

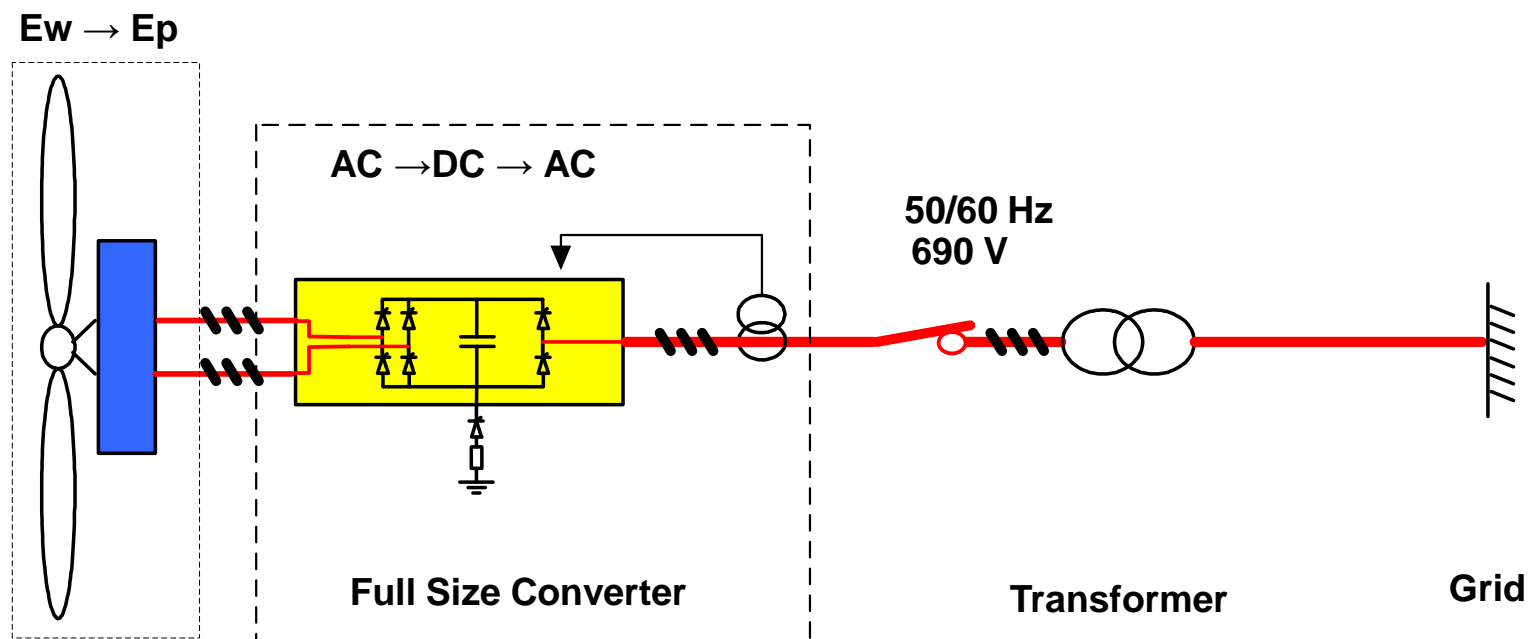


Grid-Connected Experiences of Goldwind MW Direct Drive PMSG Wind Turbine

Yuan QIAO
Grid Connection Technology office
Goldwind



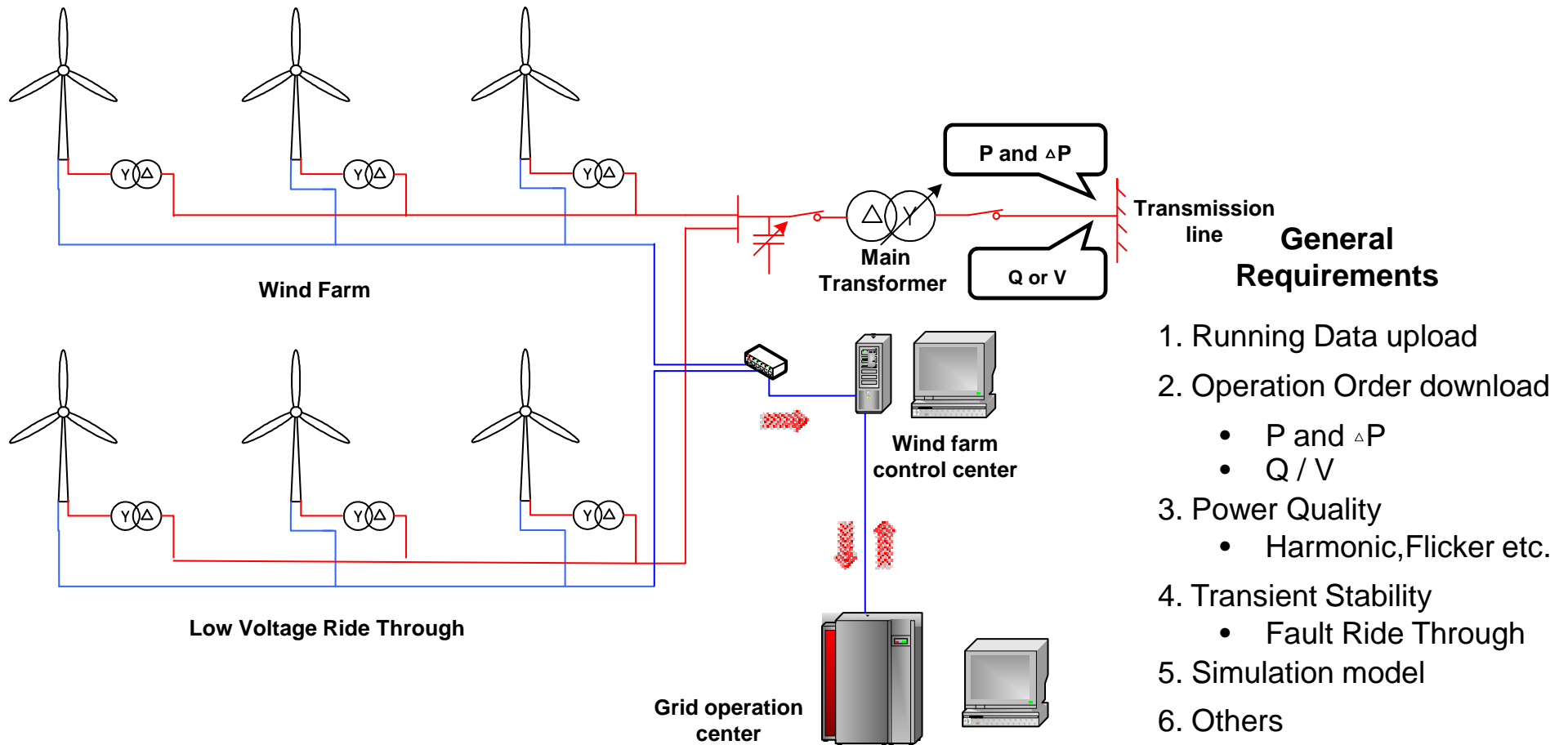
Goldwind MW Variy_Speed Direct_Drive PMSG WT



- ❑ **Blades Direct Drive Permanent Magnetic Synchronous Generator**
 - Without GearBox, High efficiency and low maintain
- ❑ **Full Size Converter**
 - Wide operation speed range
 - Strongly Control Capability for Active Power and Reactive Power

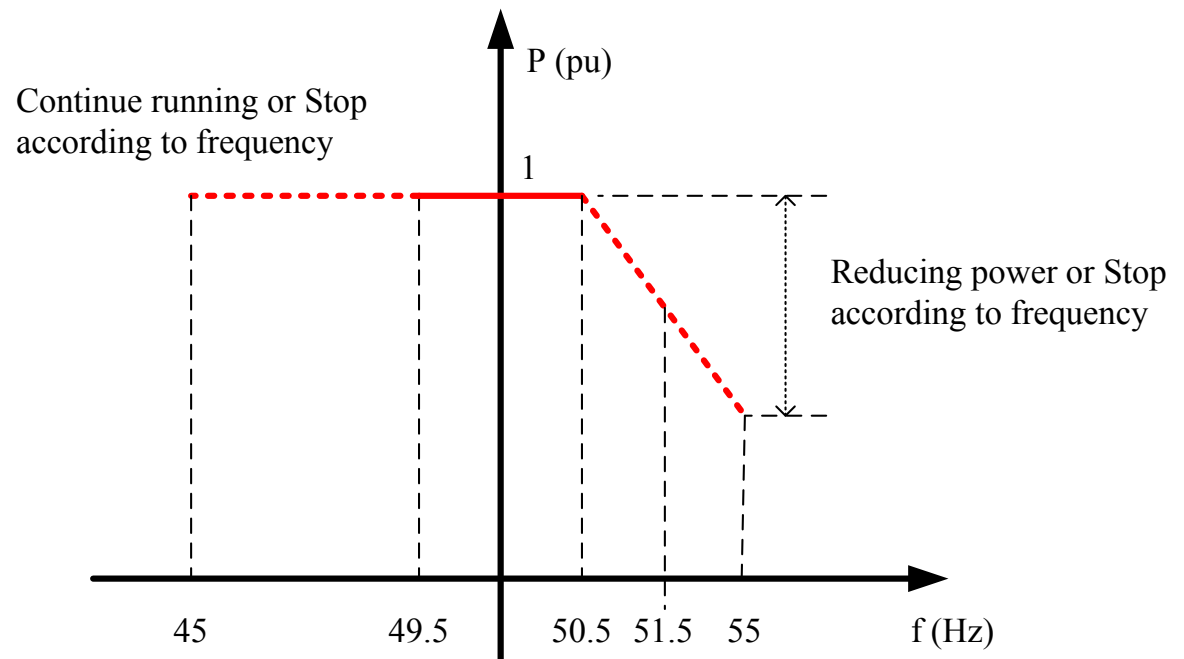
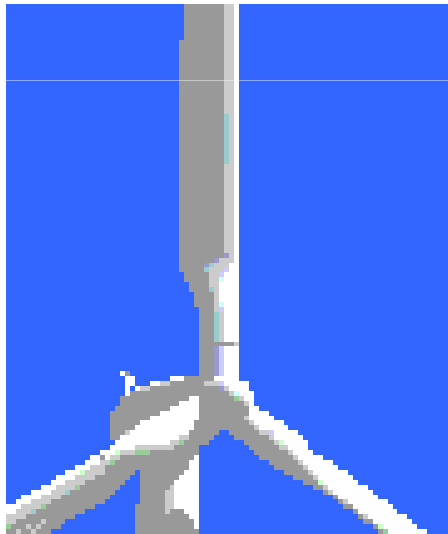


General Requirements of Grid code



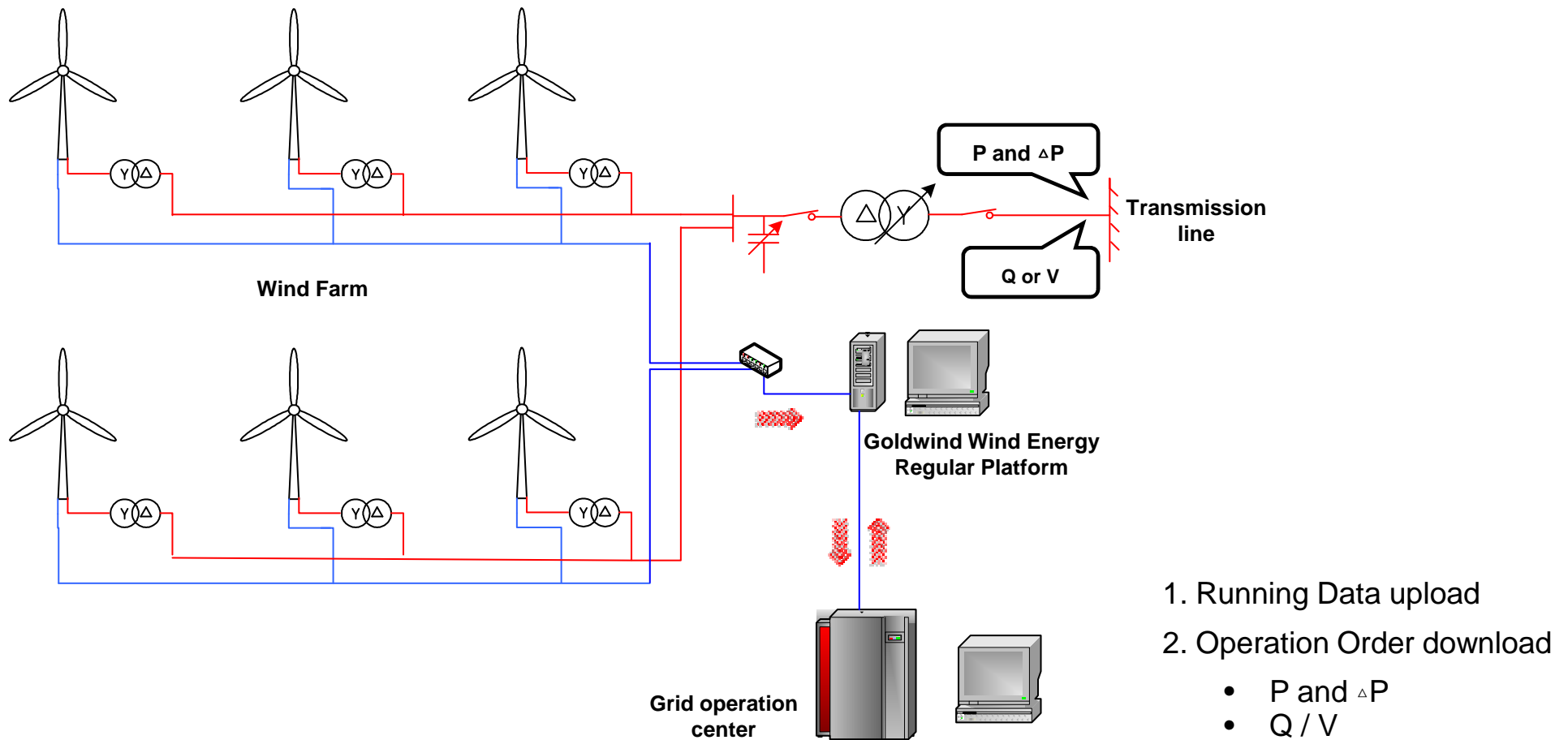


Active Power Control for Goldwind MW WT





Goldwind Wind Energy Regular Platform





风电场实时功率曲线



变电站负荷

限定负荷

理论出力

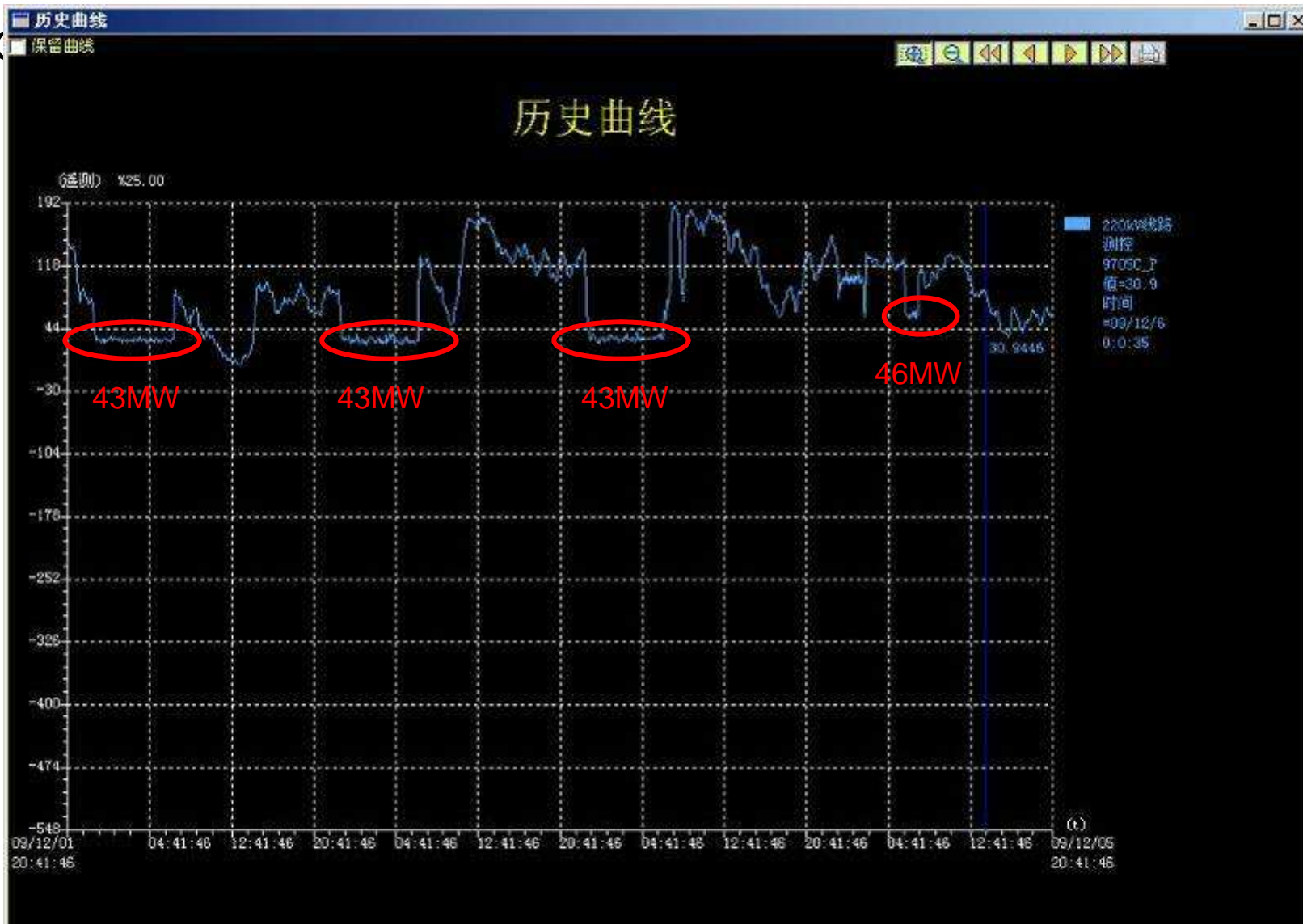
风机有功合计

数据导出

关闭



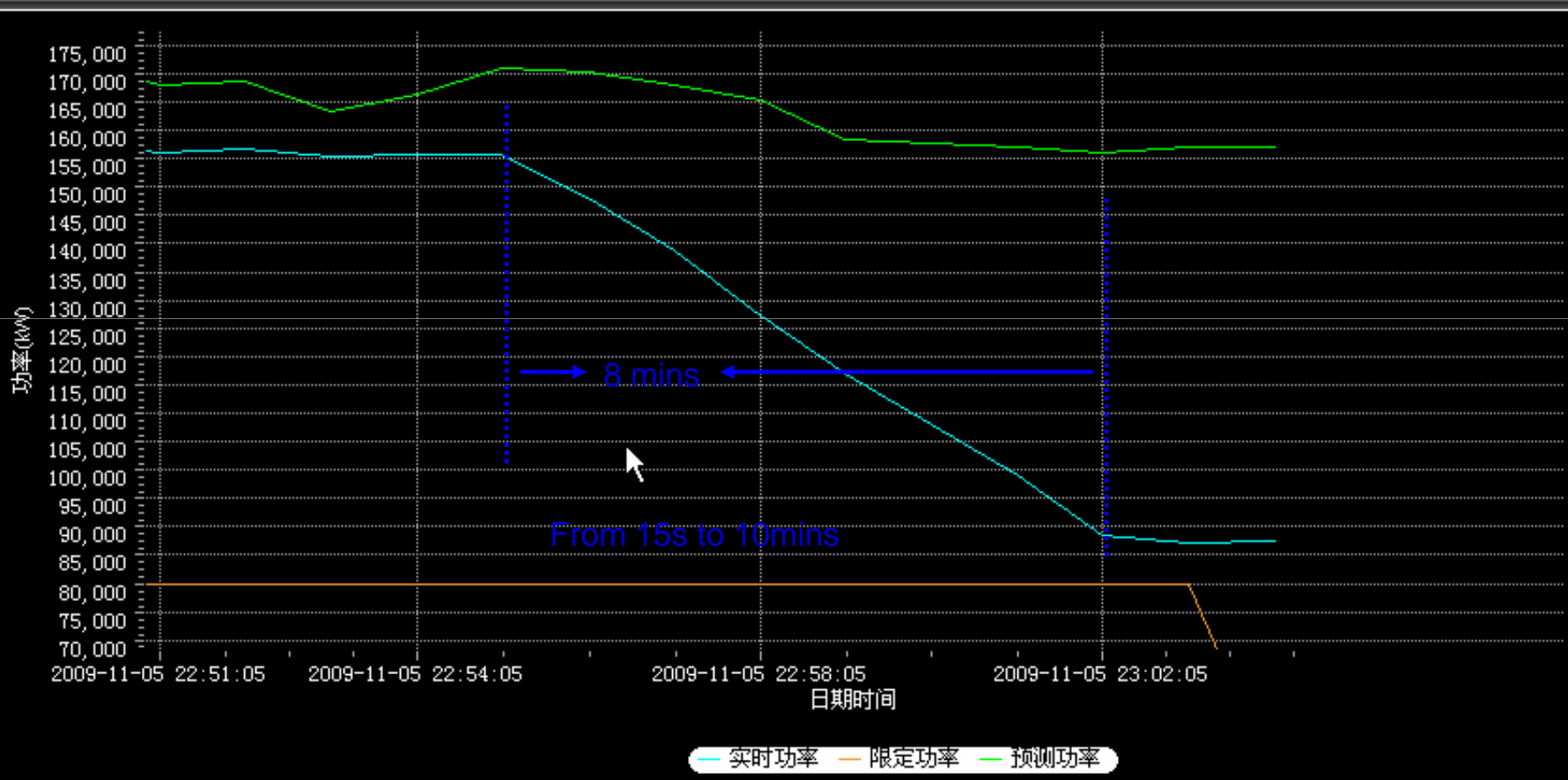
Go



ontrol

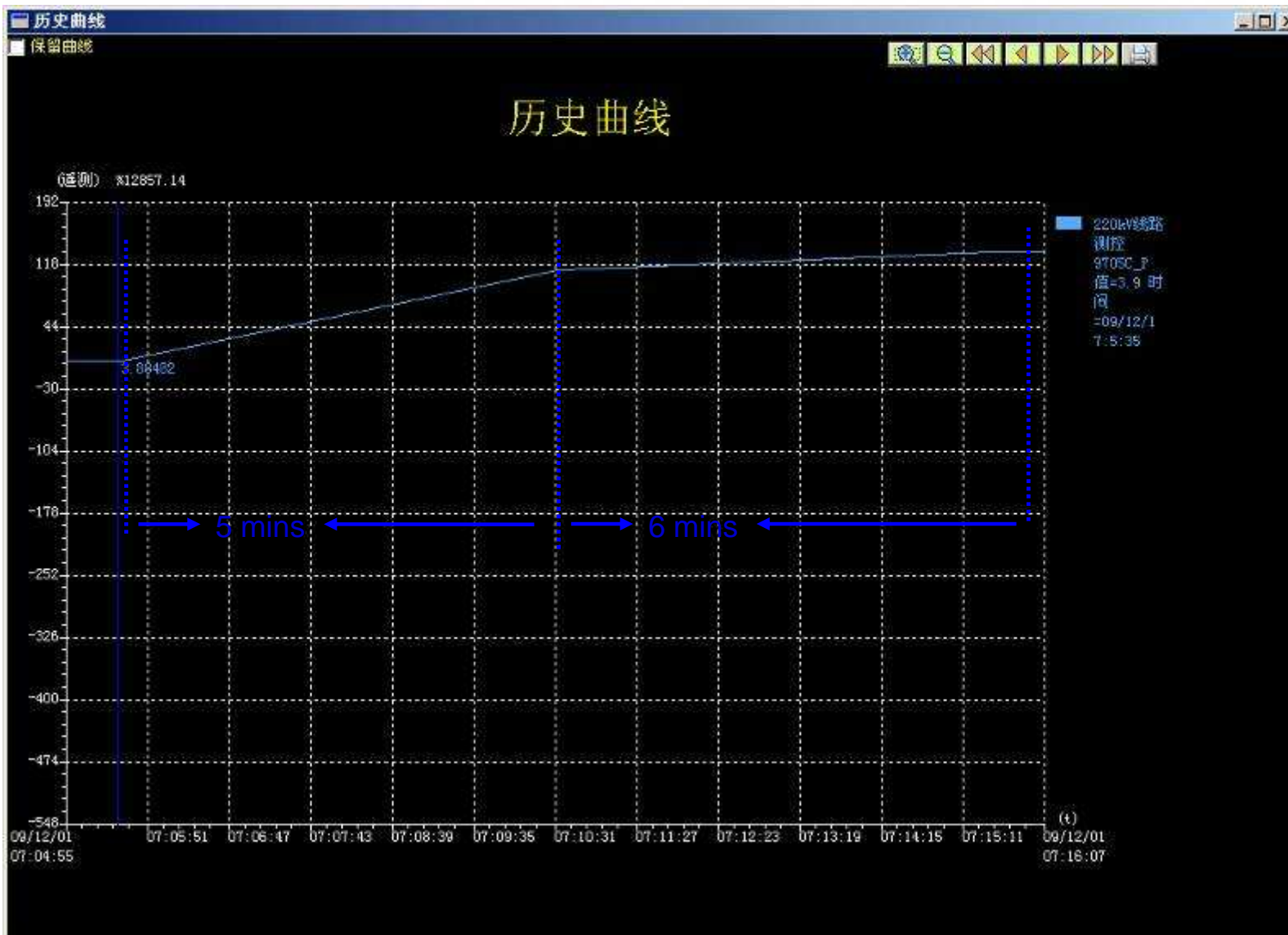


风电场实时功率曲线



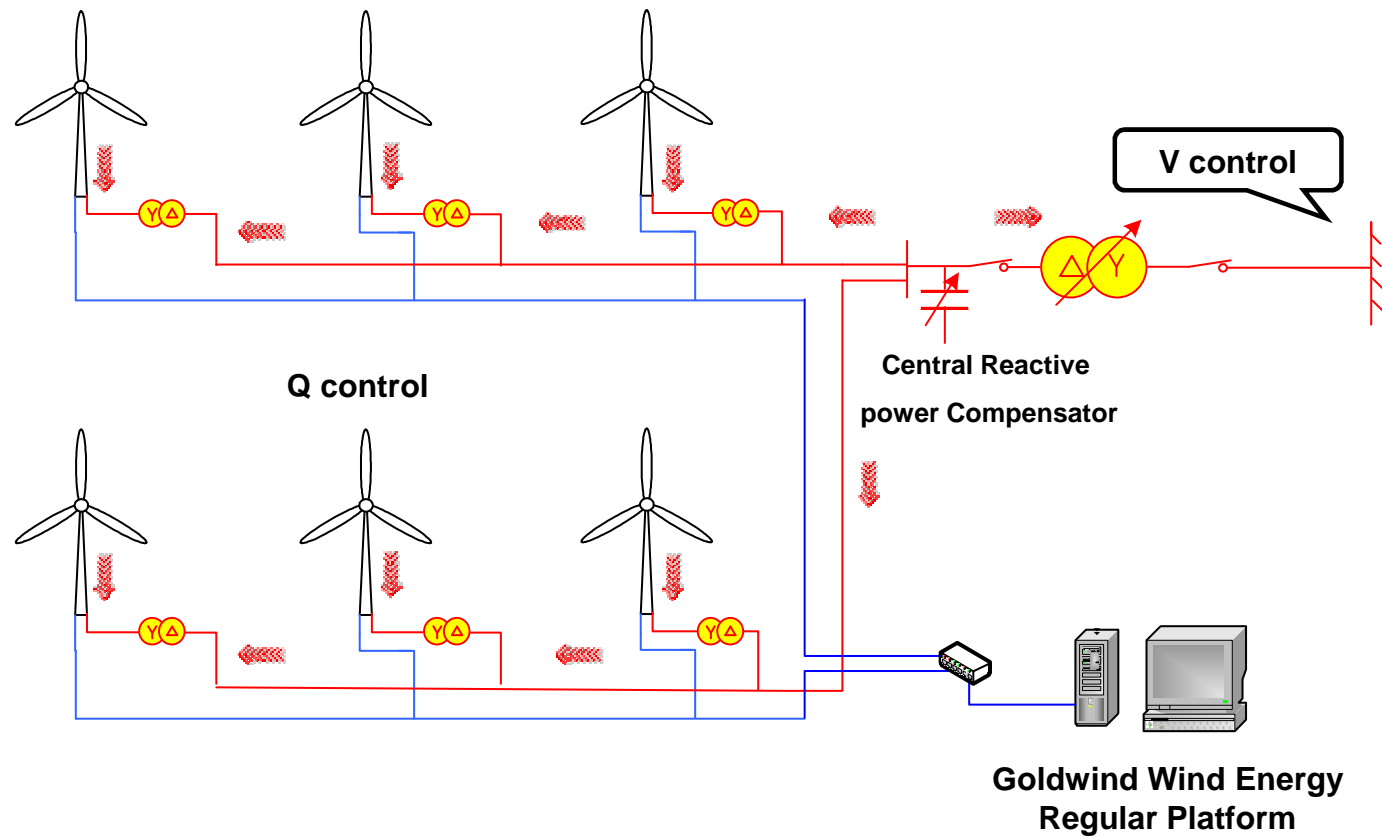
数据导出

关闭





Goldwind Wind Energy Regular Platform for reactive power control

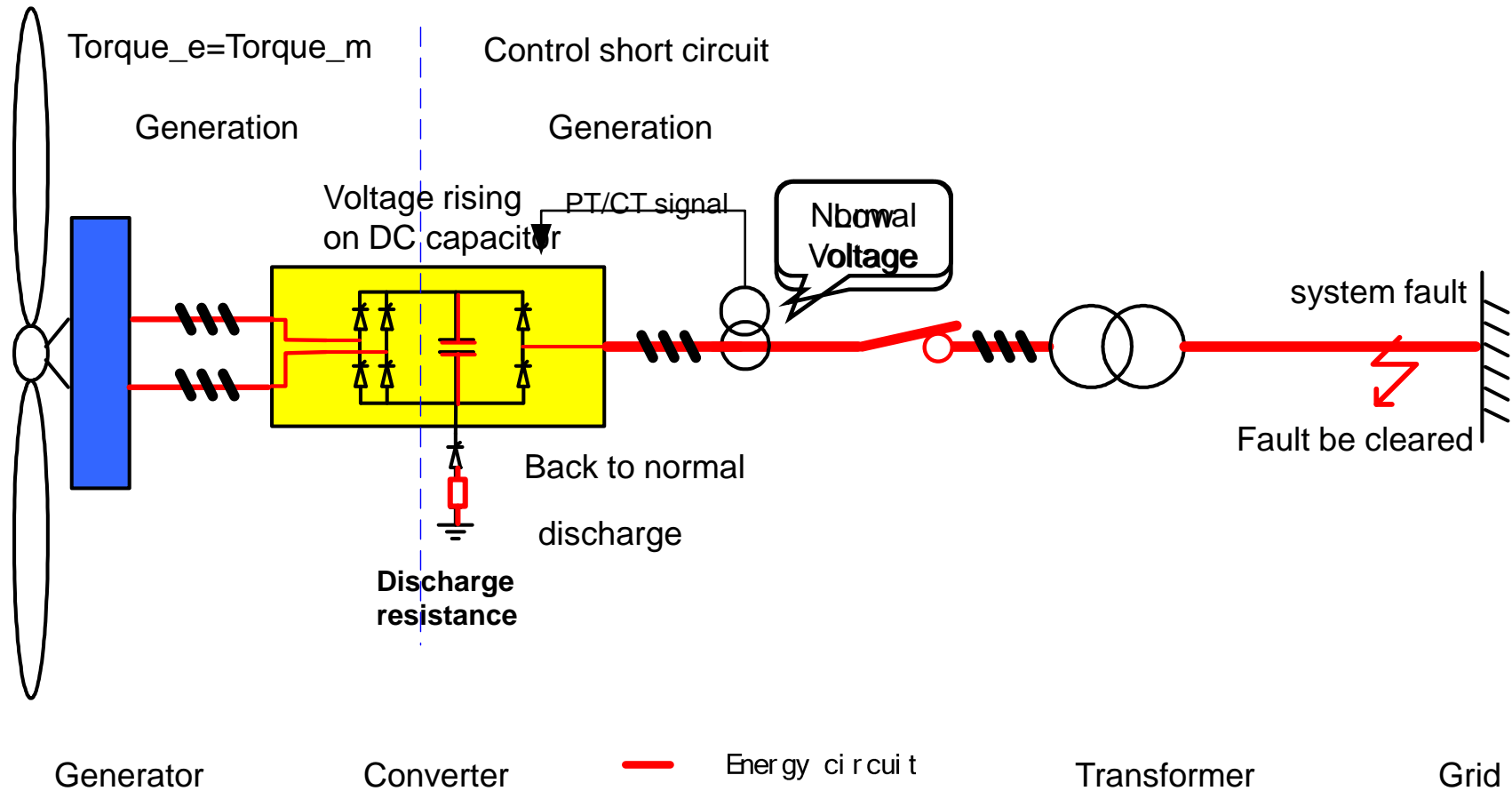






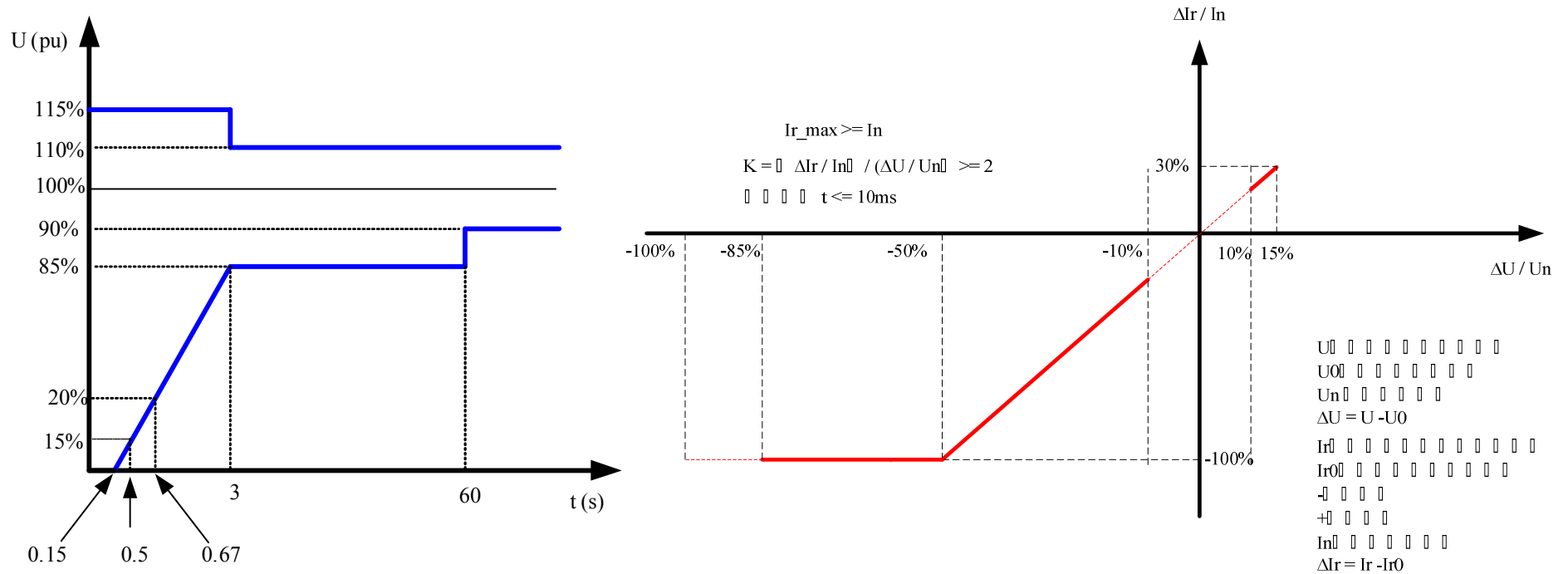


Goldwind MW Direct Drive PMSG WT's LVRT





Goldwind MW Direct Drive PMSG WT's FRT





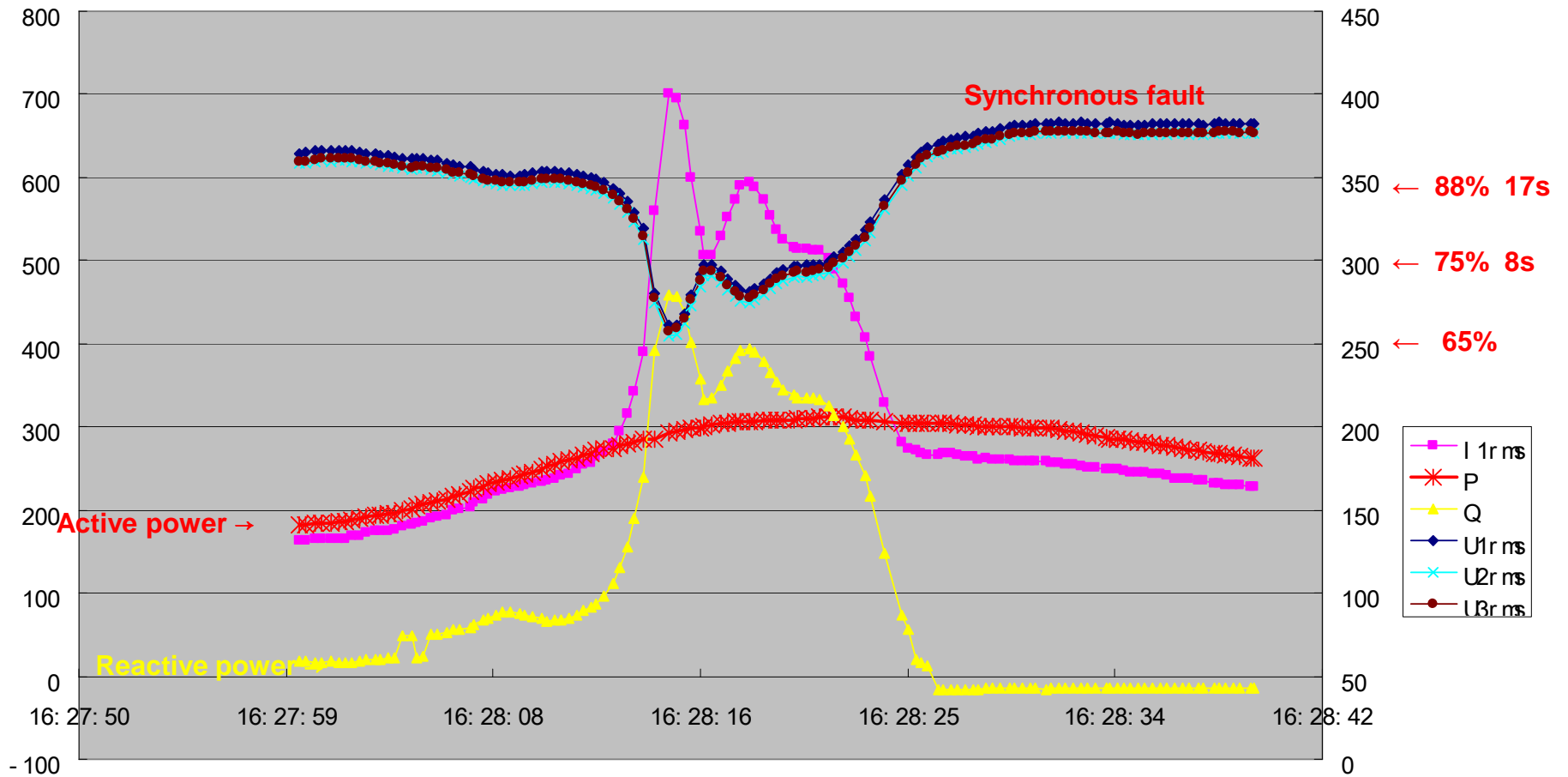
Goldwind 1.5MW Wind Turbine LVRT recorded on site

•Wind Farm:	Fuyuan Wind Farm
•WTG Capacity:	Goldwind 1.5MW Wind Turbine
•Recording Time:	16:28:15, 30 May 2009
•Wind Speed:	6.5 m/s approximately
•Wind Power:	300kW approximately
•Voltage Dip:	Balanced three-phase voltage dip
•Level of voltage Dip:	258 V in phase (64.8% rated voltage)
•Duration of Voltage Dip:	19 sec below 90% rated voltage
•Max Reactive Power:	450 kVar
•Max Current (RMS)	700A



LVRT recording

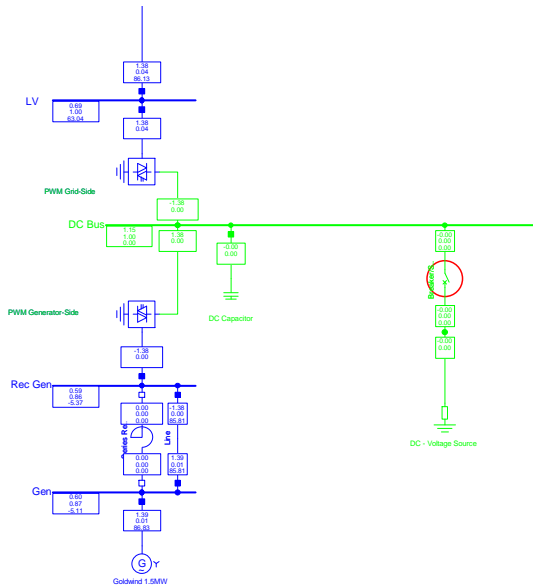
16 : 28 : 15





Goldwind MW Direct Drive PMSG WT's Simulation

Goldwind 1.5MW Direct Drive PMSG WT's simulation is available both on DigSILENT PowerFactory and PSS/e, also PSCAD platform.



GoldWind Peking	Goldwind Science & Technology Co.ltd Goldwind 1.5MW Wide range Variable Speed Direct Drive Wind Turbine	Project: Graphic: Goldwind 1.5MW Date: 6/12/2009 Annex:
PowerFactory 14.0.510		



**Thank You
for Your Attention
Questions?**