Control Code Upgrade

Newest Software Code with Advanced Fault Logic

Control Code Upgrades increase your fleet's AEP and decrease downtime and costs through improved turbine fault handling. The latest update to GE's wind turbine control software uses tuned logic to reduce faults for major components and provides targeted and detailed fault information for technicians. Control Code Upgrades are installed on 1,200+ units globally and generate 1% greater AEP (annual energy production).

Targeted Logic – Save Time, Save Money

Upgraded control code turns collective faults into targeted faults for the pitch and converter systems, allowing for technicians to troubleshoot more efficiently through use of granular diagnostic information. The decreased repair time ranges from 10-60 hrs/WTG/yr., depending on the site.

Pitch Thyristor Fault

This example shows a collective fault broken into detailed faults for technicians with a control code upgrade, allowing technicians to quickly and easily identify the issue.

Before
Pitch thyristor fault axis 1/2/3

After
Pitch converter not ready axis 1/2/3
Pitch converter speed loss axis 1/2/3
Pitch converter marker loss axis 1/2/3
Pitch converter incorrect encoder correction axis 1/2/3
Pitch converter 90deg limit switch angle error axis 1/2/3
Pitch converter DC link voltage low axis 1/2/3
Pitch converter motor brake current/voltage not ok axis 1/2/3

Improved diagnostics expedite turbine return-to-service and save money by:

- Reducing the number of turbine trips
- Reducing troubleshooting labor costs
- Preventing unnecessary parts replacements

Tuned logic incorporates GE's latest understanding of component life cycles and platform specific parameters into improved fault monitoring for your fleet. Refined fault logic means less offline time for your turbines. Components addressed by tuned logic include:

- Pitch
- Downtower assembly, converter
- Gearbox
- Generator
- Safety chain

Increased AEP and safety...improving wind farm profitability and operations

Customers who upgrade their turbine control software see an increase of 0.5-2% increase in AEP, depending on the site. Turbine downtime is significantly reduced through focused troubleshooting and fewer faults that take turbines offline. EHS is paramount to GE and control code upgrades also integrate the latest safety features related to safe start, human interactions, drive train integrity, and independent supervision.

Enables Additional Upgrades

Control Code Upgrades pave the way for more opportunities to improve your fleet:

- Greater AEP through PowerUp (Extended Cutout, Dynamic Uprating, WindBOOST)
- Improved reliability with installation of Ultracapacitors for pitch batteries
- Reduced power consumption with WindSCOUT

System	Requirement
Turbine controller	UCSB/UCSC*
SCADA	WindSCADA v11+
ToolboxST	ControlST v7.x+
Server	64bit

*Both UCSB and UCSC controllers do not have code dependency. However, UCSB controllers have a 2019 end of life while UCSC controllers are not EOL and are multi-core.

Control Code Upgrades allow for improved fault handling. Targeted fault logic allows for enhanced turbine control and granular faults expedite troubleshooting, allowing your fleet to run more efficiently and generate greater AEP.

Contact your Digital Services Sales Leader for more information on gaining more insights into your wind farm.

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