

Fuel Data

Case Descriptor

Evaluation	Techninomics	Techninomics
Run Date	Feb 21 2012 12:44PM	Feb 21 2012 12:44PM
Case Number	1	2
Unit	Techninomics_Demo_PC	Techninomics_Demo_PC
Load Curve	Techninomics Full Load Curve	Techninomics Full Load Curve
Fuel Description	E - Base	E - OW1
Gas Cofire Percentage	0	0

Coal Properties

Description	E - Base	E - OW1
Higher Heating Value	13100.00 Btu/lbm	13112.00 Btu/lbm
Higher Heating Value, Min	12772.50 Btu/lbm	12784.20 Btu/lbm
Higher Heating Value, Max	13427.50 Btu/lbm	13439.80 Btu/lbm
Lower Heating Value	12595.40 Btu/lbm	12606.40 Btu/lbm
Lower Heating Value, Min	0.00 Btu/lbm	0.00 Btu/lbm
Lower Heating Value, Max	0.00 Btu/lbm	0.00 Btu/lbm

Proximate Analysis

Basis	Wet	Wet
Moisture	5.71 %	5.72 %
Moisture, Min	4.45 %	4.46 %
Moisture, Max	6.97 %	6.98 %
Ash	7.73 %	7.74 %
Ash, Min	6.38 %	6.39 %
Ash, Max	9.08 %	9.09 %
Volatile Matter	35.72 %	35.72 %
Fixed Carbon	50.84 %	50.82 %

Ultimate Analysis

Basis	Wet	Wet
Carbon	73.47 %	73.56 %
Carbon, Min	71.27 %	71.35 %
Carbon, Max	75.67 %	75.77 %
Hydrogen	4.89 %	4.90 %
Hydrogen, Min	4.74 %	4.75 %
Hydrogen, Max	5.04 %	5.05 %
Nitrogen	1.47 %	1.47 %
Nitrogen, Min	1.28 %	1.28 %
Nitrogen, Max	1.66 %	1.66 %
Sulfur	2.69 %	2.57 %
Sulfur, Min	2.27 %	2.17 %
Sulfur, Max	3.11 %	2.97 %
Chlorine	0.09 %	0.09 %
Chlorine, Min	0.08 %	0.08 %
Chlorine, Max	0.10 %	0.10 %
Oxygen (by difference)	3.95 %	3.95 %

Ash Analysis

Silica (SiO2)	42.88 %	42.88 %
Alumina (Al2O3)	21.80 %	21.80 %
Titania (TiO2)	0.92 %	0.92 %
Iron Oxide (Fe2O3)	21.03 %	21.03 %
Lime (CaO)	5.15 %	5.15 %
Magnesia (MgO)	0.89 %	0.89 %
Potassium (K2O)	1.44 %	1.44 %
Sodium (Na2O)	1.05 %	1.05 %
Sulfur Trioxide (SO3)	4.25 %	4.25 %
Phosphorous (P2O5)	0.59 %	0.59 %
Strontium (SrO)	0.00 %	0.00 %
Barium (BaO)	0.00 %	0.00 %
Manganese (Mn3O4)	0.00 %	0.00 %
Undetermined	0.00 %	0.00 %

Ash Temperatures

Initial Deformation (Reducing)	2128.00 F	2128.00 F
Softening (Reducing)	2214.00 F	2214.00 F
Hemispherical (Oxidizing)	2508.00 F	2508.00 F

Miscellaneous Properties

Hardgrove Grindability	55.00	55.00
Hardgrove Grindability, Min	50.05	50.05
Hardgrove Grindability, Max	59.95	59.95
T250	2340.00 F	2340.00 F
T250, Min	2246.40 F	2246.40 F
T250, Max	2433.60 F	2433.60 F
Equilibrium Moisture	4.85 %	4.86 %
SO2 Production	4.10 lbm/MBtu	3.91 lbm/MBtu
Ash Production	5.90 lbm/MBtu	5.90 lbm/MBtu
Hg Production	6.48 lbm/TBtu	6.11 lbm/TBtu

Trace Elements

Arsenic (As)	6.67 ppm	5.2 ppm
Lead (Pb)	3.28 ppm	3.27 ppm
Mercury (Hg)	0.09 ppm	0.085 ppm

Full Load Unit Performance

Case Descriptor

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Run Date		
Case Number	1	2
Unit	Techninomics_Demo_PC	Techninomics_Demo_PC
Load Curve	Techninomics Full Load Curve	Techninomics Full Load Curve
Fuel Description	E - Base	E - OW1

Full Load Unit Operation

Gross Power	677.00 MW	677.00 MW
Net Power	615.01 MW	615.84 MW
Boiler Efficiency, HHV Basis	87.85 %	88.14 %
Boiler Efficiency, LHV Basis	91.37 %	91.68 %
Net Turbine Heat Rate	7210.87 Btu/kWh	7210.87 Btu/kWh
Net Unit Heat Rate, HHV Basis	9035.71 Btu/kWh	8993.38 Btu/kWh
Net Unit Heat Rate, LHV Basis	8687.66 Btu/kWh	8646.59 Btu/kWh
Fuel Burn Rate		
Total Heat Input, HHV Basis	5557.04 MBtu/hr	5538.49 MBtu/hr
Total Heat Input, LHV Basis	5342.99 MBtu/hr	5324.93 MBtu/hr
Coal Burn Rate, Mass Basis	212.10 ton/hr	211.20 ton/hr
Coal Burn Rate, HHV Basis	5557.04 MBtu/hr	5538.49 MBtu/hr
Coal Burn Rate, LHV Basis	5342.99 MBtu/hr	5324.93 MBtu/hr
Alt Solid Fuel Burn Rate, Mass Basis	0.00 ton/hr	0.00 ton/hr
Alt Solid Fuel Burn Rate, HHV Basis	0.00 MBtu/hr	0.00 MBtu/hr
Alt Solid Fuel Burn Rate, LHV Basis	0.00 MBtu/hr	0.00 MBtu/hr
Gas Burn Rate, Volumetric Basis	0.00 gal/min	0.00 gal/min
Gas Burn Rate, HHV Basis	0.00 MBtu/hr	0.00 MBtu/hr
Gas Burn Rate, LHV Basis	0.00 MBtu/hr	0.00 MBtu/hr
Oil Burn Rate, Mass Basis	0.00 ton/hr	0.00 ton/hr
Oil Burn Rate, Volumetric Basis	0.00 gal/min	0.00 gal/min
Oil Burn Rate, HHV Basis	0.00 MBtu/hr	0.00 MBtu/hr
Oil Burn Rate, LHV Basis	0.00 MBtu/hr	0.00 MBtu/hr

Boiler Efficiency

Higher Heating Value Basis

Latent	4.06 %	4.06 %
Sensible	6.32 %	6.14 %
Unburned Carbon	0.40 %	0.28 %
Radiation and Convection	0.37 %	0.37 %
Margin and Unaccounted	1.00 %	1.00 %
Total	87.85 %	88.14 %

Lower Heating Value Basis

Latent	0.00 %	0.00 %
Sensible	6.74 %	6.56 %
Unburned Carbon	0.43 %	0.30 %
Radiation and Convection	0.39 %	0.40 %
Margin and Unaccounted	1.07 %	1.07 %
Total	91.37 %	91.68 %

Net Turbine Heat Rate Adjustments

Base by Input	7210.87 Btu/kWh	7210.87 Btu/kWh
Superheat Temperature/Spray	0.00 Btu/kWh	0.00 Btu/kWh
Reheat Temperature/Spray	0.00 Btu/kWh	0.00 Btu/kWh
Sootblowing Steam	0.00 Btu/kWh	0.00 Btu/kWh
Air Preheat Steam	0.00 Btu/kWh	0.00 Btu/kWh
Steam Driven Fans	0.00 Btu/kWh	0.00 Btu/kWh
SCR Reheat Steam	0.00 Btu/kWh	0.00 Btu/kWh
FGD Reheat Steam	0.00 Btu/kWh	0.00 Btu/kWh
Adjusted Net Turbine Heat Rate	7210.87 Btu/kWh	7210.87 Btu/kWh

Unburned Combustible Details

Calculation Source

NOx LOI Predictor's LOI Prediction Used	No	No
NOx LOI Predictor's LOI Prediction	0.00 %	0.00 %
Vista's LOI Prediction	4.25 %	3.02 %
LOI Results Used in Analysis		
Total LOI	4.47 %	3.17 %
Fly Ash LOI	4.25 %	3.02 %
Bottom Ash LOI	6.38 %	4.53 %

Period Values

Case Descriptor

Evaluation	Technomics	
Run Date	Feb 21 2012 12:44PM	Feb 21 2012 12:44PM
Case Number	1	2
Unit	Technomics_Demo_PC	Technomics_Demo_PC
Load Curve	Technomics Full Load Curve	Technomics Full Load Curve
Fuel Description	E - Base	E - OW1

Unit Performance

Gross Output Target	677.00 MW	677.00 MW
Gross Output Maximum Achievable	677.00 MW	677.00 MW
Average Net Unit Heat Rate, HHV Basis	9035.71 Btu/kWh	8993.38 Btu/kWh
Average Net Unit Heat Rate, LHV Basis	8687.66 Btu/kWh	8646.59 Btu/kWh
Average Net Load while Operating	615.01 MW	615.84 MW
Average Gross Load while Operating	677.00 MW	677.00 MW
Capacity Factor, Based on Gross Generation	70.00 %	70.00 %
Capacity Factor, Based on Net Generation	70.00 %	70.00 %

Period Total Values

Gross Power Generation	4151.36 GWh	4151.36 GWh
Net Power Generation	3771.24 GWh	3776.34 GWh
Auxiliary Power Required	380.13 GWh	375.03 GWh
Heat Input, HHV Basis	34.08 MMBtu	33.96 MMBtu
Heat Input, LHV Basis	32.76 MMBtu	32.65 MMBtu
Coal Burn Rate	1300.60 kton	1295.07 kton
Alt Solid Fuel Burn Rate	0.00 kton	0.00 kton
Gas Burn Rate	0.00 Mft3	0.00 Mft3
Oil Burn Rate, Mass Basis	0.00 ton	0.00 ton
Oil Burn Rate, Volume Basis	0.00 gal	0.00 gal
SCR Ammonia Reagent Consumption	4762.29 ton	4728.23 ton
SNCR Ammonia Reagent Consumption	0.00 ton	0.00 ton
SO3 System Sulfur Consumption	0.00 ton	0.00 ton
Hg Removal Additive	0.00 ton	0.00 ton
Coal Additive #1	0.00 ton	0.00 ton
Coal Additive #2	0.00 ton	0.00 ton
Furnace Sorbent	0.00 ton	0.00 ton
Sorbent Injection (Sorbent Injector)	0 ton	0.00 ton
Sorbent Injection (Gas Cleaning Device)	0 ton	0.00 ton
FGD Additive Consumption	111719.00 ton	106278.00 ton
FGD Fixative Consumption	0.00 ton	0.00 ton
FGD Water Consumption	111417000.00 gal	107823000.00 gal
SO2 Emitted	1687.70 ton	1605.48 ton
Fly Ash Production	94717.30 ton	93168.10 ton
Bottom Ash Production	10524.10 ton	10352.00 ton
FGD Sludge Production (Wet Basis)	678486.00 ton	645439.00 ton
FGD Sludge Production (Dry Basis)	525826.00 ton	500215.00 ton
Gypsum Production	0.00 ton	0.00 ton
Dry FGD Waste Production (Dry Basis)	0.00 ton	0.00 ton
Fly Ash Collected & Handled	94787.50 ton	93227.40 ton
Bottom Ash Collected & Handled	10524.10 ton	10352.00 ton

Auxiliary Power Requirements

Coal Unloading, Stockout, Reclaim	15023.40 MWh	15023.40 MWh
Bottom Ash and Fly Ash Systems	2554.43 MWh	2550.04 MWh
PA Fans	16691.50 MWh	15516.30 MWh
Hot PA Fans	0.00 MWh	0.00 MWh
FD Fans	21850.10 MWh	21794.90 MWh
Pulverizers Exhauster Mills	11488.20 MWh	11460.30 MWh
Precipitator/Fabric Filter	4571.05 MWh	4571.05 MWh
Selective Catalytic Reduction	919.76 MWh	913.91 MWh
Sorbent Injector	0.00 MWh	0.00 MWh
ID Fans	54206.30 MWh	52852.10 MWh
Scrubber	51216.50 MWh	48770.70 MWh
Scrubber Booster Fans	0.00 MWh	0.00 MWh
Scrubber Additive Preparation	9478.68 MWh	9026.75 MWh
Waste Conditioning	763.97 MWh	726.75 MWh
Soot Blowing Air Compressors	0.00 MWh	0.00 MWh
Misc Boiler Equipments	0.00 MWh	0.00 MWh
Total Fuel - Related Equipment	188.76 GWh	183.21 GWh

Replacement Power Required

Due to Differential Auxillary Power	0.00 GWh	-5.56 GWh
Lost Generation	0.00 GWh	0.00 GWh
Differential Unavailability	0.00 GWh	-0.45 GWh

Input Load Curve

Basis	Net	Net
Target Load		
Point 1 - Max Load	615.00 MW	615.00 MW
Point 2	0.00	0.00
Point 3	0.00	0.00
Point 4	0.00	0.00
Point 5	0.00	0.00
Hours at Load		
Point 1 - Max Load	6132.00 hr	6132.00 hr
Point 2	0.00	0.00
Point 3	0.00	0.00
Point 4	0.00	0.00
Point 5	0.00	0.00

Equipment System Performance

Case Descriptor

Evaluation	Techninomics	
	Feb 21 2012 12:44PM	Feb 21 2012 12:44PM
Run Date	1	2
Case Number	Techninomics_Demo_PC	Techninomics_Demo_PC
Unit	Techninomics Full Load Curve	Techninomics Full Load Curve
Load Curve	E - Base	E - OW1
Fuel Description		
Air Heater		
Primary Air		
Air Inlet Temperature	117.00 F	117.00 F
Air Outlet Temperature	518.26 F	516.97 F
Gas Inlet Temperature	706.05 F	706.18 F
Gas Outlet Temperature	338.49 F	332.31 F
Air Inlet Flow	843037.00 lbm/hr	822569.00 lbm/hr
Gas Inlet Flow	5607750.00 lbm/hr	5580090.00 lbm/hr
Gas Outlet Flow	5936360.00 lbm/hr	5907090.00 lbm/hr
Air Pressure Drop from Fouling	0.00 inwg	0.00 inwg
Total Air Pressure Drop	1.89 inwg	1.45 inwg
Gas Pressure Drop from Fouling	0.00 inwg	0.00 inwg
Total Gas Pressure Drop	6.60 inwg	6.53 inwg
Air Heater Fouling Level	Not Applicable	Not Applicable
Air Heater Sootblowing Cycle Per Day	0.00	0.00
Secondary Air		
Air Inlet Temperature	99.00 F	99.00 F
Air Outlet Temperature	549.09 F	542.55 F
Gas Inlet Temperature	706.05 F	706.18 F
Gas Outlet Temperature	338.49 F	332.31 F
Air Inlet Flow	4329100.00 lbm/hr	4475450.00 lbm/hr
Gas Inlet Flow	5607750.00 lbm/hr	5580090.00 lbm/hr
Gas Outlet Flow	5936360.00 lbm/hr	5907090.00 lbm/hr
Air Pressure Drop from Fouling	0.00 inwg	0.00 inwg
Total Air Pressure Drop	2.20 inwg	2.36 inwg
Gas Pressure Drop from Fouling	0.00 inwg	0.00 inwg
Total Gas Pressure Drop	6.60 inwg	6.53 inwg
Air Heater Fouling Level	Not Applicable	Not Applicable
Air Heater Sootblowing Cycle Per Day	0.00	0.00
Air Heater Leakage, Primary Air to Flue Gas	3.10 %	3.10 %
Air Heater Leakage, Secondary Air to Flue Gas	2.76 %	2.76 %
Air Heater Leakage, Primary Air to Secondary Air	3.45 %	3.45 %
Total Air Heater Leakage	5.86 %	5.86 %
H2SO4/SO3		
Outlet SO3 Loading ppm (wet basis)	34.55 ppm	33.11 ppm
SO3 Removal Efficiency	0.00 %	0.00 %
Bulk Material Handling		
Coal Handling System		
Total Maximum Capacity	3000 ton/hr	3000 ton/hr
Typical Throughput while Operating	1575.00 ton/hr	1575.00 ton/hr
Typical Coal Handled	212.10 ton/hr	211.20 ton/hr
Typical Hours of Operation	3.23 hr	3.22 hr
Pulverizer Rejects		
Typical Rejects Handled	0.00 ton/hr	0.00 ton/hr
Bottom Ash System		
Total Capacity	7.14 ton/hr	7.14 ton/hr
Typical Ash Handled	1.72 ton/hr	1.69 ton/hr
Typical Hours of Operation	24.00 hr	24.00 hr
Fly Ash System		
Total Capacity	50.00 ton/hr	50.00 ton/hr
Typical Ash Handled (includes economizer hopper ash)	15.46 ton/hr	15.20 ton/hr
Typical Hours of Operation	24.00 hr	24.00 hr
Economizer Hopper Ash		
Typical Ash Handled	0.69 ton/hr	0.68 ton/hr
Fan Performance		
Primary Air Fans		
Flow Required	286157.00 ft3/min	246349.00 ft3/min
Flow Available	388460.00 ft3/min	388460.00 ft3/min
Pressure Rise Required	32.23 inwg	23.77 inwg
Pressure Rise Available	59.39 inwg	59.09 inwg
Inlet Temperature	99.00 F	99.00 F
Motor Power Required	3650.31 hp	3393.31 hp
Motor Power Available	5000.00 hp	5000.00 hp
Forced Draft Fans		
Flow Required	1329200.00 ft3/min	1322330.00 ft3/min
Flow Available	1680980.00 ft3/min	1680980.00 ft3/min
Pressure Rise Required	10.64 inwg	10.53 inwg
Pressure Rise Available	17.02 inwg	17.02 inwg
Inlet Temperature	92.00 F	92.00 F
Motor Power Required	4778.45 hp	4766.39 hp
Motor Power Available	6000.00 hp	6000.00 hp
Induced Draft Fans		
Flow Required	2180890.00 ft3/min	2153090.00 ft3/min
Flow Available	2386080.00 ft3/min	2475440.00 ft3/min
Pressure Rise Required	30.31 inwg	30.10 inwg
Pressure Rise Available	36.29 inwg	39.78 inwg
Inlet Temperature	333.49 F	327.31 F
Motor Power Required	11854.50 hp	11558.30 hp
Motor Power Available	21000.00 hp	21000.00 hp
Mill Drying		
Achievable Load	100.00 %	100.00 %
Total Primary Air Flow (include Tempering Air)	848404.00 lbm/hr	675838.00 lbm/hr
Tempering Air	372674.00 lbm/hr	218765.00 lbm/hr
Air:Fuel Ratio	2.00	1.60
Coal Moisture Content Leaving Mills	2.24 %	2.24 %
Pulverizer Inlet Temperature	342.00 F	387.50 F
Pulverizer Outlet Temperature	150.00 F	150.00 F

Equipment System Performance

Case Descriptor

Evaluation	Techninomics	Techninomics
Run Date	Feb 21 2012 12:44PM	Feb 21 2012 12:44PM
Case Number	1	2
Unit	Techninomics_Demo_PC	Techninomics_Demo_PC
Load Curve	Techninomics Full Load Curve	Techninomics Full Load Curve
Fuel Description	E - Base	E - OW1

Air Heater

Primary Air		
Air Inlet Temperature	117.00 F	117.00 F
Air Outlet Temperature	518.26 F	516.97 F
Gas Inlet Temperature	706.05 F	706.18 F
Gas Outlet Temperature	338.49 F	332.31 F
Air Inlet Flow	843037.00 lbm/hr	822569.00 lbm/hr
Gas Inlet Flow	5607750.00 lbm/hr	5580090.00 lbm/hr
Gas Outlet Flow	5936360.00 lbm/hr	5907090.00 lbm/hr
Air Pressure Drop from Fouling	0.00 inwg	0.00 inwg
Total Air Pressure Drop	1.89 inwg	1.45 inwg
Gas Pressure Drop from Fouling	0.00 inwg	0.00 inwg
Total Gas Pressure Drop	6.60 inwg	6.53 inwg
Air Heater Fouling Level	Not Applicable	Not Applicable
Air Heater Sootblowing Cycle Per Day	0.00	0.00
Secondary Air		
Air Inlet Temperature	99.00 F	99.00 F
Air Outlet Temperature	549.09 F	542.55 F
Gas Inlet Temperature	706.05 F	706.18 F
Gas Outlet Temperature	338.49 F	332.31 F
Air Inlet Flow	4329100.00 lbm/hr	4475450.00 lbm/hr
Gas Inlet Flow	5607750.00 lbm/hr	5580090.00 lbm/hr
Gas Outlet Flow	5936360.00 lbm/hr	5907090.00 lbm/hr
Air Pressure Drop from Fouling	0.00 inwg	0.00 inwg
Total Air Pressure Drop	2.20 inwg	2.36 inwg
Gas Pressure Drop from Fouling	0.00 inwg	0.00 inwg
Total Gas Pressure Drop	6.60 inwg	6.53 inwg
Air Heater Fouling Level	Not Applicable	Not Applicable
Air Heater Sootblowing Cycle Per Day	0.00	0.00
Air Heater Leakage, Primary Air to Flue Gas	3.10 %	3.10 %
Air Heater Leakage, Secondary Air to Flue Gas	2.76 %	2.76 %
Air Heater Leakage, Primary Air to Secondary Air	3.45 %	3.45 %
Total Air Heater Leakage	5.86 %	5.86 %
H2SO4/SO3		
Outlet SO3 Loading ppm (wet basis)	34.55 ppm	33.11 ppm
SO3 Removal Efficiency	0.00 %	0.00 %

Bulk Material Handling

Coal Handling System		
Total Maximum Capacity	3000 ton/hr	3000 ton/hr
Typical Throughput while Operating	1575.00 ton/hr	1575.00 ton/hr
Typical Coal Handled	212.10 ton/hr	211.20 ton/hr
Typical Hours of Operation	3.23 hr	3.22 hr
Pulverizer Rejects		
Typical Rejects Handled	0.00 ton/hr	0.00 ton/hr
Bottom Ash System		
Total Capacity	7.14 ton/hr	7.14 ton/hr
Typical Ash Handled	1.72 ton/hr	1.69 ton/hr
Typical Hours of Operation	24.00 hr	24.00 hr
Fly Ash System		
Total Capacity	50.00 ton/hr	50.00 ton/hr
Typical Ash Handled (includes economizer hopper ash)	15.46 ton/hr	15.20 ton/hr
Typical Hours of Operation	24.00 hr	24.00 hr
Economizer Hopper Ash		
Typical Ash Handled	0.69 ton/hr	0.68 ton/hr

Fan Performance

Primary Air Fans		
Flow Required	286157.00 ft3/min	246349.00 ft3/min
Flow Available	388460.00 ft3/min	388460.00 ft3/min
Pressure Rise Required	32.23 inwg	23.77 inwg
Pressure Rise Available	59.39 inwg	59.09 inwg
Inlet Temperature	99.00 F	99.00 F
Motor Power Required	3650.31 hp	3393.31 hp
Motor Power Available	5000.00 hp	5000.00 hp
Forced Draft Fans		
Flow Required	1329200.00 ft3/min	1322330.00 ft3/min
Flow Available	1680980.00 ft3/min	1680980.00 ft3/min
Pressure Rise Required	10.64 inwg	10.53 inwg
Pressure Rise Available	17.02 inwg	17.02 inwg
Inlet Temperature	92.00 F	92.00 F
Motor Power Required	4778.45 hp	4766.39 hp
Motor Power Available	6000.00 hp	6000.00 hp
Induced Draft Fans		
Flow Required	2180890.00 ft3/min	2153090.00 ft3/min
Flow Available	2386080.00 ft3/min	2475440.00 ft3/min
Pressure Rise Required	30.31 inwg	30.10 inwg
Pressure Rise Available	36.29 inwg	39.78 inwg
Inlet Temperature	333.49 F	327.31 F
Motor Power Required	11854.50 hp	11558.30 hp
Motor Power Available	21000.00 hp	21000.00 hp

Mill Drying

Achievable Load	100.00 %	100.00 %
Total Primary Air Flow (include Tempering Air)	848404.00 lbm/hr	675838.00 lbm/hr
Tempering Air	372674.00 lbm/hr	218765.00 lbm/hr
Air:Fuel Ratio	2.00	1.60
Coal Moisture Content Leaving Mills	2.24 %	2.24 %
Pulverizer Inlet Temperature	342.00 F	387.50 F
Pulverizer Outlet Temperature	150.00 F	150.00 F

Equipment System Performance

Case Descriptor

	Technomics Feb 21 2012 12:44PM 1 Technomics_Demo_PC Technomics Full Load Curve E - Base	Technomics Feb 21 2012 12:44PM 2 Technomics_Demo_PC Technomics Full Load Curve E - OW1
Evaluation		
Run Date	Feb 21 2012 12:44PM	Feb 21 2012 12:44PM
Case Number	1	2
Unit	Technomics_Demo_PC	Technomics_Demo_PC
Load Curve	Technomics Full Load Curve	Technomics Full Load Curve
Fuel Description	E - Base	E - OW1
Additive Preparation		
Number of Mills/Slakers Required	2.00	2.00
Number of Spare Mills/Slakers	0.00	0.00
Throughput Required For Each Mill/Slaker	18219.00 lbm/hr	17331.60 lbm/hr
Throughput Available For Each Mill/Slaker	33120.00 lbm/hr	33120.00 lbm/hr
Number of Feed Pumps Required	1.00	1.00
Number of Spare Feed Pumps	1.00	1.00
Throughput Required For Each Feed Pump	385.80 gal/min	367.01 gal/min
Throughput Available For Each Feed Pump	622.00 gal/min	622.00 gal/min
Modules		
Number of Modules Required	1.00	1.00
Number of Spare Modules	0.00	0.00
Number of Spray Pumps Required	4.00	4.00
Number of Spare Spray Pumps	1.00	1.00
Throughput Required For Each Spray Pump	53641.50 gal/min	51028.90 gal/min
Throughput Available For Each Spray Pump	56550.00 gal/min	56550.00 gal/min
Number of Oxidation Air Blowers Required	1.00	1.00
Number of Spare Oxidation Air Blowers	1.00	1.00
Throughput Required For Each Oxidation Air Blower	3589.54 ft3/min	3414.71 ft3/min
Throughput Available For Each Oxidation Air Blower	8982.00 ft3/min	8982.00 ft3/min
Number of Dry Sorbent Blowers Required	0.00	0.00
Number of Spare Dry Sorbent Blowers	0.00	0.00
Throughput Available For Each Dry Sorbent Blower	0.00 lbm/hr	0.00 lbm/hr
Throughput Required For Each Sorbent Blower	0.00 lbm/hr	0.00 lbm/hr
Primary Dewatering		
Number of Primary Dewatering Systems Required	1.00	1.00
Number of Spare Primary Dewatering Systems	0.00	0.00
Throughput Required For Each Primary Dewatering System	236.89 ton/hr	225.35 ton/hr
Throughput Available For Each Primary Dewatering System	243.25 ton/hr	243.25 ton/hr
Number of Blowdown Pumps Required	1.00	1.00
Number of Spare Blowdown Pumps	1.00	1.00
Throughput Required For Each Blowdown Pump	838.40 gal/min	797.57 gal/min
Throughput Available For Each Blowdown Pump	1025.00 gal/min	1025.00 gal/min
Number of Overflow Pumps Required	0.00	0.00
Number of Spare Overflow Pumps	0.00	0.00
Throughput Required For Each Overflow Pump	0.00 gal/min	0.00 gal/min
Throughput Available For Each Overflow Pump	0.00 gal/min	0.00 gal/min
Number of Underflow Pumps Required	0.00	0.00
Number of Spare Underflow Pumps	0.00	0.00
Throughput Required For Each Underflow Pump	0.00 gal/min	0.00 gal/min
Throughput Available For Each Underflow Pump	0.00 gal/min	0.00 gal/min
Recycle Solids		
Throughput Required For Each Recycle Solids System	0.00 ton/hr	0.00 ton/hr
Throughput Available For Each Recycle Solids System	0.00 ton/hr	0.00 ton/hr
Auxiliary Power		
Additive Prep Power	1545.77 kW	1472.07 kW
Module Auxiliary Power	8125.69 kW	7729.93 kW
Primary Dewatering Auxiliary Power	226.65 kW	223.54 kW
Recycle Solids Auxiliary Power	0.00 kW	0.00 kW
Total Auxiliary Power	9898.11 kW	9425.54 kW
H2SO4/SO3		
Outlet SO3 Loading ppm (wet basis)	29.75 ppm	28.50 ppm
SO3 Removal Efficiency	10.00 %	10.00 %
Scrubber Waste Disposal System		
System Type	Stabilized Landfill	
Total Capacity	106.75 ton/hr	106.75 ton/hr
Typical Hours of Operation	19.55 hr	18.59 hr
Sludge Flows		
Wet Sludge Flow Entering System	86.94 ton/hr	82.70 ton/hr
Dry Sludge Flow Entering System	30.43 ton/hr	28.95 ton/hr
Wet Dewatered Sludge Flow	55.32 ton/hr	52.63 ton/hr
Dry Dewatered Sludge Flow	30.43 ton/hr	28.95 ton/hr
Fixative Flow	0.00 ton/hr	0.00 ton/hr
Stabilizing Ash Flow	55.32 ton/hr	52.63 ton/hr
Wet Sludge Flow Leaving System	110.65 ton/hr	105.26 ton/hr
Dry Sludge Flow Leaving System	85.75 ton/hr	81.57 ton/hr
Gypsum		
Wet Sludge Flow To Gypsum Plant	0.00 ton/hr	0.00 ton/hr
Dry Sludge Flow to Gypsum Plant	0.00 ton/hr	0.00 ton/hr
Gypsum Flow Leaving Plant	0.00 ton/hr	0.00 ton/hr

Emissions Table

Case Descriptor

Evaluation	Techninomics	Techninomics
Run Date	Feb 21 2012 12:44PM	Feb 21 2012 12:44PM
Case Number	1	2
Unit	Techninomics_Demo_PC	Techninomics_Demo_PC
Load Curve	Techninomics Full Load Curve	Techninomics Full Load Curve
Fuel Description	E - Base	E - OW1

Emissions Reference Values

	Techninomics	Techninomics
Boiler NOx Reference Basis	Wet	Wet
Boiler NOx Reference O2	0.00 %	0.00 %
Boiler NOx Reference Pressure	14.70 psi	14.70 psi
Boiler NOx Reference Temperature	32.00 F	32.00 F
SO2 Limit Reference Basis	Wet	Wet
SO2 Limit Reference O2	0.00 %	0.00 %
SO2 Limit Reference Pressure	14.70 psi	14.70 psi
SO2 Limit Reference Temperature	32.00 F	32.00 F
Particulate Limit Reference Basis	Wet	Wet
Particulate Limit Reference O2	0.00 %	0.00 %
Particulate Limit Reference Pressure	14.70 psi	14.70 psi
Particulate Limit Reference Temperature	32.00 F	32.00 F
NOx Limit Reference Basis	Wet	Wet
NOx Limit Reference O2	0.00 %	0.00 %
NOx Limit Reference Pressure	14.70 psi	14.70 psi
NOx Limit Reference Temperature	32.00 F	32.00 F
CEMS NOx Reporting Option	Do NOT report all NOx as NO2	Do NOT report all NOx as NO2
Hg Limit Reference Basis	Wet	Wet
Hg Limit Reference O2	0.00 %	0.00 %
Hg Limit Reference Pressure	14.70 psi	14.70 psi
Hg Limit Reference Temperature	32.00 F	32.00 F
HCl Limit Reference Basis	Wet	Wet
HCl Limit Ref O2	0.00 %	0.00 %
HCl Limit Ref Temperature	32.00 F	32.00 F
HCl Limit Ref Pressure	14.70 psi	14.70 psi
HF Limit Reference Basis	Wet	Wet
HF Limit Ref O2	0.00 %	0.00 %
HF Limit Ref Temperature	32.00 F	32.00 F
HF Limit Ref Pressure	14.70 psi	14.70 psi
Dioxin and Furan Limit Reference Basis	Dry	Dry
Dioxin and Furan Limit Reference O2	0.00 %	0.00 %
Other Emission Reference O2	0.00 %	0.00 %
Other Emission Reference Pressure	32.00 F	32.00 F
Other Emission Reference Temperature	14.70 psi	14.70 psi

Sulfur Dioxide

Input Limits	Techninomics	Techninomics
lbm/MBtu	0.15 lbm/MBtu	0.15 lbm/MBtu
Required Removal Efficiency	0.00 %	0.00 %
Mass/Gross Power	0 lbm/Btu	0 lbm/Btu
ppmv	0.00 ppm	0.00 ppm
mg/Normal m3	0.00 mg/Norma	0.00 mg/Normal m3
g/GJ	0.00 g/GJ	0.00 g/GJ
grains/Normal ft3	0.00 grains/Nor	0.00 grains/Normal ft3
Actual Emissions		
lbm/MBtu	0.10 lbm/MBtu	0.09 lbm/MBtu
Actual Removal Efficiency	97.59 %	97.59 %
Mass/Gross Power	0.81308 lbm/MWh	0.773473 lbm/MWh
ppmv (wet basis)	38.27 ppm	36.64 ppm
ppmv (dry basis)	44.43 ppm	42.49 ppm
ppmv (wet basis at ref O2)	38.27 ppm	36.64 ppm
ppmv (dry basis at ref O2)	44.43 ppm	42.49 ppm
mg/Normal m3 (wet basis at ref O2)	109.39 mg/Norma	104.74 mg/Normal m3
mg/Normal m3 (dry basis at ref O2)	127.02 mg/Norma	121.47 mg/Normal m3
g/GJ	22.15 g/GJ	21.14 g/GJ
grains/Normal ft3 (wet basis at ref O2)	0.05 grains/Nor	0.05 grains/Normal ft3
grains/Normal ft3 (dry basis at ref O2)	0.06 grains/Nor	0.05 grains/Normal ft3

Particulates

Input Limits	Techninomics	Techninomics
lbm/MBtu	0.02 lbm/MBtu	0.02 lbm/MBtu
Required Removal Efficiency	0.00 %	0.00 %
Mass/Gross Power	0 lbm/Btu	0 lbm/Btu
ppmv	0.00 ppm	0.00 ppm
mg/Normal m3	0.00 mg/Norma	0.00 mg/Normal m3
g/GJ	0.00 g/GJ	0.00 g/GJ
grains/Normal ft3	0.00 grains/Nor	0.00 grains/Normal ft3
Actual Emissions		
lbm/MBtu	0.01 lbm/MBtu	0.01 lbm/MBtu
Actual Removal Efficiency	99.75 %	99.75 %
Mass/Gross Power	0.110802 lbm/MWh	0.10899 lbm/MWh
ppmw (wet basis)	11.55 ppm	11.43 ppm
ppmw (dry basis)	12.64 ppm	12.50 ppm
mg/Normal m3 (wet basis at ref O2)	14.91 mg/Norma	14.76 mg/Normal m3
mg/Normal m3 (dry basis at ref O2)	17.31 mg/Norma	17.12 mg/Normal m3
g/GJ	3.02 g/GJ	2.98 g/GJ
grains/Normal ft3 (wet basis at ref O2)	0.01 grains/Nor	0.01 grains/Normal ft3
grains/Normal ft3 (dry basis at ref O2)	0.01 grains/Nor	0.01 grains/Normal ft3

Opacity

	Techninomics	Techninomics
Opacity Correlation Option	Corr based on ROx and H2SO4	Corr based on ROx and H2SO4
Opacity Limit, Percent	20.00 %	20.00 %
Actual Opacity, Percent	15.00 %	14.77 %

NOx

Input Limits	Techninomics	Techninomics
US Bituminous, lbm/MBtu	0.00	0.00
US Subbituminous, lbm/MBtu	0.00	0.00
lbm/MBtu	0.07 lbm/MBtu	0.07 lbm/MBtu
Required Removal Efficiency	78.50 %	78.50 %
ppm	0.00 ppm	0.00 ppm
mg/Normal m3	0.00 mg/Norma	0.00 mg/Normal m3
g/GJ	0.00 g/GJ	0.00 g/GJ
Boiler NOx Generated		
Calculation Source		

Emissions Table

Case Descriptor

Case Descriptor	Techinomics Feb 21 2012 12:44PM 1 Techinomics_Demo_PC Techinomics Full Load Curve E - Base	Techinomics Feb 21 2012 12:44PM 2 Techinomics_Demo_PC Techinomics Full Load Curve E - OW1
Evaluation		
Run Date	Feb 21 2012 12:44PM	Feb 21 2012 12:44PM
Case Number	1	2
Unit	Techinomics_Demo_PC	Techinomics_Demo_PC
Load Curve	Techinomics Full Load Curve	Techinomics Full Load Curve
Fuel Description	E - Base	E - OW1
NOx LOI Predictor's NOx Prediction Used	No	No
NOx LOI Predictor's NOx Prediction	0.00 ppm	0.00 ppm
Vista's NOx Prediction	223.31 ppm	222.82 ppm
Boiler NOx Results Used in Analysis		
lbm/MBtu	0.23 lbm/MBtu	0.23 lbm/MBtu
ppmv (wet basis)	223.31 ppm	222.82 ppm
ppmv (dry basis)	244.42 ppm	243.93 ppm
ppmv (wet basis at ref O2)	223.31 ppm	222.82 ppm
ppmv (dry basis at ref O2)	244.42 ppm	243.93 ppm
mg/Normal m3 (wet basis at ref O2)	459.45 mg/Norma	458.43 mg/Normal m3
mg/Normal m3 (dry basis at ref O2)	502.89 mg/Norma	501.86 mg/Normal m3
g/GJ	51.41 g/GJ	51.22 g/GJ
Actual Emissions		
lbm/MBtu	0.05 lbm/MBtu	0.05 lbm/MBtu
Actual Removal Efficiency	78.50 %	78.50 %
ppmv (wet basis)	40.21 ppm	40.19 ppm
ppmv (dry basis)	46.69 ppm	46.60 ppm
ppmv (wet basis at ref O2)	40.21 ppm	40.19 ppm
ppmv (dry basis at ref O2)	46.69 ppm	46.60 ppm
mg/Normal m3 (wet basis at ref O2)	82.74 mg/Norma	82.68 mg/Normal m3
mg/Normal m3 (dry basis at ref O2)	96.07 mg/Norma	95.89 mg/Normal m3
g/GJ	11.05 g/GJ	11.01 g/GJ
Mercury		
Input Limits		
lbm/TBtu	0.00 lbm/TBtu	0.00 lbm/TBtu
Minimum Required Removal Efficiency	0.00 %	0.00 %
Mass/Gross Power	0 lbm/Btu	0 lbm/Btu
ppbv	0.00 ppb	0.00 ppb
ug/Normal m3	0.00 ug/Nm3	0.00 ug/Nm3
g/TJ	0.00 g/TJ	0.00 g/TJ
nanograins/Normal ft3	0.00 nanograin:	0.00 nanograins/ft3
Actual Emissions		
lbm/TBtu	0.65 lbm/TBtu	0.61 lbm/TBtu
Actual Removal Efficiency	90.00 %	90.00 %
Mass/Gross Power	0.005317 lbm/GWh	0.005 lbm/GWh
ppbv (wet basis)	0.08 ppb	0.08 ppb
ppbv (dry basis)	0.09 ppb	0.09 ppb
ppbv (wet basis at ref O2)	0.08 ppb	0.08 ppb
ppbv (dry basis at ref O2)	0.09 ppb	0.09 ppb
ug/Normal m3 (wet basis at ref O2)	0.72 ug/Nm3	0.68 ug/Nm3
ug/Normal m3 (dry basis at ref O2)	0.83 ug/Nm3	0.79 ug/Nm3
g/TJ	0.14 g/TJ	0.14 g/TJ
nanograins/Normal ft3 (wet basis at ref O2)	312.61 nanograin:	295.89 nanograins/ft3
nanograins/Normal ft3 (dry basis at ref O2)	363.00 nanograin:	343.14 nanograins/ft3
pg/J	0.14 pg/J	0.14 pg/J
H2SO4/SO3		
Actual Emissions		
lbm/MBtu	0.004 lbm/MBtu	0.004 lbm/MBtu
Actual Removal Efficiency	92.76 %	92.73 %
ppmv (wet basis)	1.09 ppm	1.04 ppm
ppmv (dry basis)	1.28 ppm	1.21 ppm
ppmv (wet basis at ref O2)	1.09 ppm	1.04 ppm
ppmv (dry basis at ref O2)	1.28 ppm	1.21 ppm
mg/Normal m3 (wet basis at ref O2)	4.75 mg/Norma	4.56 mg/Normal m3
mg/Normal m3 (dry basis at ref O2)	5.52 mg/Norma	5.29 mg/Normal m3
g/GJ	0.96 g/GJ	0.92 g/GJ
grains/Normal ft3 (wet basis at ref O2)	0.00 grains/Nor	0.00 grains/Normal ft3
grains/Normal ft3 (dry basis at ref O2)	0.00 grains/Nor	0.00 grains/Normal ft3
CO (Note: unless calibration value is entered, CO values will be 0.)		
Boiler CO, ppm	304 80 ppm	214.27 ppm
Period Emissions		
Particulate	229.99 ton	226.23 ton
SO2	1687.70 ton	1605.48 ton
NOx	842.42 ton	836.39 ton
CO2	3522000.00 ton	3516700.00 ton
CO2 (Adjusted for Alternate Solid Fuel)	3522000.00 ton	3516700.00 ton
H2SO4/SO3	73.34 ton	69.92 ton
Carbon Equivalent	961220.00 ton	959774.00 ton
Carbon Equivalent (Adjusted for Alternate Solid Fuel)	961220.00 ton	959774.00 ton
CO	1149.84 ton	804.30 ton
Trace Elements		
Mercury (Hg) Input*	220.74 lbm	207.57 lbm
Speciation Details		
Elemental Mercury (Hg) Input*	110.37 lbm	103.79 lbm
Oxidized Mercury (Hg) Input*	77.26 lbm	72.65 lbm
Particulate Mercury (Hg) Input*	33.11 lbm	31.14 lbm
Mercury (Hg) Emitted*	22.07 lbm	20.76 lbm
Speciation Details		
Elemental Mercury (Hg) Emitted*	11.04 lbm	10.38 lbm
Oxidized Mercury (Hg) Emitted*	0.00 lbm	0.00 lbm
Particulate Mercury (Hg) Emitted*	3.31 lbm	3.11 lbm
Arsenic (As)	16359.40 lbm	12698.40 lbm
Lead (Pb)	8044.78 lbm	7985.31 lbm

Emissions Table

Case Descriptor

Evaluation
Run Date
Case Number
Unit
Load Curve
Fuel Description

Techinomics
Feb 21 2012 12:44PM
1
Techinomics_Demo_PC
Techinomics Full Load Curve
E - Base

Techinomics
Feb 21 2012 12:44PM
2
Techinomics_Demo_PC
Techinomics Full Load Curve
E - OW1

* NOTE: Mercury production and mercury emission calculations are very dependent upon the mercury speciation and the mercury removal seen in flue gas processing equipment. While Vista defaults are based on industry data such as the EPA ICR, these values show a wide range of variation and have a large potential error in them. Therefore, proper care should be used in utilizing Vista's mercury emission predictions, particularly if default data has been used.

Boiler Performance

Case Descriptor

Evaluation	Techinomics	Techinomics
Run Date	Feb 21 2012 12:44PM	Feb 21 2012 12:44PM
Case Number	1	2
Unit	Techinomics_Demo_PC	Techinomics_Demo_PC
Load Curve	Techinomics Full Load Curve	Techinomics Full Load Curve
Fuel Description	E - Base	E - OW1

General Steam Generator Parameters

Heat Input per Plan Area	1.47 MBtu/hr ft2	1.47 MBtu/hr ft2
Maximum Gas Velocity	42.47 ft/s	42.35 ft/s
Horizontal Furnace Exit Gas Temperature	2513.43 F	2515.30 F
Vertical Furnace Exit Gas Temperature	1852.87 F	1852.34 F
Economizer Gas Outlet Temperature	706.04 F	706.17 F
Burner Tilt	0.00 deg	0.00 deg
Overfire Air Level 1	10.00 %	10.00 %
Overfire Air Level 2	5.00 %	5.00 %
Boiler Inleakage	0.00 %	0.00 %
Burner Levels/Cyclones in Service	3.00	3.00
Heat Entering Cyclone	0.00 Btu/hr	0.00 Btu/hr
Cyclone Heat Absorbtion	0.00 Btu/hr	0.00 Btu/hr
Gas through Rear Side of Split Backpass	55.50 %	55.17 %

Turbine Cycle

Feed water		
Flow	4015320.00 lbm/hr	4022770.00 lbm/hr
Inlet Pressure	4439.00 psi	4439.00 psi
Inlet Temperature	552.86 F	552.86 F
Outlet Temperature	612.89 F	612.14 F
Main Steam		
Outlet Flow	4317330.00 lbm/hr	4317330.00 lbm/hr
Inlet Pressure	4013.00 psi	4013.00 psi
Inlet Temperature	762.89 F	762.89 F
Outlet Pressure	3800.00 psi	3800.00 psi
Outlet Temperature	1054.82 F	1054.82 F
Reheat		
Outlet Flow	3523910.00 lbm/hr	3523910.00 lbm/hr
Inlet Pressure	616.60 psi	616.60 psi
Inlet Temperature	574.80 F	574.80 F
Outlet Pressure	595.60 psi	595.60 psi
Outlet Temperature	1055.00 F	1055.00 F
Secondary Reheat		
Outlet Flow	0.00 lbm/hr	0.00 lbm/hr
Inlet Pressure	0.00 psi	0.00 psi
Inlet Temperature	0.00 F	0.00 F
Outlet Pressure	0.00 psi	0.00 psi
Outlet Temperature	0.00 F	0.00 F
Attemperation Flow		
Superheat Spray Flow	302005.00 lbm/hr	294559.00 lbm/hr
Superheat Spray Flow 2	0.00 lbm/hr	0.00 lbm/hr
Reheat Spray Flow	0.00 lbm/hr	0.00 lbm/hr
Secondary Reheat Spray Flow	0.00 lbm/hr	0.00 lbm/hr

Slagging, Fouling, Erosion, Cyclone Acceptability

Slagging Index	Medium/High	Medium/High
Slagging Margin	9.56	9.56
Fouling Index	Medium	Medium
Fouling Margin	50.00	50.00
Erosion Potential	Low	Low
Cyclone Acceptability	Not Applicable	Not Applicable
Stoker Acceptability	Not Applicable	Not Applicable

Sootblowing

Sootblows per Day		
Furnace Wallblowers	2.00	2.00
Furnace Water Lance	0.00	0.00
Furnace Water Cannon	0.00	0.00
Upper Furnace Retractable	2.00	2.00
Pendant Pass Retractable	2.00	2.00
Convective Pass Retractable	2.00	2.00
Maximum Sootblows per Day		
Furnace Wallblowers	6.00	6.00
Furnace Water Lance	0.00	0.00
Furnace Water Cannon	0.00	0.00
Upper Furnace Retractable	6.00	6.00
Pendant Pass Retractable	6.00	6.00
Convective Pass Retractable	6.00	6.00
Steam and Air Per Day		
Total Sootblowing Steam Required	35877.20 lbm	35877.20 lbm
Total Sootblowing Air Required	0.00 ft3	0.00 ft3
Air Sootblower Auxiliary Power	0.00 MW	0.00 MW

SNCR

Required Removal Efficiency	0.00 %	0.00 %
Actual Removal Efficiency	0.00 %	0.00 %
Stoichiometric Ratio	0.00	0.00
Reagent Usage	0 lbm/hr	0.00 lbm/hr
Dilution Water in Reagent	0.00 lbm/hr	0.00 lbm/hr
Total Water in Reagent	0 lbm/hr	0.00 lbm/hr
Reagent Slip	0.00 ppm	0.00 ppm

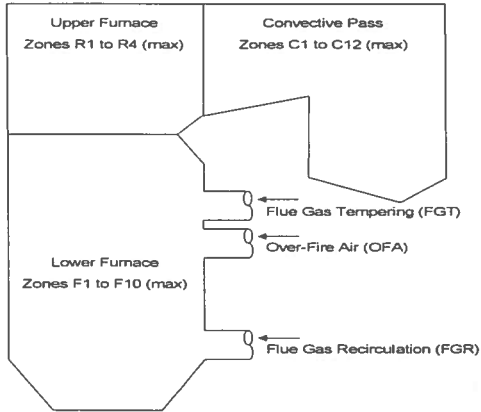
Boiler Performance

Case Descriptor

Evaluation	Techninomics	Techninomics
Run Date	Feb 21 2012 12:44PM	Feb 21 2012 12:44PM
Case Number	1	2
Unit	Techninomics_Demo_PC	Techninomics_Demo_PC
Load Curve	Techninomics Full Load Curve	Techninomics Full Load Curve
Fuel Description	E - Base	E - OW1

Furnace Sorbent Injection

Furnace Sorbent Type	None	None
Furnace Sorbent SO2 Removal	0.00 %	0.00 %
Furnace Sorbent SO3 Removal	0.00 %	0.00 %
Furnace Sorbent Stoichiometry	0.00	0.00
Furnace Sorbent Mass Flow	0.00 lbm/hr	0.00 lbm/hr



Boiler Temperature and Flow Profile

Lower Furnace

F1	Description	ASH HOPPER ZONE	ASH HOPPER ZONE
	Inlet Gas Temp	1869.94 F	1872.91 F
	Middle Gas Temp	1869.94 F	1872.91 F
	Outlet Gas Temp	1869.94 F	1872.91 F
	Inlet Gas Flow Rate	0.00 lbm/hr	0.00 lbm/hr
	Gas Velocity	1.00 ft/s	1.00 ft/s
F2	Description	LOWER BURNER ZONE	LOWER BURNER ZONE
	Inlet Gas Temp	1869.94 F	1872.91 F
	Middle Gas Temp	2445.69 F	2449.56 F
	Outlet Gas Temp	3021.44 F	3026.22 F
	Inlet Gas Flow Rate	2066710.00 lbm/hr	2059460.00 lbm/hr
	Gas Velocity	12.64 ft/s	12.63 ft/s
F3	Description	UPPER BURNER ZONE	UPPER BURNER ZONE
	Inlet Gas Temp	3021.44 F	3026.22 F
	Middle Gas Temp	3106.50 F	3112.05 F
	Outlet Gas Temp	3191.55 F	3197.88 F
	Inlet Gas Flow Rate	5166780.00 lbm/hr	5148640.00 lbm/hr
	Gas Velocity	32.28 ft/s	32.23 ft/s
F4	Description	INTERMEDIATE FURNACE	INTERMEDIATE FURNACE
	Inlet Gas Temp	3191.55 F	3197.88 F
	Middle Gas Temp	3075.52 F	3081.00 F
	Outlet Gas Temp	2959.50 F	2964.11 F
	Inlet Gas Flow Rate	5554290.00 lbm/hr	5534790.00 lbm/hr
	Gas Velocity	37.28 ft/s	37.22 ft/s
F5	Description	FURNACE NOSE ZONE	FURNACE NOSE ZONE
	Inlet Gas Temp	2959.50 F	2964.11 F
	Middle Gas Temp	2736.46 F	2739.71 F
	Outlet Gas Temp	2513.43 F	2515.30 F
	Inlet Gas Flow Rate	5554290.00 lbm/hr	5534790.00 lbm/hr
	Gas Velocity	35.14 ft/s	35.07 ft/s

Boiler Performance

Case Descriptor

Evaluation	Techninomics	Techninomics
Run Date	Feb 21 2012 12:44PM	Feb 21 2012 12:44PM
Case Number	1	2
Unit	Techninomics_Demo_PC	Techninomics_Demo_PC
Load Curve	Techninomics Full Load Curve	Techninomics Full Load Curve
Fuel Description	E - Base	E - OW1

R1

Description	Secondary Superheat	Secondary Superheat
Inlet Gas Temp	2513.43 F	2515.30 F
Middle Gas Temp	2280.64 F	2281.57 F
Outlet Gas Temp	2047.85 F	2047.85 F
Inlet Gas Flow Rate	5554290.00 lbm/hr	5534790.00 lbm/hr
Gas Velocity	42.47 ft/s	42.35 ft/s
Inlet Bank Temperature	799.37 F	799.31 F
Outlet Bank Temperature	959.51 F	959.55 F
Heat Transferred to Tube Bank	874.08 Btu/hr	874.84 Btu/hr

R2

Description	Final Superheater	Final Superheater
Inlet Gas Temp	2047.85 F	2047.85 F
Middle Gas Temp	1950.36 F	1950.09 F
Outlet Gas Temp	1852.87 F	1852.34 F
Inlet Gas Flow Rate	5554290.00 lbm/hr	5534790.00 lbm/hr
Gas Velocity	31.00 ft/s	30.89 ft/s
Inlet Bank Temperature	959.51 F	959.55 F
Outlet Bank Temperature	1053.17 F	1053.17 F
Heat Transferred to Tube Bank	330.86 Btu/hr	330.66 Btu/hr

Convective Pass

C1

Description	Vertical Pendant RH #5	Vertical Pendant RH #5
Inlet Gas Temp	1852.87 F	1852.34 F
Middle Gas Temp	1765.22 F	1764.57 F
Outlet Gas Temp	1677.56 F	1676.80 F
Inlet Gas Flow Rate	5554290.00 lbm/hr	5534790.00 lbm/hr
Gas Velocity	42.10 ft/s	41.94 ft/s
Inlet Bank Temperature	899.95 F	900.28 F
Outlet Bank Temperature	1053.56 F	1053.56 F
Heat Transferred to Tube Bank	297.31 Btu/hr	296.67 Btu/hr

C2

Description	Vertical Upper Backpass RH #4	Vertical Upper Backpass RH #4
Inlet Gas Temp	1677.56 F	1676.80 F
Middle Gas Temp	1633.83 F	1633.05 F
Outlet Gas Temp	1590.11 F	1589.30 F
Inlet Gas Flow Rate	5554290.00 lbm/hr	5534790.00 lbm/hr
Gas Velocity	42.47 ft/s	42.31 ft/s
Inlet Bank Temperature	824.82 F	825.36 F
Outlet Bank Temperature	899.95 F	900.28 F
Heat Transferred to Tube Bank	146.77 Btu/hr	146.35 Btu/hr

C3

Description	Primary SH Vertical	Primary SH Vertical
Inlet Gas Temp	1590.11 F	1589.30 F
Middle Gas Temp	1527.15 F	1526.23 F
Outlet Gas Temp	1464.19 F	1463.16 F
Inlet Gas Flow Rate	3085720.00 lbm/hr	3074880.00 lbm/hr
Gas Velocity	22.63 ft/s	22.54 ft/s
Inlet Bank Temperature	806.48 F	805.85 F
Outlet Bank Temperature	823.32 F	822.53 F
Heat Transferred to Tube Bank	116.34 Btu/hr	116.15 Btu/hr

C4

Description	Upper Horizontal Primary SH	Upper Horizontal Primary SH
Inlet Gas Temp	1520.33 F	1519.40 F
Middle Gas Temp	1351.70 F	1350.31 F
Outlet Gas Temp	1183.07 F	1181.22 F
Inlet Gas Flow Rate	3082490.00 lbm/hr	3053570.00 lbm/hr
Gas Velocity	40.90 ft/s	40.50 ft/s
Inlet Bank Temperature	773.88 F	773.70 F
Outlet Bank Temperature	806.48 F	805.85 F
Heat Transferred to Tube Bank	306.22 Btu/hr	304.18 Btu/hr

C5

Description	Lower Horizontal Primary SH	Lower Horizontal Primary SH
Inlet Gas Temp	1183.07 F	1181.22 F
Middle Gas Temp	1092.22 F	1090.46 F
Outlet Gas Temp	1001.38 F	999.70 F
Inlet Gas Flow Rate	3082490.00 lbm/hr	3053570.00 lbm/hr
Gas Velocity	33.93 ft/s	33.58 ft/s
Inlet Bank Temperature	763.34 F	763.34 F
Outlet Bank Temperature	773.88 F	773.70 F
Heat Transferred to Tube Bank	160.60 Btu/hr	158.93 Btu/hr

Boiler Performance

Case Descriptor

Evaluation
Run Date
Case Number
Unit
Load Curve
Fuel Description
C6

Techinomics
Feb 21 2012 12:44PM
1
Techinomics_Demo_PC
Techinomics Full Load Curve
E - Base

Techinomics
Feb 21 2012 12:44PM
2
Techinomics_Demo_PC
Techinomics Full Load Curve
E - OW1

C7

Description	Horizontal Economizer		Horizontal Economizer
Inlet Gas Temp	1001.38 F		999.70 F
Middle Gas Temp	824.06 F		822.73 F
Outlet Gas Temp	646.74 F		645.77 F
Inlet Gas Flow Rate	3082490.00 lbm/hr		3053570.00 lbm/hr
Gas Velocity	35.91 ft/s		35.54 ft/s
Inlet Bank Temperature	552.90 F		552.90 F
Outlet Bank Temperature	612.95 F		612.20 F
Heat Transferred to Tube Bank	303.36 Btu/hr		299.89 Btu/hr

C8

Description	Upper Horizontal RH #3		Upper Horizontal RH #3
Inlet Gas Temp	1520.33 F		1519.40 F
Middle Gas Temp	1368.72 F		1368.32 F
Outlet Gas Temp	1217.12 F		1217.25 F
Inlet Gas Flow Rate	2471790.00 lbm/hr		2481220.00 lbm/hr
Gas Velocity	40.00 ft/s		40.14 ft/s
Inlet Bank Temperature	714.44 F		714.91 F
Outlet Bank Temperature	824.82 F		825.36 F
Heat Transferred to Tube Bank	221.14 Btu/hr		221.23 Btu/hr

C9

Description	Middle Horizontal RH #2		Middle Horizontal RH #2
Inlet Gas Temp	1217.12 F		1217.25 F
Middle Gas Temp	1087.38 F		1087.71 F
Outlet Gas Temp	957.63 F		958.18 F
Inlet Gas Flow Rate	2471790.00 lbm/hr		2481220.00 lbm/hr
Gas Velocity	36.31 ft/s		36.45 ft/s
Inlet Bank Temperature	628.05 F		628.27 F
Outlet Bank Temperature	714.44 F		714.91 F
Heat Transferred to Tube Bank	183.81 Btu/hr		184.24 Btu/hr

Description	Lower Horizontal RH #1		Lower Horizontal RH #1
Inlet Gas Temp	957.63 F		958.18 F
Middle Gas Temp	868.47 F		869.00 F
Outlet Gas Temp	779.30 F		779.81 F
Inlet Gas Flow Rate	2471790.00 lbm/hr		2481220.00 lbm/hr
Gas Velocity	33.28 ft/s		33.42 ft/s
Inlet Bank Temperature	575.01 F		575.01 F
Outlet Bank Temperature	628.05 F		628.27 F
Heat Transferred to Tube Bank	123.05 Btu/hr		123.58 Btu/hr

Slagging/Fouling/Erosion/Cyclone Acceptability

Case Descriptor

	Techinomics	Techinomics
Evaluation	Feb 21 2012 12:44PM	Feb 21 2012 12:44PM
Run Date		
Case Number	1	2
Unit	Techinomics_Demo_PC	Techinomics_Demo_PC
Load Curve	Techinomics Full Load Curve	Techinomics Full Load Curve
Fuel Description	E - Base	E - OW1

Slagging Potential

	Techinomics	Techinomics
Coal Rank	Bituminous A	Bituminous A
Ash Type	Bituminous	Bituminous
Calculated Slagging Potential	Medium/High	Medium/High
User Input Slagging Potential	Not Applicable	Not Applicable

Slagging Indices

	Techinomics	Techinomics
Battelle, Western		
Potential	Not Applicable	Not Applicable
Value	0.99	0.99
Weighting Factor	1.00	1.00

	Techinomics	Techinomics
Battelle, Eastern		
Potential	Low	Low
Value	-109.77	-112.92
Weighting Factor	1.00	1.00

	Techinomics	Techinomics
AEP Slagging Factor		
Potential	Medium	Medium
Value	5.80	5.81
Weighting Factor	1.00	1.00

	Techinomics	Techinomics
Base-to-Acid Ratio, Western		
Potential	Not Applicable	Not Applicable
Value	0.45	0.45
Weighting Factor	1.00	1.00

	Techinomics	Techinomics
Base-to-Acid Ratio, Eastern		
Potential	High/Severe	High/Severe
Value	0.45	0.45
Weighting Factor	1.00	1.00

	Techinomics	Techinomics
Silica Factor		
Potential	High	High
Value	61.30	61.30
Weighting Factor	1.00	1.00

	Techinomics	Techinomics
Iron/Calcium Ratio		
Potential	Not Applicable	Not Applicable
Value	4.08	4.08
Weighting Factor	1.00	1.00

	Techinomics	Techinomics
Attig & Duzy		
Potential	Medium	Medium
Value	1.29	1.23
Weighting Factor	1.00	1.00

	Techinomics	Techinomics
Ash Fusion Temperatures		
Potential	Not Applicable	Not Applicable
Value	2204.00	2204.00
Weighting Factor	1.00	1.00

	Techinomics	Techinomics
Hensel-Halfinger		
Potential	Very Low	Very Low
Value	0.47	0.47
Weighting Factor	1.00	1.00

	Techinomics	Techinomics
User-Input Custom Slagging Factor (1)		
Potential	Not Applicable	Not Applicable
Value	0.00	0.00
Weighting Factor	1.00	1.00

Temperature/Viscosity Correlations

	Techinomics	Techinomics
Multi - Viscosity		
Potential	Severe	Severe
Value	2.44	2.44
Weighting Factor	1.00	1.00

	Techinomics	Techinomics
Watt & Fereday		
Potential	Medium	Medium
Value	2374.13	2374.13
Weighting Factor	1.00	1.00

	Techinomics	Techinomics
Hoy & Roberts		
Potential	High	High
Value	2198.07	2198.07
Weighting Factor	1.00	1.00

	Techinomics	Techinomics
Bcura		
Potential	Medium	Medium
Value	2330.80	2330.80
Weighting Factor	1.00	1.00

	Techinomics	Techinomics
Dolomite		
Potential	Not Applicable	Not Applicable
Value	1682.90	1682.90
Weighting Factor	1.00	1.00

	Techinomics	Techinomics
B&W		
Potential	Medium	Medium
Value	2337.98	2337.98
Weighting Factor	1.00	1.00

Coal Ash Hemispherical Temperature	2508.00 F	2508.00 F
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Coal Ash Initial Deformation Temperature	2128.00 F	2128.00 F
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Coal Ash Softening Temperature	2214.00 F	2214.00 F
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Base Constituents	29.56	29.56
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Acid Constituents	65.60	65.60
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Steam Flow per Furnace Wall Perimeter	17269.30 lbm/hr-ft	17269.30 lbm/hr-ft
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Steam Flow per Furnace Plan Area	1143.69 lbm/hr-ft2	1143.69 lbm/hr-ft2
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Coal Ash T250 Temperature	2340.00 F	2340.00 F
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Slagging/Fouling/Erosion/Cyclone Acceptability

Case Descriptor

	Technomics	Technomics
Evaluation	Feb 21 2012 12:44PM	Feb 21 2012 12:44PM
Run Date	1	2
Case Number	Technomics_Demo_PC	Technomics_Demo_PC
Unit	Technomics Full Load Curve	Technomics Full Load Curve
Load Curve	E - Base	E - OW1
Fuel Description		

Fouling Potential

	Technomics	Technomics
Coal Rank	Bituminous A	Bituminous A
Ash Type	Bituminous	Bituminous
Calculated Fouling Potential	Medium	Medium
User Input Fouling Potential	Not Applicable	Not Applicable
Fouling Indices		
Battelle, Western		
Potential	Not Applicable	Not Applicable
Value	0.17	0.17
Weighting Factor	1.00	1.00
Battelle, Eastern		
Potential	High	High
Value	16.80	16.68
Weighting Factor	1.00	1.00
Chlorine Factor, Western		
Potential	Not Applicable	Not Applicable
Value	0.00	0.00
Weighting Factor	1.00	1.00
Chlorine Factor, Eastern		
Potential	Low	Low
Value	0.10	0.10
Weighting Factor	1.00	1.00
Maximum Sodium Factor		
Potential	Not Applicable	Not Applicable
Value	27.07	27.07
Weighting Factor	1.00	1.00
Sodium Factor		
Potential	Medium/High	Medium/High
Value	1.05	1.05
Weighting Factor	1.00	1.00
Adjusted Sodium		
Potential	Not Applicable	Not Applicable
Value	1.10	1.10
Weighting Factor	1.00	1.00
NA2O - K2O Factor		
Potential	Medium/High	Medium/High
Value	0.42	0.42
Weighting Factor	1.00	1.00
Maximum Ash		
Potential	Not Applicable	Not Applicable
Value	1.05	1.05
Weighting Factor	1.00	1.00
Base/Acid - NA2O		
Potential	Medium/High	Medium/High
Value	0.47	0.47
Weighting Factor	1.00	1.00
Alkali Factor		
Potential	Low	Low
Value	0.15	0.15
Weighting Factor	1.00	1.00
Vanadium Factor		
Potential	Not Applicable	Not Applicable
Value	0.00	0.00
Weighting Factor	1.00	1.00
Biomass Alkali Factor		
Potential	Not Applicable	Not Applicable
Value	0.15	0.15
Weighting Factor	1.00	1.00
Biomass Free Alkali Factor		
Potential	Not Applicable	Not Applicable
Value	-1.83	-1.75
Weighting Factor	1.00	1.00
User-Input Custom Fouling Factor (1)		
Potential	Not Applicable	Not Applicable
Value	0.00	0.00
Weighting Factor	1.00	1.00

Erosion Potential

Calculated Erosion Potential	Low	Low
Free Quartz	10.18	10.18

Maintenance and Availability Results

Case Descriptor

Evaluation	Techinomics	Techinomics
Run Date	Feb 21 2012 12:44PM	Feb 21 2012 12:44PM
Case Number	1	2
Unit	Techinomics_Demo_PC	Techinomics_Demo_PC
Load Curve	Techinomics Full Load Curve	Techinomics Full Load Curve
Fuel Description	E - Base	E - OW1

Forced Outage Rate

Coal Handling System	61.63 hr	61.37 hr
Primary Air Fans	0.35 hr	0.23 hr
Hot Primary Air Fans	0.00 hr	0.00 hr
Forced Draft Fans	0.40 hr	0.39 hr
Fuel Prep & Firing System	0.09 hr	0.09 hr
Steam Generator	627.20 hr	626.80 hr
Air Heaters	9.22 hr	9.22 hr
SCR System	30.82 hr	30.70 hr
Sorbent Injector System	0.00 hr	0.00 hr
Particulate Removal System	0.00 hr	0.00 hr
Induced Draft Fans	0.73 hr	0.68 hr
Scrubber Booster Fans	0.00 hr	0.00 hr
Fly Ash System	30.20 hr	30.20 hr
Bottom Ash System	4.40 hr	4.37 hr
FGD System	28.07 hr	27.82 hr
FGD Waste Disposal System	0.00 hr	0.00 hr
Balance of Plant	728.25 hr	728.25 hr
Total	1442.85 hr	1441.80 hr

Period Maintenance Costs

Coal Handling System	149.08 k\$	148.53 k\$
Primary Air Fans	16.19 k\$	15.82 k\$
Hot Primary Air Fans	0.00 k\$	0.00 k\$
Forced Draft Fans	48.32 k\$	48.28 k\$
Fuel Prep & Firing System	300.23 k\$	300.22 k\$
Steam Generator	617.91 k\$	617.37 k\$
Air Heaters	84.39 k\$	84.39 k\$
SCR System	100.48 k\$	99.52 k\$
Sorbent Injector System	0.00 k\$	0.00 k\$
Particulate Removal System	257.05 k\$	257.31 k\$
Induced Draft Fans	53.58 k\$	53.58 k\$
Scrubber Booster Fans	0.00 k\$	0.00 k\$
Fly Ash System	115.24 k\$	113.55 k\$
Bottom Ash System	197.15 k\$	194.26 k\$
FGD System	407.43 k\$	396.35 k\$
FGD Waste Disposal System	65.29 k\$	63.73 k\$
Balance of Plant	0.00 k\$	0.00 k\$
Total	2412.33 k\$	2392.92 k\$

Steam Generator Maintenance Concerns

Waterwalls		
Forced Outages	0.10	0.10
Time to repair	40.00 hr	40.00 hr
Manhours to repair	160.00 hr	160.00 hr
Material cost to repair	5000.00 \$	5000.00 \$
Superheater		
Forced Outages	0.10	0.10
Time to repair	40.05 hr	39.89 hr
Manhours to repair	300.34 hr	299.19 hr
Material cost to repair	10009.70 \$	9976.91 \$
Reheater		
Forced Outages	0.10	0.10
Time to repair	40.05 hr	40.02 hr
Manhours to repair	300.35 hr	300.13 hr
Material cost to repair	10010.00 \$	10003.80 \$
Economizer		
Forced Outages	0.10	0.10
Time to repair	40.04 hr	39.80 hr
Manhours to repair	300.33 hr	298.49 hr
Material cost to repair	10009.40 \$	9956.97 \$

Maintenance and Availability Results

Case Descriptor

Evaluation	Techinomics	Techinomics
Run Date	Feb 21 2012 12:44PM	Feb 21 2012 12:44PM
Case Number	1	2
Unit	Techinomics_Demo_PC	Techinomics_Demo_PC
Load Curve	Techinomics Full Load Curve	Techinomics Full Load Curve
Fuel Description	E - Base	E - OW1

Probability to Meet Desired Load Level

Percent of Max Load

100	74.67	74.68
90	78.66	78.67
80	81.85	81.86
70	83.04	83.06
60	84.48	84.49
50	85.12	85.13
40	85.71	85.72
30	85.71	85.72
20	85.71	85.72
10	100.00	100.00

Equivalent Availability	83.53 %	83.54 %
Differential Unavailability	0.00 GWh	-0.45 GWh

Derates and Concerns

Case Descriptor

Evaluation

Techinomics

Techinomics

Run Date

Feb 21 2012 12:44PM

Feb 21 2012 12:44PM

Case Number

1

2

Unit

Techinomics_Demo_PC

Techinomics_Demo_PC

Load Curve

Techinomics Full Load Curve

Techinomics Full Load Curve

Fuel Description

E - Base

E - OW1

Derates

Coal Handling

Average	0.00 %	0.00 %
Worst-Case	0.00 %	0.00 %

Fans

PA Fan Capacity

Average	0.00 %	0.00 %
Worst-Case	0.00 %	0.00 %

PA Fan Motor Power

Average	0.00 %	0.00 %
Worst-Case	0.00 %	0.00 %

Hot PA Fan Capacity

Average	0.00 %	0.00 %
Worst-Case	0.00 %	0.00 %

Hot PA Motor Power

Average	0.00 %	0.00 %
Worst-Case	0.00 %	0.00 %

FD Fan Capacity

Average	0.00 %	0.00 %
Worst-Case	0.00 %	0.00 %

FD Fan Motor Power

Average	0.00 %	0.00 %
Worst-Case	0.00 %	0.00 %

ID Fan Capacity

Average	0.00 %	0.00 %
Worst-Case	0.00 %	0.00 %

ID Fan Motor Power

Average	0.00 %	0.00 %
Worst-Case	0.00 %	0.00 %

SB Fan Capacity

Average	0.00 %	0.00 %
Worst-Case	0.00 %	0.00 %

SB Fan Motor Power

Average	0.00 %	0.00 %
Worst-Case	0.00 %	0.00 %

Mill

Drying

Average	0.00 %	0.00 %
Worst-Case	0.00 %	0.00 %

Feeder

Average	0.00 %	0.00 %
Worst-Case	0.00 %	0.00 %

Mill/Cyclone

Average	0.00 %	0.00 %
Worst-Case	0.00 %	0.00 %

Exhauster Fan

Average	0.00 %	0.00 %
Worst-Case	0.00 %	0.00 %

Motor

Average	0.00 %	0.00 %
Worst-Case	0.00 %	0.00 %

Stoker

Feeder

Average	0.00 %	0.00 %
Worst-Case	0.00 %	0.00 %

Grate Burn Rate

Average	0.00 %	0.00 %
Worst-Case	0.00 %	0.00 %

Grate Heat Release

Average	0.00 %	0.00 %
Worst-Case	0.00 %	0.00 %

Boiler

Slagging

Average	0.00 %	0.00 %
Worst-Case	0.00 %	0.00 %

Fouling

Average	0.00 %	0.00 %
Worst-Case	0.00 %	0.00 %

Coal Burner Heat Input Capability

Average	0.00 %	0.00 %
Worst-Case	0.00 %	0.00 %

Alt. Solid Fuel Burner Heat Input Capability

Average	0.00 %	0.00 %
Worst-Case	0.00 %	0.00 %

Gas Burner Heat Input Capability

Average	0.00 %	0.00 %
Worst-Case	0.00 %	0.00 %

Oil Burner Input Capability

Derates and Concerns

Case Descriptor

Evaluation	Techninomics		Techninomics	
Run Date	Feb 21 2012 12:44PM		Feb 21 2012 12:44PM	
Case Number	1		2	
Unit	Techninomics_Demo_PC		Techninomics_Demo_PC	
Load Curve	Techninomics Full Load Curve		Techninomics Full Load Curve	
Fuel Description	E - Base		E - OW1	
Average		0.00 %		0.00 %
Worst-Case		0.00 %		0.00 %
SNCR				
Average		0.00 %		0.00 %
Worst-Case		0.00 %		0.00 %
SCR System				
Average		0.00 %		0.00 %
Worst-Case		0.00 %		0.00 %
Precipitator				
Excessive Flow				
Average		0.00 %		0.00 %
Worst-Case		0.00 %		0.00 %
Collection Area				
Average		0.00 %		0.00 %
Worst-Case		0.00 %		0.00 %
Flue Gas Desulfurization				
Removal Capacity				
Average		0.00 %		0.00 %
Worst-Case		0.00 %		0.00 %
Additive Prep Mill/Slaker				
Average		0.00 %		0.00 %
Worst-Case		0.00 %		0.00 %
Additive Prep Feed Pump				
Average		0.00 %		0.00 %
Worst-Case		0.00 %		0.00 %
Module Spray Pumps				
Average		0.00 %		0.00 %
Worst-Case		0.00 %		0.00 %
Module Dry Sorbent Blowers				
Average		0.00 %		0.00 %
Worst-Case		0.00 %		0.00 %
Primary Dewatering Equipment				
Average		0.00 %		0.00 %
Worst-Case		13.35 %		8.92 %
Blowdown				
Average		0.00 %		0.00 %
Worst-Case		0.00 %		0.00 %
Overflow				
Average		0.00 %		0.00 %
Worst-Case		0.00 %		0.00 %
Underflow				
Average		0.00 %		0.00 %
Worst-Case		0.00 %		0.00 %
Recycle Solids System				
Average		0.00 %		0.00 %
Worst-Case		0.00 %		0.00 %
Fly Ash				
Handling System				
Average		0.00 %		0.00 %
Worst-Case		0.00 %		0.00 %
Hopper				
Average		0.00 %		0.00 %
Worst-Case		0.00 %		0.00 %
Silo				
Average		0.00 %		0.00 %
Worst-Case		0.00 %		0.00 %
Blower				
Average		0.00 %		0.00 %
Worst-Case		0.00 %		0.00 %
Pump				
Average		0.00 %		0.00 %
Worst-Case		0.00 %		0.00 %
Bottom Ash				
Handling System				
Average		0.00 %		0.00 %
Worst-Case		0.00 %		0.00 %
Hopper				
Average		0.00 %		0.00 %
Worst-Case		0.00 %		0.00 %
Dewatering Bin				
Average		0.00 %		0.00 %
Worst-Case		0.00 %		0.00 %
Setting Tank				
Average		0.00 %		0.00 %
Worst-Case		0.00 %		0.00 %
Sluice Pump				
Average		0.00 %		0.00 %
Worst-Case		0.00 %		0.00 %

Derates and Concerns

Case Descriptor

Evaluation

Run Date

Case Number

Unit

Load Curve

Fuel Description

Waste Disposal

Waste Solids Throughput

Average

Worst-Case

Waste Mixers

Average

Worst-Case

Dewatering Conveyor

Average

Worst-Case

Mixer Conveyor

Average

Worst-Case

Fly Ash Conveyor

Average

Worst-Case

Fixative Conveyor

Average

Worst-Case

Mixed Waste Conveyor

Average

Worst-Case

Radial Stacker Conveyor

Average

Worst-Case

Fixed Stacker Conveyor

Average

Worst-Case

Sludge Dewatering

Average

Worst-Case

Waste Centrifuge

Average

Worst-Case

Secondary Dewatering Pump

Average

Worst-Case

Gypsum

Average

Worst-Case

Stack

SO2

Average

Worst-Case

Particulate

Average

Worst-Case

NOx

Average

Worst-Case

Mercury

Average

Worst-Case

Potential Limitations

No Spare Mills - Typical Coal

No Spare Mills - Worst Case Coal

Boiler Erosion Potential Problem

Air Heater Corrosion Risk

Main Steam Temperature Concern

Reheat Steam Temperature Concern

FGD Potential Loss of Spare Modules

Fly Ash System High Cycle Time

Bottom Ash System High Cycle Time

Techinomics
Feb 21 2012 12:44PM
1
Techinomics_Demo_PC
Techinomics Full Load Curve
E - Base

Techinomics
Feb 21 2012 12:44PM
2
Techinomics_Demo_PC
Techinomics Full Load Curve
E - OW1

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No

No

No

No

First Year Comparison Costs**Case Descriptor**

Evaluation	Techinomics	Techinomics
Run Date	Feb 21 2012 12:44PM	Feb 21 2012 12:44PM
Vista Version	Vista Version 2.20	Vista Version 2.20
Case Number	1	2
Unit	Techinomics_Demo_PC	Techinomics_Demo_PC
Load Curve	Techinomics Full Load Curve	Techinomics Full Load Curve
Fuel Description	E - Base	E - OW1
Gas Cofire Percentage	0	0
Economic Data Set Description	Techinomics Evaluation	Techinomics Evaluation

Performance Results

Evaluation Time Period, hr	8760.00	8760.00
Period Gross Generation, GWh	4151.36	4151.36
Period Net Generation, GWh	3771.24	3776.34
Period Auxiliary Power, GWh	380.13	375.03
Average Net Unit Heat Rate ,Btu/kWh		
HHV Basis	9035.71	8993.38
LHV Basis	8687.66	8646.59
Period Heat Input, HHV Basis, MMBtu	34.08	33.96
Period Coal Burn Rate, kton	1300.60	1295.07
Maximum Achievable Gross Load, MW	677.00	677.00
Period SO2 Emissions, ton	1687.70	1605.48
Period NOx Emissions, ton	842.42	836.39
FGD Sludge Production (Wet Basis), ton	678486.00	645439.00
Gypsum Production, ton	0.00	0.00

First Year Economic Results, M\$**Operating and Maintenance**

SCR Ammonia Reagent	1.667	1.655
Scrubber Additive	2.234	2.126
Scrubber Water	0.334	0.323
Scrubber Waste Disposal	13.570	12.909
Fly Ash Disposal	1.422	1.398
Bottom Ash Disposal	0.158	0.155
Differential Maintenance Cost	0.000	-0.019

Emissions

Particulate Emission	0.000	0.000
SO2 Allowance	0.005	0.005
NOx Emission	0.013	0.013

Fuel

Coal FOB Mine	110.746	110.377
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Replacement Power

Replacement Power Derate	0.000	0.000
Differential Unavailability	0.000	-0.014
Differential Aux Power	0.000	-0.167
Differential Turndown	0.000	0.000

Total Fuel Related Cost, M\$	130.149	128.761
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