

Galebreaker Wind Screen Installation on Unit 8 ACC

Mystic Station
Exelon Generation
Boston, MA

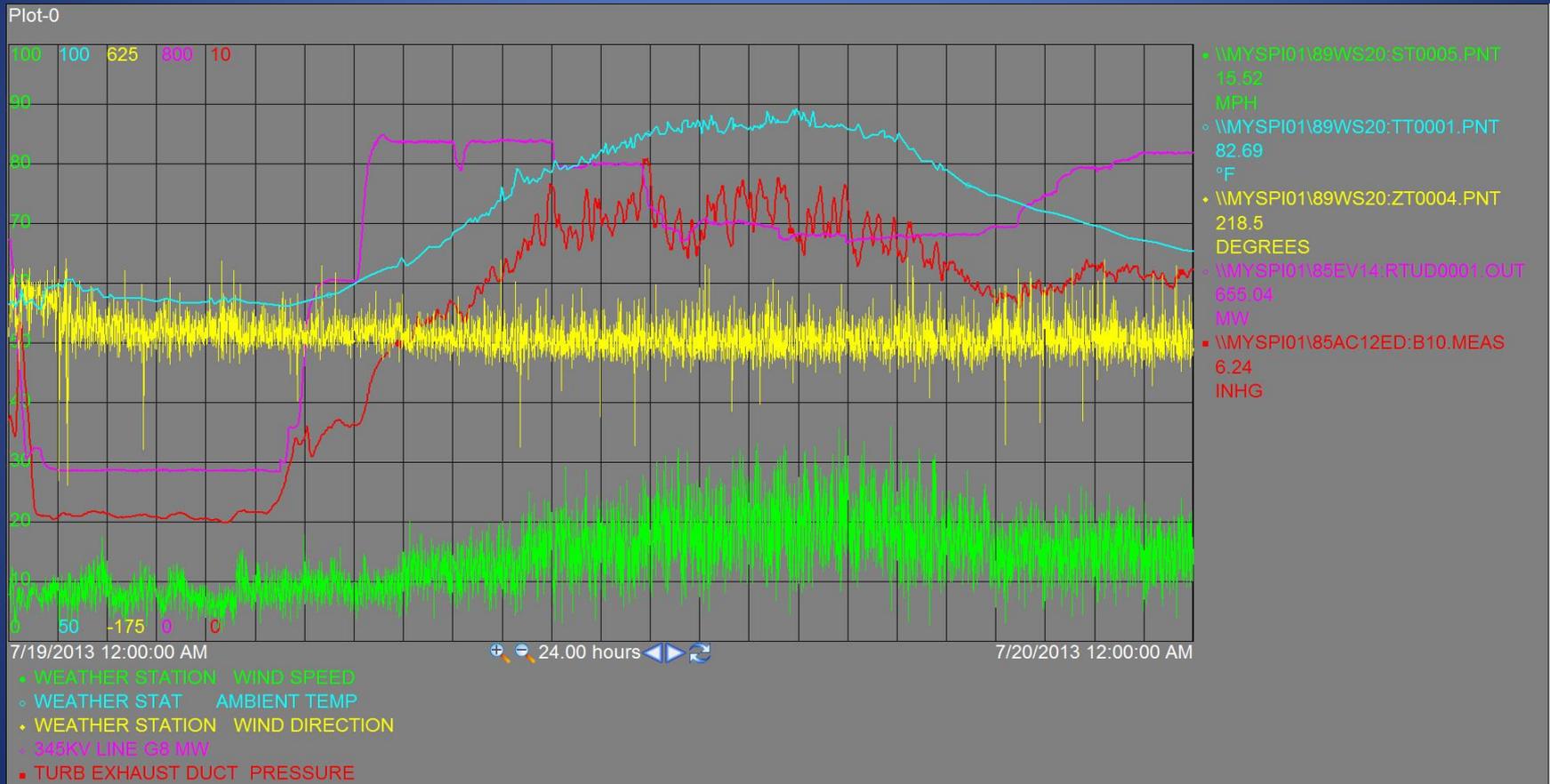
Mystic Station Units 8 and 9

- Unit 8 and 9 are identical 2x1 800 MW CC units, MHI 501G GT's, MHI ST, Deltak HRSGs, Hamon ACC
- ACC configuration is 9 streets x 4 cells per street
- Streets 2-6 are all VSD fans. Streets 1,7,8,9 are each equipped with one VSD and 3 fixed speed fans.
- Steam turbine nominal rating is 300 MW.

ACC Issues

- Both unit 8 and 9 ACC's are affected by winds during summer operation. Unit 8 is affected by SW winds, which is the prevalent wind direction in the summer. Unit 9 is affected by NW winds, which occur much less frequently on hot summer days.
- Decision was made to try Galebreaker wind screens on unit 8, on the south and west sides.

Typical Summer Day, M8, SW wind, >10 mph No Wind Screens





Scheduling and Installation

- Original plan was to install in spring and have ready for summer operation.
- Due to budgetary issues, project was delayed until late summer. Actual installation took place in late August/early September.
- Beginning in June, began working with Galebreaker, providing information and field measurements for installation drawings and details.

Scheduling and Installation

- The west side of the ACC is fairly clear and access for installation was fairly straightforward.
- Not the case with the south side. Many obstacles to design around, such as cable trays, conduit, small bore piping, structural attachments.
- Access for installation on the south side is difficult as well.

West Side



South Side



South Side @ Screen Elevation





Installation Method

- Preferred method was to work out of JLGs. Worked fine for west side and first couple columns on south side from west and east end.
- Middle 6 columns required a combination of JLGs and swing staging, or just swing staging.
- Due to access and working off of swing staging, work on south side progressed more slowly than west side.
- Wind affected installation in all cases.

Other Installation Issues

- Work stopped numerous times due to issues with JLGs.
- Worked long days and some weekend days to take advantage of weather conditions.
- Had to coordinate fan operation with Operations – shut fan down in working cell until screen installation complete.
- Due to space limitations on south side, time consuming to maneuver JLGs.
- Had to use a crane in one case to place JLG in position for installation of screen.

West Side Installation



West Side With 2 JLG's Working



1st South Side Screen



Crane Lift of JLG on South Side



Crane Lift of JLG on South Side



Swing Staging Used on South Side



Swing Staging Used on South Side



South Side Screens from Backside



Completed Screens



Benefits from wind screens

- Unit performance from summer 2013 was compared to summer 2015.
- Comparisons are based on similar ambient temperature, RH, wind speed and wind direction, and back pressure.
- Based on the above, the unit has been able to produce an additional 15-20 MW with the wind screens in place.
- The screens appear most effective for wind speeds up to 20 mph. The screens are less effective for winds exceeding 20 mph, but these don't occur often.

Benefits from wind screens

- Using a conservative approach and typical summer conditions, payback appears to be in the range of 2-3 yrs.
- The analysis does not assume any high load, extreme temperature days when clearing prices occasionally spike into the hundreds of \$/MWH. Days like these may effect payback significantly.