

Operator: GE Contractual Services

Key project participant:

Doug Klar, Operations Manager

HRSG stack balloon

Challenge. Plant was designed to operate at base load year-round. Today's reality is a cycling HRSG without a stack damper. The challenge is to retain heat when on standby and the ambient temperature is low—this to prevent freeze-up and to allow for warm rather than cold starts.

Solution. The stack balloon is a relatively simple modification compared to retrofitting a stack damper. The balloon is similar to an inflatable Moon Walk ride for children. Balloon material is industrial-weight and rated for service at temperatures up to 485F, allowing deployment within hours after shutdown. It weighs approximately 50 lb, so two operators can easily handle the balloon. A small 120-V blower is used to maintain inflation.

For ease of operation and to avoid the need for a confined-space permit, the balloon access door was located in the stack at the penthouse level. Three 2-in.-diam stainless steel pipes were installed across the stack to facilitate deployment and alignment of the balloon (similar to a curtain rod). The balloon hangs from carabineers and ropes to position it during inflation. The two outside rods limit deflection caused by the draft across the balloon, thereby



creating a tight seal. Installation or removal takes between 15 and 30 minutes.

After inflation, the stack temperature is monitored to ensure a tight seal. If adjustment is necessary, the air blower is turned off and the balloon deflates slightly. This facilitates repositioning. Following adjustment, the blower is restarted.

Results. If the gas turbine operates every fourth day, the duct balloon holds sufficient heat in the system to prevent freeze-up. No alternative heating is necessary. If operation is less frequent, the plant can inject sparge steam to maintain about 100F ambient in the HRSG. The cost of the balloons and unit stack modifications are more than offset by the saving associated decreased start-up time—that is, warm vs cold starts—reduced component cycling, and unit trips caused by frozen systems and instrumentation.

are replaced when greasing. The potentials to pass through increases with gear lip seals with non-isolators. To detect viscous filters on v

Whiting Clean Energy

525-MW, gas-fired, 2 x 1 combined-cycle cogeneration facility located in Whiting, Ind

Facility manager: Steve Carroll

Owner: NiSource Inc

Operator: GE Contractual Services

Key project participant:
John Nicoll, Maintenance Manager

■ Proper lube-oil are supplied with a our plant \$428 per