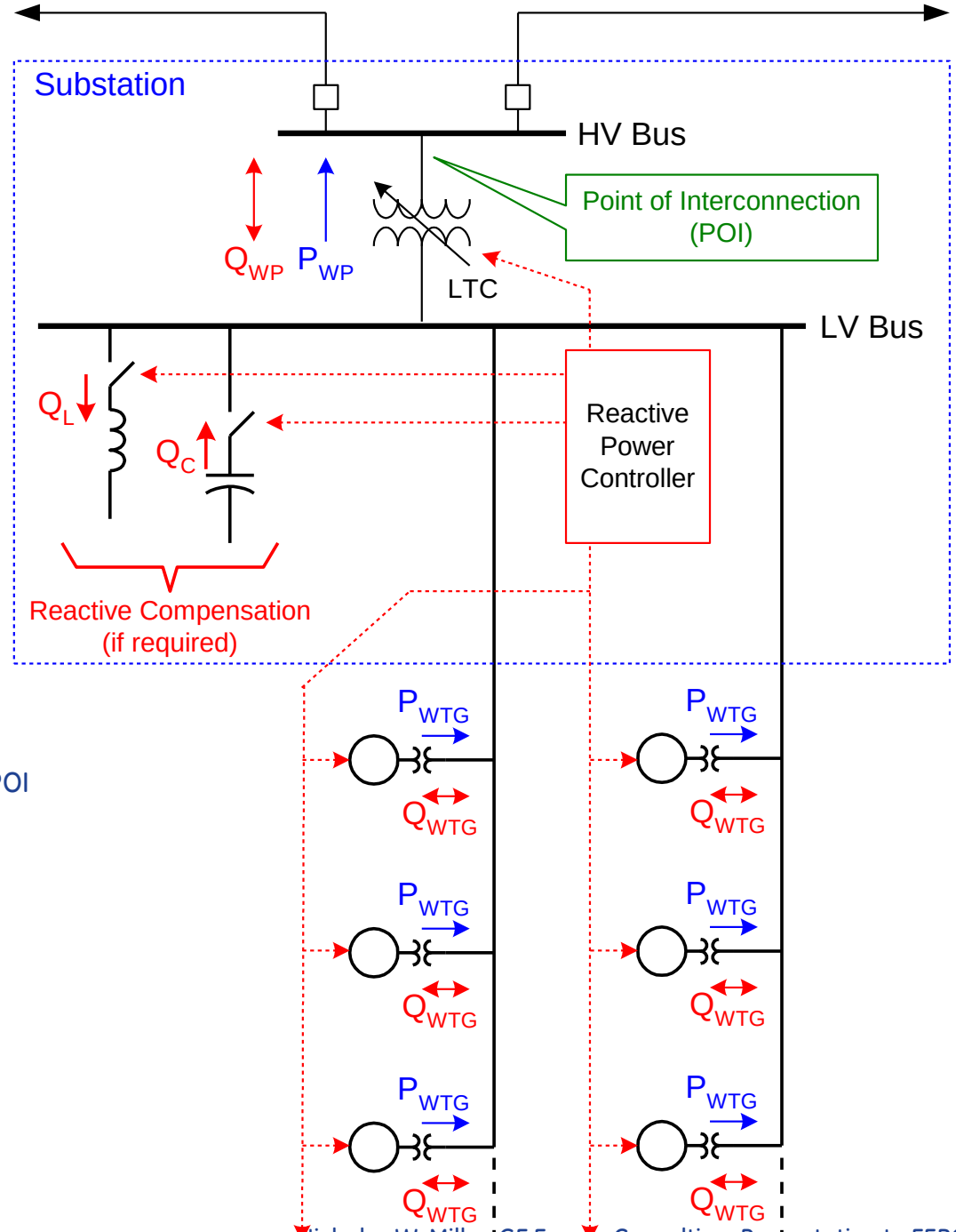
Voltage Control

Plant Level Control System

- Coordinated turbine and plant supervisory control structure
- Voltage, VAR, & PF control
- PF requirements primarily met by WTG reactive capability, but augmented by mechanically switched shunt devices if necessary

Actual measurements from a 162MW wind plant – from 2004





A few comments (for 2016 workshop)

- GE has been providing wind turbines and wind plant controls (and now Solar PV inverters) that produce reactive power and regulate voltage for more than a decade
- It is NOT possible to purchase a wind turbine from GE that does not have this capability
- It is POSSIBLE for wind plant owners to NOT enable this capability or to invest in the supporting infrastructure to do so.
- Having this capability adds to the cost of making the generation equipment and to the balance of plant, and is reflected in the capital cost to developers
- Augmenting WTG reactive capability with static, switched capacitors is much less expensive than augmentation with dynamic (e.g. SVC) devices
- Using this capability has a small, but non-zero, variable cost for the owner – mainly losses and some added O&M


nicholas.miller@ge.com
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