

Power producer minimizes planned outage duration with reheater isolation solution

RESULTS

- Reduced planned outage duration from 5 days to 1 day unlocking an additional \$346K in revenue
- Eliminated risk of damage to adjoining pipework during reheater isolation and resulting leakage
- Eliminated high recurring maintenance costs
- Improved safety of maintenance and operations personnel



APPLICATION

Isolation of the hot and cold reheat lines during maintenance of the reheater unit.

CUSTOMER

A major coal fired power plant (2x 350MW) in The Philippines.

CHALLENGE

Isolation of the reheater unit in a power plant is a critical action in any scheduled outage plan. It facilitates safe maintenance and inspection of the unit, chemical cleaning, tube leak repair, and hydro-testing before the unit is returned to service.

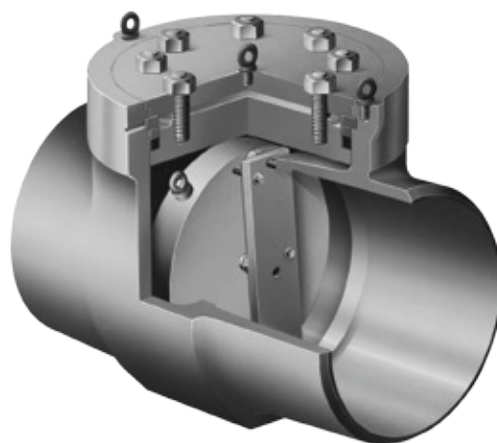
Scheduled outages typically occur every 12-18 months so isolation of the reheater unit is often not considered during the design and construction of a plant when striving for the lowest total installed cost. However the efficiency of reheater isolation during a scheduled outage can have a significant impact on ongoing maintenance costs and downtime, as one major power producer in The Philippines discovered.

Without an efficient reheater isolating solution, the maintenance team achieved isolation by removing flange bolting on the hot and cold reheat lines, prying open the mating flanges with high powered hydraulic jacks, inserting a thick blank flange, and then retightening the flange bolting. The team would then perform the required maintenance work, hydro test the unit, and then reverse the procedure to re-join the pipes before returning to operations.

This process typically took a team of 10 maintenance personnel up to 5 days to complete, resulting in an extended period of plant unavailability as well as high labor and equipment costs. The method also increased the risk of operator error in re-aligning pipework and re-tensioning bolts leading to a higher incidence of leakage.

“An operation that took us 5 days is now taking just 1 day, and with a much reduced risk.”

Maintenance Manager
Major Coal Power Producer



Sempell Dewrance Reheater Isolating Device

POWER

SOLUTION

Emerson's power isolation valve experts consulted with the plant's management and engineering team to determine a cost-effective solution that would meet the technical specifications of the application.

Emerson's solution was to install a DN 800 ASME Class 900 Sempell Dewrance Reheater Isolating Device on the hot reheat line and a DN 800 ASME Class 500 Sempell Dewrance Reheater Isolating Device (RHID) on the cold reheat line.

Emerson's solution now allowed a maintenance team of only 2 people to perform the isolation function in just 1 day, immediately unlocking 4 additional days of profitable power generation. Not only was uptime improved, but maintenance costs were also reduced as the operation required less personnel, less equipment, and less time.

Installation of the Sempell Dewrance RHID also eliminated the tremendous stress applied to pipework during the traditional maintenance operation, decreasing the risk of an unplanned outage and improving plant operator safety.

The maintenance team also noted that in addition to efficient hydrotesting, the Sempell Dewrance RHID proved a safe and convenient solution for more frequent maintenance actions. The device has since served as an injection point for chemical cleaning, an outlet for steam purging, and an access point for inspection equipment.

A similar strategic upgrade is planned for the second 350MW unit during the next scheduled outage.

RESOURCES

Sempell Dewrance Reheater Isolating Device
<https://www.emerson.com/en-us/catalog/semPELL-p000135>
Emerson's coal power generation solutions
<https://www.emerson.com/en-us/industries/automation/power-generation/coal-fired-power>

Emerson Automation Solutions
1 Pandan Crescent
Singapore, 128461
Singapore
+65 6363 7766
ContactUs@Emerson.com
Emerson.com/FinalControl

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ECONOMIC ANALYSIS

Cash Flows

Initial Investment

DN 800 Hot RHID -\$100K

DN 800 Cold RHID -\$85K

Installation -\$10K

Additional Revenue

Outage 1 +\$0K

Outage 2 +\$346K

Ongoing +\$346K

Payback Period

19 months

*Assumptions per power industry research findings:
One planned maintenance event per year.
Revenue spread of \$20/MWh.
Plant operational capacity factor of 0.5.
Labor rates per Philippine Statistics Authority.
Savings due to improved equipment reliability would be additional.
Figures shown in USD.*

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