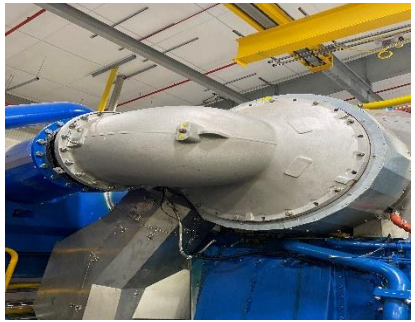
8816 - Denton Energy Center
Turbo Replacement, Parts, Services



Public Utilities Board Presentation

PUB26-033

Arthur Pando (Plant Manager) – Denton Municipal Electric

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Background

- Denton Energy Center (DEC) has 12 engines with 2 turbos on each engine, totaling 24 turbo chargers installed across the units. To maintain high generating unit availability and reliability, the turbos require regular scheduled inspections and maintenance to reduce unplanned unit downtime.

- Peak shaving operation poses specific challenges for turbochargers, especially for the rotating equipment and the components on the exhaust gas side. Despite the state-of-the-art development and high-grade materials, the components suffer from thermomechanical fatigue, which significantly accelerates the crack initiation and wear and tear of turbine side components. These damages are impacting the lifetime of the components and are due for replacement early.

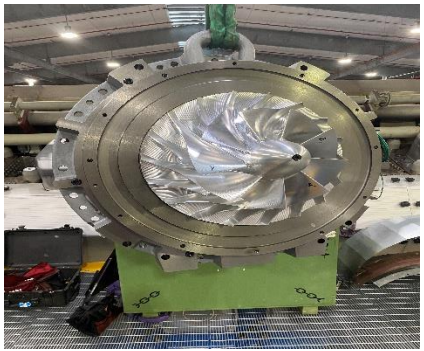
- The new challenging part of the peak shaving operation for the turbocharger is primarily the number of starts and stops of the engine rather than the operating hours. Consequently, service work recommendations as well as the expected replacement intervals specified in the turbocharger operation manual now include engine start cycles alongside operating hours. Whatever comes first is applicable.

Inspections

- ## Operating Hours & Start Cycles
  - Hour based maintenance and inspection is performed at 16,000 engine hours or 2,500 start cycles.
    * Whichever is earlier.
  - Current engine hours at 13,500 and starts at 3,500-4,000.
  - Manufacturer of turbos released a bulletin in February of 2025 revising the maintenance schedule to include cycles/starts every 2,500. Inspections and repairs are now recommended to be performed as early as possible.
- ## Maintenance Tasks
  - Dismantle turbo charger.
  - Clearance measurements.
  - Clean casings and inspect for damage.
  - Clean bearing casings and clear oil ports.
  - Clean nozzle ring and inspect for damage.
  - Check and assess rotor bearing parts.
  - Balancing.

Turbo R&R

- Repair & Replacement of Turbos.
  - Average cost of turbo found with damage but repairable- ($125,000) .
    - 24 turbos expected to be overhauled during term of contract totaling ($3,000,000).
  - Complete turbo replacement average cost- ($400,000).
    - Expecting to purchase 10 new turbos through term of contract totaling ($4,000,000).



Parts & Services

- Original design manufacturer (ODM) recommends checking operation profile of engine to verify, if the specified number of operating hours or the number of engine start cycles is reached earlier to ensure the recommended service work is carried out at the right time. This will ensure an assessment and overhauling of the turbocharger and its parts based on the results in a high performance, efficient and reliable operation of the product.

- Turbo Charger Overhauls
  - Performed at ODM authorized workshop.

- Field Services
  - Performed on site by ODM.
  - Labor, Travel and Accommodations accounted for.

- Turbo Parts
  - Components and spare parts for normal maintenance

intervals, inventory stock and maintenance repairs planned and unplanned is an estimated cost of ($105,000.00) per unit for a 5 year span on 24 turbos totaling ($2,520,000.00).

Expenditure Summary

- Manufacturer and authorized repairs.
- Restocking critical component inventory for future maintenance needs.
- Restocking critical components for unplanned maintenance.
- 24 turbos installed on 12 units. A complete new turbo charger is ($400,000) expecting to purchase 10 through term of contract totaling ($4,000,000).
- Estimated overhaul and repair cost is ($125,000) and expecting all 24 turbos to be overhauled during term of contract totaling ($3,000,000).
- Critical components, parts, and services for normal maintenance and hour based intervals averages a cost of ($105,000) for all turbos totaling ($2,520,000).
- Total cost estimated of ($9,520,000.00).
  - $2.5M funded from revenue (605331497).
  - Remaining will be in 10-year bonds.

Recommendation

- Staff recommendation to PUB to provide City Council a recommendation to approve the RFP to Accelleron US Inc. to execute a 5-year contract for turbo chargers at the Denton Energy Center.

Questions: