



JAMESTOWN TECHNOLOGIES



Can cut operating
cost by:

\$20,114

First year

\$100,570

5 years

\$201,140

10 years

at:

ABC Production Boiler
Maintenance Manager
New Haven, Connecticut





Made by:



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Summary of « ABC Production Boiler » operating data








	<i>Make-Up Water</i>	
Average conductivity of softened water	300 mmhos	
Softened water temperature	60 °F	
Make-Up Water Cost (Affluent)	1 USD/1000 gal	
	<i>Deaerator / Feed Water</i>	
Deaerator / Feed Tank average conductivity	150	
Deaerator / Feed Tank pressure	5 psig	
Deaerator / Feed Tank temperature	227.154 °F	
	<i>Condensate Water</i>	
Average conductivity of condensate returns	20 mmhos	
Temperature of condensate returns	185 °F	
Percentage of condensate returns	50%	
	<i>Boiler Water</i>	
Boiler average conductivity (unneutralized)	2000 mmhos	
Target conductivity (unneutralized)	10000	
Concentration cycles	13.33333	
Steam boilers operating pressure	125 psig	
Total annual steam production	103680000 lbs/year	
Hours of operation per day	24	
Days of operation per year	360	

	<i>Combustible</i>	
Combustible #1	Natural gaz	
Boiler energy consumption	120000 Dthm	
Fuel cost (incl. delivery)	6 USD/Dthm	
Fuel heat value	1000000 BTU/Dthm	
	<i>More details on softeners</i>	
Annual Salt Cost	600 USD	

Recommended product:	TG 3106
Recommended dosage:	12.0 ppm
Annual quantity needed:	1252.98 lbs/year



	Cut Energy Cost by: 2.32%
	Cut Make-Up Water by: 11.15%
	Cut Blowdown by: 80%
	Cut Green House Gases by: 2.32%
	Cut Testing Time by: 30%



Results : Before and After

Recap of annual costs	Before	After	Difference	Ratio
Fuel cost	\$720,000	\$703,292.98	\$16,707.02	2.32%
Make-up water cost	\$7,143.92	\$6,347.18	\$796.74	11.15%
Sewage water cost	\$931.82	\$184.87	\$746.95	80.16%
Cost of time needed to make tests	\$4,500.00	\$3,150.00	\$1,350.00	30%
Cost of salt for the softener	\$600.00	\$533.08	\$66.92	11.15%
Cost of water treatment chemicals	\$23,000.00	\$22,553.67	\$446.33	1.94%

Main savings	Before	After	Difference	Ratio
Steam production	103,680,000.0 lbs/year	102,848,897.8 lbs/year	831,102.2 lbs/year	0.8%
Fuel consumption	120,000.0 MMBTU/year	117,215.5 MMBTU/year	2,784.5 MMBTU/year	2.32%
Amount of greenhouse gases released	14,156,950.36 lbs/year	13,828,449.67 lbs/year	328,500.69 lbs/year	2.32%
Thermodynamic quality of the steam	99%	99.8%	0.8%	0.8%
Concentration cycles	13.3333	66.6667	53.3333	400%
Pre-heat steam rate	17.63%	16.11%	1.52%	8.62%
Steam boiler system efficiency	74.3%	76.07%	1.77%	2.32%
Amount of make-up water used	7,143,918.75 gal/year	6,347,175.84 gal/year	796,742.91 gal/year	11.15%

Detailed savings	Before	After	Difference	Ratio
Energy lost in blowdown	1,057.3 MMBTU/year	196.99 MMBTU/year	860.31 MMBTU/year	81.37%
Energy lost in pre-heat steam	15,716.91 MMBTU/year	14,361.95 MMBTU/year	1354.95 MMBTU/year	8.62%
Energy gained on steam quality	0.0 MMBTU/year	720.52 MMBTU/year	720.52 MMBTU/year	100%
Time needed to make tests	180.0 hr/year	126.0 hr/year	54.0 hr/year	30%

Total savings	First year:	Five years:	Ten years:
	\$20,113.96	\$100,569.80	\$201,139.60



Diagram: Before and After

