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A GENERATION AHEAD, today

Otay Mesa Energy Center

Air Cooled Condenser Discussion

September 23rd, 2014
ACC User Group

CLEAN MODERN EFFICIENT FLEXIBLE POWER GENERATION

Agenda

- Plant Information
- ACC Maintenance & Operations
- Wish List
- Pictures
- Q & A

Plant Information

- 2 X 1 Combined Cycle
  - 2-GE Frame 7FA Combustion Turbines
  - 1-Siemens KN Steam Turbine
  - 2-21 Cell GEA Air Cooled Condensers (ACC)
  - 605 MW Total Output

- OMEC Commissioned in October of 2009
  - 10 year PPA with SDG&E

ACC Maintenance

- Maintenance
  - Gearbox input shaft oil seal leaks-
    - Currently installing new mechanical seals
  - Desiccant breathers saturating quickly-
    - Currently using larger Des-Case Breather
  - Oil pump shaft failures-
    - Shaft to coupling wear
  - LRVP (Holding Skid) vibration issues-
    - Bearing failures-Idle for a long period and installation knowledge.
    - Hunting issue-cracked open vent valve on suction line and pump stabilized.

ACC Maintenance

- Maintenance (cont.)
  - Cleaning-
    - Annual PM set up-
      - Perform the cleaning just prior to the annual performance testing.
    - Recommend using the high pressure cleaning unit vs. fire hoses.
      - Cleaning unit proves to be more effective.
      - Hose Management; connections and moving of the hoses.
  - Predictive Maintenance-
    - Monthly vibration testing.
    - Quarterly oil sampling.
    - Annual off line motor testing.
    - Annual IR scans of electrical equipment.

ACC Operations

- Operations
  - Annual plant performance test-
    - If ambient conditions aren't near desired test condition, not sure if calculations give us a good representation of plant performance due to increase in ST backpressure at higher ambient conditions or higher wind speeds.
  - Issues during startups to reach temperature conditions to start ACC fans-
    - One side will be hot while the other side will be cold. Takes a long time to fill the bundles fully with steam.

ACC Operations

- Operations (cont.)
  - LRVP (Hogging Pumps)-
    - We have had problems with the seal water flow. Have to clean strainers and flush system before use to get rid of rust/rusty water from the system.
  - LRVP (Holding Pumps)
    - During extremely warm weather, the pumps will trip on high temps.
  - Efficiency-
    - Have cold pockets in the bundles that can't be found without the aid of a thermal device.
    - Gaps between tube bundles allowing air to bypass the finned section.

Wish List

- A good way to monitor ACC Performance-
  - Both for cleanliness and for finding inefficiencies due to cold spots.

- Steam Jet Hogger-
  - Reasoning: If we had major vacuum leaks, a properly designed Hogger can remove the excess air and drop ST backpressure to an acceptable level for continued operation. Granted, it may have to be put in and out of service frequently until the source of the air in leakage is found, but we can't do this with our LRVP Hoggers as they have vacuum permissive (right at the steam turbine trip point), which must be meet to put into service.

Pictures

Pictures

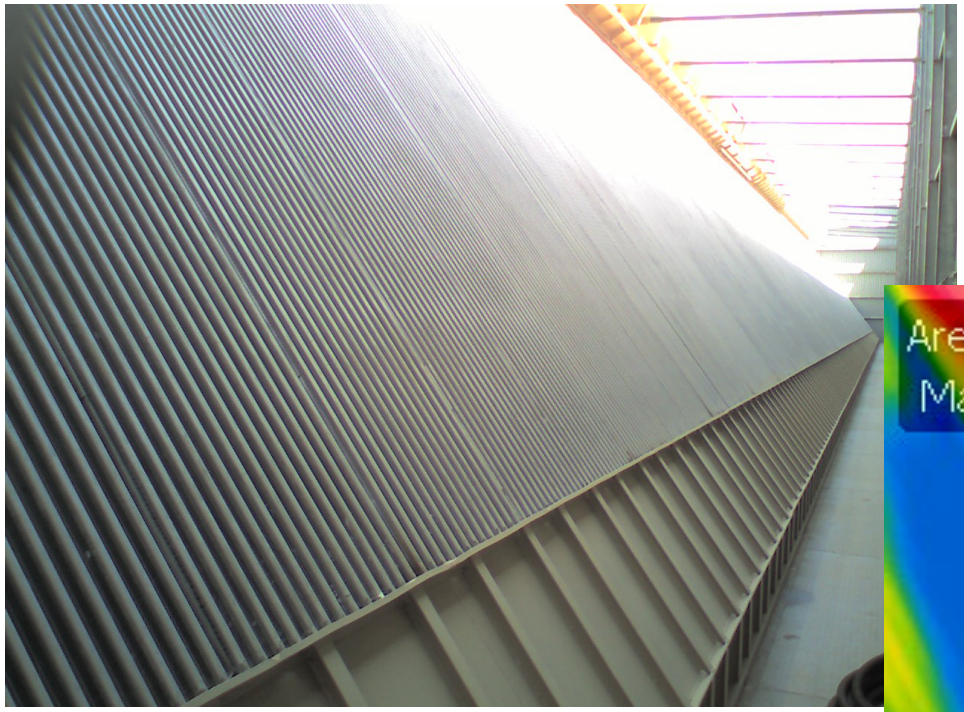
Mechanical Oil Seal

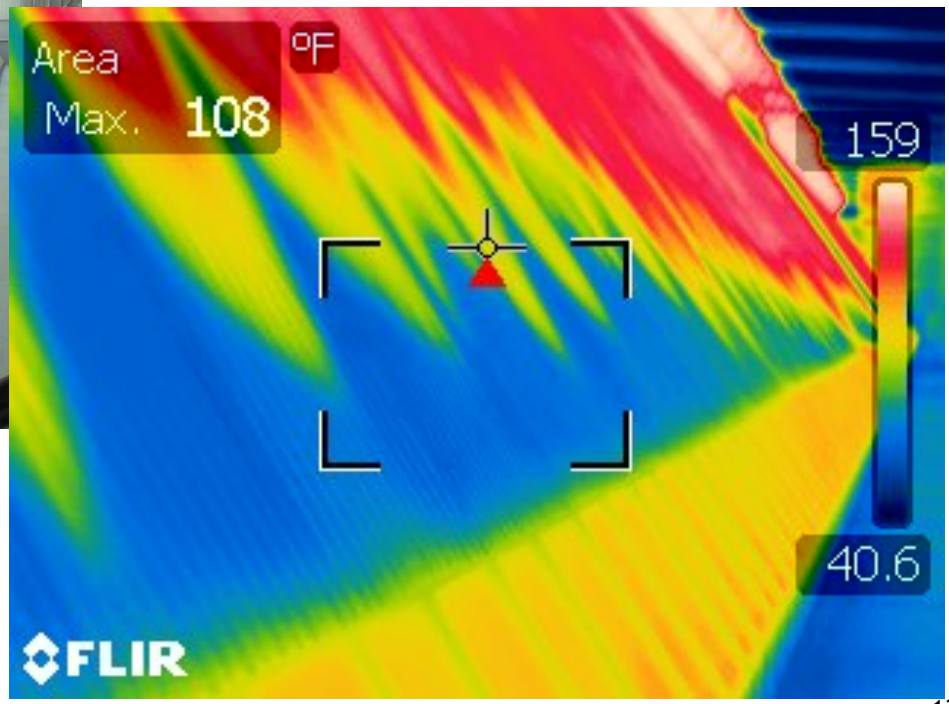
Holding Skid

Hogging Pump

Pictures

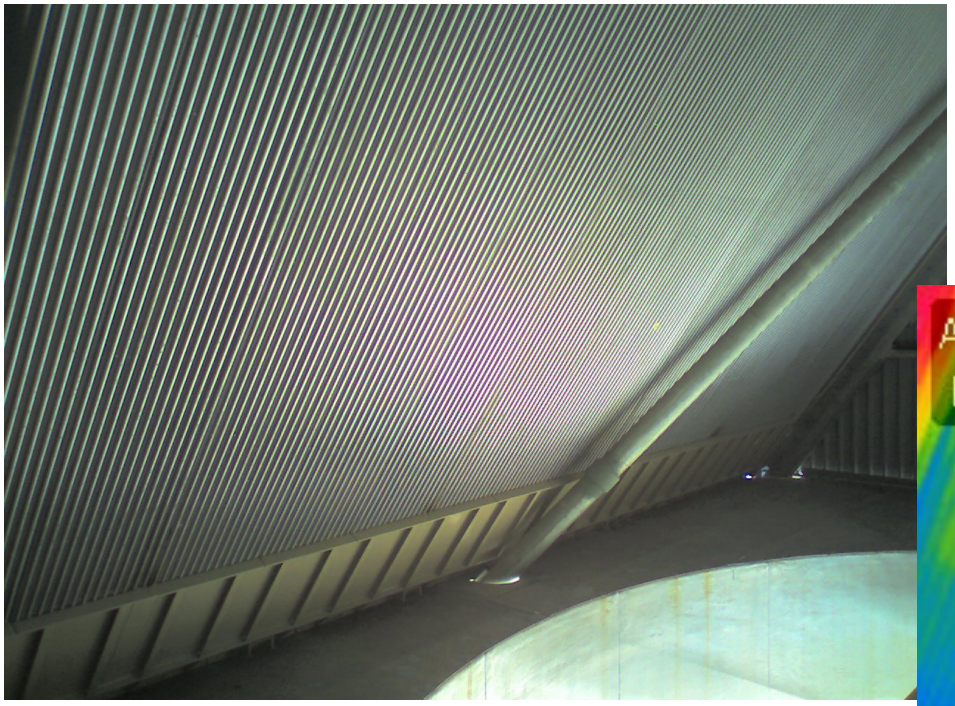
IR Scan

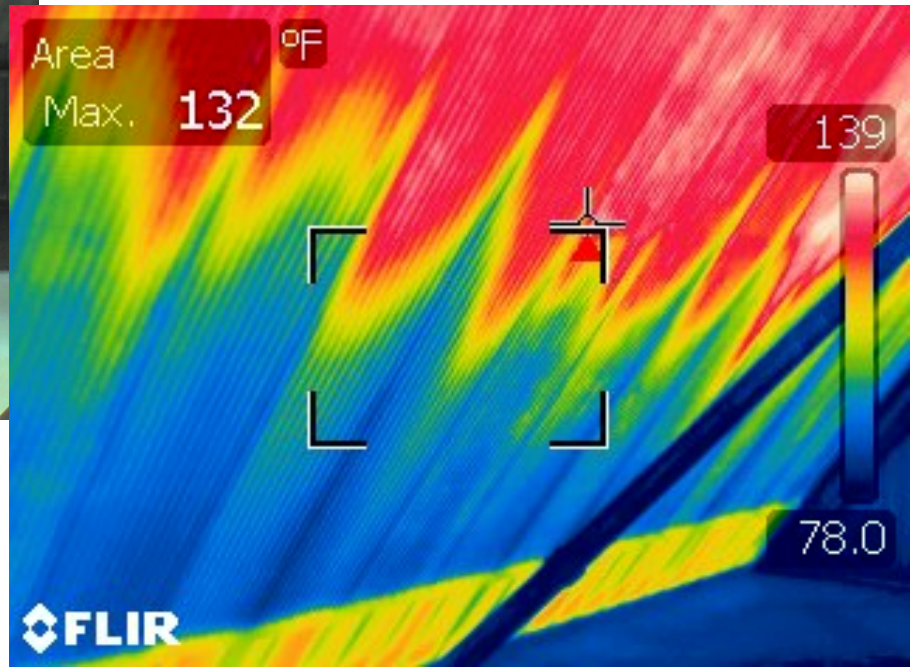




Pictures

IR Scan





Questions?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