SUCCESS STORY

ID Fan — Tennessee Valley Authority (TVA)
Kingston Plant

Plant Specifications

- Produces 10 billion kWh of electricity annually.
- Consumes 14,000 tons of blended low-sulfur coal daily.
- Nine 190 MWh boilers using 2 Westinghouse 16 MVID fans.
- Fan design is double inlet, single exhaust.
- Throughput 400,000 CFM @ 600 RPM shaft speed.
- Each fan consists of 120 forward curved fan blades.
- Units 1–4 and 9 use combustion controls and boiler optimization.
- Units 5-8 utilize low NOx burners.
- All nine units utilize SCR's to further reduce emissions.

Erosion Issues

- Electrostatic precipitators were added to all 9 units in 1977.
- Due to plant design constraints, precipitators on units 5–9 were upstream.
- Fans on units 5–9 eroded due to high dust loads, approximately 3.6 gms/acfm.
- Useful fan service life of 12–14 months with A36 steel blade and hubs.
- Soot blowers added in 1999, reducing service life to 5–8 months.
- Maintenance cost on fans alone — $500,000 annually.

Fan service life increased to 36 months with predictable performance.

Conforma Clad™ Solution

- Six different protection materials/systems tested.
- Kennametal's Conforma Clad brazed WC 200 selected by TVAER&TA/ EPRI/WR&D.
- Fan service life increased to 36 months with predictable performance.
- Current design improvements expected to extend service life to 48 months.
- Additional generating hours with extended outages 576 hours.
- Total MW gain due to outage avoidance 547,200.
- Generation revenue gain — $32,832,000.
- Plus parts and labor costs.

NOTE: EPRI — Electric Power Research Institute
TVAER&TA — TVA Energy Research & Technology Application
WR&D — Westinghouse Research & Development

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