NETC Supplemental Heat System

Rebuild Project

NETC Supplemental Heat History

- First used water jacket heat in 1973
  - Redirected jacket water to engine preheating circuits
  - Deflected radiator heat flow back into the power plant
  - Before this upgrade engines were hard to start in cold weather and operators wore parkas and bunny boots in the power plant
- Headquarters Building was constructed in 1976
  - Water jacket heat was directly extended through 2” copper pipe to the HQ
  - Pressure sensing automated valves protected the generator from coolant lose due to leaks in the extended system
  - This system remained in service until 1984

NETC Supplemental Heat History

- Elementary School was built between 1980 and 1982 (first non-NETC use)
  - Initial supplemental heat extension to the school was direct buried steel pipe
  - Grant funded by SoA, $150K
  - Supplemental heat billing formula was developed, designed to share savings 50/50
- Heat loop was extended to High School, State Shop, SWRSD and Court House in 1983. Heat exchangers were placed between the water jacket and the waste heat system
  - SoA grant of $539K
  - NETC funds of $160K

Supplemental Heat System Benefits

- Provides a cost saving option for heating several NETC and Community buildings
  - High School
  - Elementary
  - SWRSD Office
  - State Shop
  - Curyung Tribal Office
  - NETC Main Office
- Provides heat for offline generators and tank farm
- Provides revenue to NETC
  - Cost of supplemental heat service derived by measuring BTU's used, computing equivalent diesel cost and splitting the savings with the recipient

System Rebuild Project

System Rebuild Project

- System components are beyond expected lifespan, many are failing or have failed
- The distribution to the State Shop and NETC Main Office have failed and are not recoverable
- The loss of this system would cripple critical functionality such as fuel pre heating
- System Rebuild Cost $2.34M
  - $1.75M from USDA Power Plant Upgrade Loan
  - $590K NETC Capital

System Rebuild Project

- This project would replace all the critical components including:
  - Pumps and Heat Exchangers
  - Valves, Mixers and Air Separators
  - BTU Meters and Controls
  - Distribution piping
- Project progress to date:
  - Engineering complete
  - Most components ordered and received

System Rebuild Project

- Project timeline:
  - Spring 2021
    - Work with Schools, Tribe, State maintenance to schedule onsite system integration work
    - Organize material for phased installation work
  - Summer/Fall 2021
    - Replace Power Plant components
    - Install new distribution piping
    - Install new system at recipient sites
    - Commission the new system