

# Steam System Assessment

## Scope of Steam System Assessment

- ▶ In December 2002, DOE and Chevron Phillips collaborated on a two-day assessment targeting the steam generation and distribution system at the Cedar Bayou Plant.
- ▶ The Cedar Bayou Plant produces approximately 1,500,000 pounds of steam per hour:
  - 26 waste heat boilers with separate superheaters produce 1,500-psig, 170-psig, and 100-psig steam.
  - 2 packaged boilers produce 400 psig superheated steam.
  - 3 field-erected boilers produce 600 psig superheated steam.
- ▶ The plant has a large and complex system with miles of steam and condensate piping and approximately 7,000 traps.

## Assessment Findings

- ▶ The steam generation and distribution systems yielded few areas for large cost savings because they are well managed, operated, and maintained.
  - Boilers are operating at a rate of efficiency above 80%.
  - General leaks and component failures in the steam distribution system are at a minimum.
  - Plant-wide condensate return is at approximately 80%.

## Steam Generation Recommendations

- ▶ Further investigate and fix hot spots identified on the 400-psig boilers to prevent casing leaks and efficiency loss.
- ▶ Continue implementation of convection section upgrades on the ethylene furnaces to allow shutdown of the 1,500-psig superheaters.

## Steam End User Recommendations

- ▶ Install correct trapping scheme on the steam preheater coils of the 600-psig boiler to prevent condensate backup and reduce maintenance costs.
- ▶ Install traps on the air blower turbines for the 600-psig boilers to prevent purging steam to the atmosphere. This will keep the turbine dry while off-line and save condensate.



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