Prevented Cost of
$884,471
over Ten Years

CLEAVER-BROOKS INTEGRATED ENERGY SOLUTIONS

Over a decade ago we made a commitment to develop a group of energy saving products that could easily be retrofitted on existing boilers. We had a vision of making steam boilers — the foundation of the Industrial Revolution — a driving factor in the green revolution. Along the way, we helped create the most efficient boiler in the world (The Super Boiler), as well as paired these energy saving products with our new boilers.

Because we are the only fully integrated boiler solution provider in the industry — meaning we manufacture our own boilers, burners, combustion controls, and boiler room accessories — we are in a unique position to offer solutions that address boiler energy usage holistically as well as serve as a single point of contact. All of our energy saving products have been designed and tested together in our Research & Design facility, so you can be assured the products will integrate seamlessly with one another.

For more information visit www.cleaver-brooks.com.

BOOST PLAN

Let us show you how to save **$88,447** in energy cost every year. This plan outlines the best energy solution for your boiler retrofit.

Ultimately deciding to implement this plan is a business decision and must make smart financial sense. To that end, we have prepared a comprehensive life cycle financial analysis.

We also understand that improving energy consumption is important to you because reducing your green gas emissions and carbon footprint is essential to be competitive in today's marketplace. If your company is not demanding this improvement, your customer probably is. Implementing this plan will make a huge environmental impact.

The assumptions about your boiler room presented in the plan may need to be further refined, but think of this plan as a living document. As we verify assumptions and develop the details of the plan, the new assumptions and details can be integrated and the plan further improved.

In the end, this document will serve as a guide to making an informed decision about your boiler room energy management.

CLEAVER-BROOKS

Cleaver-Brooks is world-renowned as a provider of boiler room products and systems that outperform and outlast the competition with the highest efficiency and lowest emissions. With an extensive line of Boilers, Burners, Controls and Accessories, we offer solutions for every industry--new or retrofit. We are your single source for full life cycle support including installation, aftermarket sales and service.

To further discuss this BOOST plan, or any other boiler needs, please contact:

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CleaverBrooks®

BOOST KEY METRICS

ENERGY

16.7%

Reduction in Overall Energy Expense

COST PREVENTION

$88,447

Savings Each Year

GREENHOUSE GASSES

750

Metric Tons Reduction of CO2 per year and **17%** Reduction in NOx

CleaverBrooks

BOOST
PREPARED FOR: SAMPLE BOOST

OVERVIEW

This BOOST plan proposes the implementation of Cleaver-Brooks Energy Saving Solutions to your existing boiler room which will reduce overall energy consumption and lower greenhouse gas emissions.

Executing the plan will prevent energy cost of **$88,447** each year and reduce your boiler room's carbon footprint by **16.7%** The total cost to implement the plan is **$143,780.00.**

PROPOSED ENERGY SAVING SOLUTIONS						
BOILER ROOM BREAKDOWN	Condensing Economizer	Stack Economizer	Advanced Linkageless Controls	High Turndown Burner	Blow Down Heat Recovery	Replace Boiler
1981 CB 600 BHP	X		X	X		

IMPLEMENTATION COST, SAVINGS AND PAYBACK			
BOILER ROOM BREAKDOWN	IMPLEMENTATION COST	ANNUAL SAVINGS	PAYBACK
1981 CB 600 BHP	$143,780.00	$88,447	28.0 Months
Total	$143,780.00	$88,447	28.0 Months

PROJECT LEVEL FINANCIAL RETURNS AND ASSUMPTIONS

While simple payback as presented above is a good indication of a project's merits, more detailed financial analysis is warranted. Detailed cash flow analysis is presented herein for the entire project and for each individual boiler. A snapshot of the key project level returns and assumptions is presented to the right:

PROJECT LEVEL FINANCIAL RETURNS AND ASSUMPTIONS						
IMPLEMENTATION COST	ANNUAL SAVINGS	PAYBACK	IRR	NET PRESENT VALUE (NPV)	DISCOUNT RATE	TAX RATE
$143,780.00	$88,447	28.0 Months	40.7%	$216,838	10.0%	40.0%

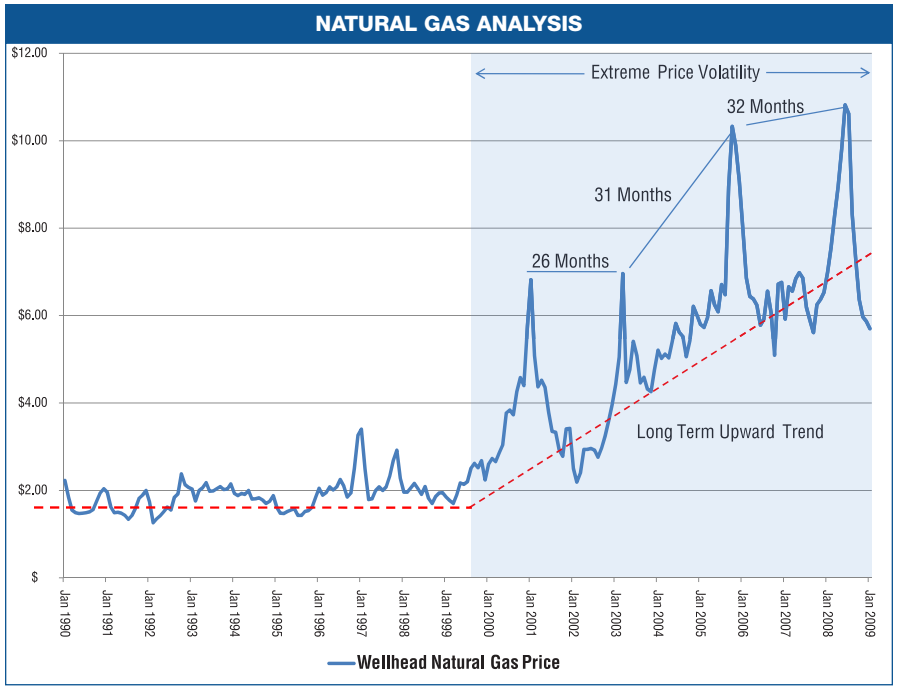
BOILER ROOM ASSUMPTIONS

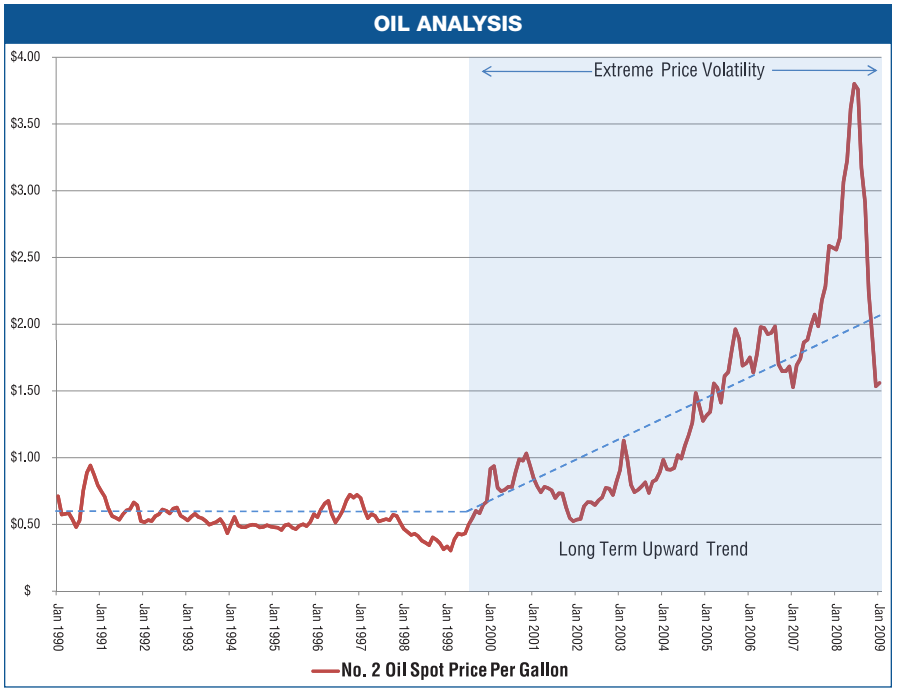
TOTAL BOILERS IN BOILER ROOM

BOILER 1
1981 CB 600 BHP

BOILER ROOM ASSUMPTIONS		
BOILER ASSUMPTIONS	**BOILER 1**	
Operating Pressure	110 PSI	
Primary Fuel Price Per Therm	Natural Gas $0.62	
Backup Fuel Price Per Gallon	#2 Oil $0.7	
Current NOx Level	100 ppm / 100 ppm	
WATER ASSUMPTIONS		
Feedwater Temperature	220 F	
Makeup Water Temperature	60 F	
Makeup Percentage	65%	
CURRENT ENERGY SAVING PRODUCTS		
Condensing Economizer	None	
Standard Economizer	None	
Advanced Linkageless Controls	None	
High-Turndown Burner	None	
Blow Down Heat Recovery	None	
QUARTERLY LOAD ASSUMPTIONS		
Quarter 1: Hours Per Day Days Per Week Average Load Fuel	16 6 70% Natural Gas	
Quarter 2: Hours Per Day Days Per Week Average Load Fuel	16 6 70% Natural Gas	
Quarter 3: Hours Per Day Days Per Week Average Load Fuel	16 6 70% Natural Gas	
Quarter 4: Hours Per Day Days Per Week Average Load Fuel	16 6 70% Natural Gas	

FUEL VOLATILITY & LONG-TERM UPWARD TREND





10-Year Cost of Doing Nothing

$884,471

COST OF DOING NOTHING

Fuel prices have leveled from their peaks over the past year, but we are still plagued with extreme price volatility in fuel commodities. We are averaging around 2.5 years between periods of peak price; this is just enough time for us to forget how painful extreme fuel prices can be.

A long-term upward trend in prices has emerged over the past decade. This long-term trend is almost certain to continue, even if prices are leveling in the short-term. Can you afford the cost of doing nothing and take on the extra risk associated with price volatility?

The good news is that this suggested BOOST plan makes smart financial sense today!

CleaverBrooks®

BOOST SUMMARY
FINANCIAL ANALYSIS AND ASSUMPTIONS

PROJECT SUMMARY

TOTAL ANNUAL SAVINGS: $88,447

TOTAL IMPLEMENTATION COST: $143,780

PAYBACK: 28.0 Months
NPV: $216,838
IRR: 40.7%

Tax Rate: 40.0%
Internal Discount Rate: 10.0%

PROJECT SUMMARY CASH FLOW												
YEAR	0	1	2	3	4	5	6	7	8	9	10	11
Total Implementation Cost	($143,780)											
Annual Incremental Pre-Tax Savings		$88,447	$88,447	$88,447	$88,447	$88,447	$88,447	$88,447	$88,447	$88,447	$88,447	$88,447
Less Depreciation from Boiler 1		($14,378)	($25,880)	($20,704)	($16,563)	($13,257)	($10,597)	($9,418)	($9,418)	($9,432)	($9,418)	($4,716)
Before Tax Savings		$74,069	$62,567	$67,743	$71,884	$75,191	$77,851	$79,030	$79,030	$79,015	$79,030	$83,731
Less Tax		($29,628)	($25,027)	($27,097)	($28,753)	($30,076)	($31,140)	($31,612)	($31,612)	($31,606)	($31,612)	($33,492)
After Tax Savings		$44,441	$37,540	$40,646	$43,130	$45,114	$46,710	$47,418	$47,418	$47,409	$47,418	$50,239
Add Back Depreciations		$14,378	$25,880	$20,704	$16,563	$13,257	$10,597	$9,418	$9,418	$9,432	$9,418	$4,716
Net After Tax Cash Flow	($143,780)	$58,819	$63,420	$61,350	$59,694	$58,371	$57,307	$56,835	$56,835	$56,841	$56,835	$54,955
Cumulative Net After Tax Cash Flow		$58,819	$122,240	$183,590	$243,284	$301,654	$358,961	$415,797	$472,632	$529,473	$586,308	$641,263

SENSITIVITY ANALYSIS

The graphics on the previous page identified the long-term upward trend in energy commodity prices which has emerged over the past decade. They also highlighted the market's extreme volatility. When evaluating any Energy Improvement Plan, we should evaluate the financial returns' sensitivity to fuel price changes, not just returns associated with current prices. Such a sensitivity analysis is presented in the table to the right:

SENSITIVITY ANALYSIS				
	(-15%) DECLINE	CURRENT PRICES	15% INCREASE	30% INCREASE
Annual Savings	$826,981	$972,918	$1,118,856	$1,264,794
Payback	32.4 Months	28.0 Months	24.9 Months	22.4 Months
IRR	34.7%	40.7%	46.6%	52.3%
NPV	$169,836	$216,838	$263,840	$310,842

FINANCIAL ANALYSIS AND ASSUMPTIONS
BOILER 1 : 1981 CB 600 BHP

BOILER 1 SUMMARY

TOTAL ANNUAL SAVINGS: $88,447

TOTAL IMPLEMENTATION COST: $143,780

PAYBACK: 28 Months
NPV: $216,838
IRR: 41%

Tax Rate: 40%
Internal Discount Rate: 10%

BOILER 1 CASH FLOW

YEAR		1	2	3	4	5	6	7	8	9	10	11
Total Implementation Cost	($143,780)											
Annual Incremental Pre-Tax Savings		$88,447	$88,447	$88,447	$88,447	$88,447	$88,447	$88,447	$88,447	$88,447	$88,447	$88,447
Less Depreciation: Condensing Economizer		($7,943)	($14,297)	($11,438)	($9,150)	($7,323)	($5,854)	($5,203)	($5,203)	($5,211)	($5,203)	($2,605)
Less Depreciation: Hawk ICS Controls		($4,282)	($7,707)	($6,166)	($4,933)	($3,948)	($3,156)	($2,805)	($2,805)	($2,809)	($2,805)	($1,404)
Less Depreciation: HTD Burner Conversion		($2,153)	($3,876)	($3,100)	($2,480)	($1,985)	($1,587)	($1,410)	($1,410)	($1,412)	($1,410)	($706)
Before Tax Savings		$74,069	$62,567	$67,743	$71,884	$75,191	$77,851	$79,030	$79,030	$79,015	$79,030	$83,731
Less Tax		($29,628)	($25,027)	($27,097)	($28,753)	($30,076)	($31,140)	($31,612)	($31,612)	($31,606)	($31,612)	($33,492)
After Tax Savings		$44,441	$37,540	$40,646	$43,130	$45,114	$46,710	$47,418	$47,418	$47,409	$47,418	$50,239
Add Back Depreciations		$14,378	$25,880	$20,704	$16,563	$13,257	$10,597	$9,418	$9,418	$9,432	$9,418	$4,716
Net After Tax Cash Flow	($143,780)	$58,819	$63,420	$61,350	$59,694	$58,371	$57,307	$56,835	$56,835	$56,841	$56,835	$54,955
Cumulative Net After Tax Cash Flow		$58,819	$122,240	$183,590	$243,284	$301,654	$358,961	$415,797	$472,632	$529,473	$586,308	$641,263

BOILER 1 ASSUMPTIONS

BOILER ASSUMPTIONS				WATER ASSUMPTIONS		
Operating Pressure	Primary Fuel (Price Per Therm)	Backup Fuel (Price Per Gallon)	Current NOx Level	Feedwater Temperature	Makeup Water Temperature	Makeup Percentage
110 PSI	Natural Gas $0.62	#2 Oil $0.7	100 ppm / 100 ppm	220 F	60 F	65%

QUARTERLY LOAD ASSUMPTIONS (Total Operating Hours Per Year: 5008)

QUARTER 1				QUARTER 2			
Hrs. Per Day	Days Per Week	Ave. Load	Fuel	Hrs. Per Day	Days Per Week	Ave. Load	Fuel
16	6	70%	Natural Gas	16	6	70%	Natural Gas
QUARTER 3				**QUARTER 4**			
Hrs. Per Day	Days Per Week	Ave. Load	Fuel	Hrs. Per Day	Days Per Week	Ave. Load	Fuel
16	6	70%	Natural Gas	16	6	70%	Natural Gas

PROPOSED ENERGY SOLUTIONS

SOLUTION	PRODUCT COST	INSTALLATION	REBATES	TOTAL COST	ANNUAL SAVINGS
Condensing Economizer	$56,736	$22,694		$79,430	$27,065
Advanced Hawk ICS Controls	$30,585	$12,234		$42,819	$34,895
High Turndown Burner Conversion	$15,379	$6,152		$21,531	$26,487
TOTAL	$102,700	$41,080		$143,780.00	$88,447

ENERGY SAVING SOLUTIONS IN-PLACE

None

CleaverBrooks

FINANCIAL ANALYSIS
SOLUTIONS IMPLEMENTED ON BOILER 1

TWO-STAGE CONDENSING ECONOMIZER

TOTAL ANNUAL SAVINGS: $27,065

PAYBACK: 46.0 Months
NPV: $42,568
IRR: 22.1%

Product Cost: $56,736
Installation: $22,694
Rebates: $0
TOTAL COST: $79,430

Depreciation Period: 10 Years
Tax Rate: 40.0%
Internal Discount Rate: 10.0%

TWO-STAGE CONDENSING ECONOMIZER CASHFLOW

YEAR		1	2	3	4	5	6	7	8	9	10	11
Product Cost and Installation	($79,430)											
Annual Incremental Pre-Tax Savings		$27,065	$27,065	$27,065	$27,065	$27,065	$27,065	$27,065	$27,065	$27,065	$27,065	$27,065
Less Depreciation		($7,943)	($14,297)	($11,438)	($9,150)	($7,323)	($5,854)	($5,203)	($5,203)	($5,211)	($5,203)	($2,605)
Before Tax Savings		$19,122	$12,767	$15,627	$17,914	$19,741	$21,211	$21,862	$21,862	$21,854	$21,862	$24,459
Less Tax		($7,649)	($5,107)	($6,251)	($7,166)	($7,897)	($8,484)	($8,745)	($8,745)	($8,742)	($8,745)	($9,784)
After Tax Savings		$11,473	$7,660	$9,376	$10,749	$11,845	$12,726	$13,117	$13,117	$13,112	$13,117	$14,676
Add Back Depreciations		$7,943	$14,297	$11,438	$9,150	$7,323	$5,854	$5,203	$5,203	$5,211	$5,203	$2,605
Net After Tax Cash Flow	($79,430)	$19,416	$21,958	$20,814	$19,899	$19,168	$18,580	$18,320	$18,320	$18,323	$18,320	$17,281
Cumulative Net After Tax Cash Flow		$19,416	$41,374	$62,188	$82,087	$101,255	$119,836	$138,156	$156,475	$174,799	$193,118	$210,399

ADVANCED ICS CONTROL SYSTEM

TOTAL ANNUAL SAVINGS: $34,895

PAYBACK: 22.0 Months
NPV: $94,883
IRR: 53.3%

Product Cost: $30,585
Installation: $12,234
Rebates: $0
TOTAL COST: $42,819

Depreciation Period: 10 Years
Tax Rate: 40.0%
Internal Discount Rate: 10.0%

ADVANCED ICS CONTROL SYSTEM CASHFLOW

YEAR		1	2	3	4	5	6	7	8	9	10	11
Total Product Cost and Installation	($42,819)											
Annual Incremental Pre-Tax Savings		$34,895	$34,895	$34,895	$34,895	$34,895	$34,895	$34,895	$34,895	$34,895	$34,895	$34,895
Less Depreciation		($4,282)	($7,707)	($6,166)	($4,933)	($3,948)	($3,156)	($2,805)	($2,805)	($2,809)	($2,805)	($1,404)
Before Tax Savings		$30,613	$27,188	$28,729	$29,962	$30,947	$31,739	$32,090	$32,090	$32,086	$32,090	$33,491
Less Tax		($12,245)	($10,875)	($11,492)	($11,985)	($12,379)	($12,696)	($12,836)	($12,836)	($12,834)	($12,836)	($13,396)
After Tax Savings		$18,368	$16,313	$17,237	$17,977	$18,568	$19,044	$19,254	$19,254	$19,252	$19,254	$20,094
Add Back Depreciations		$4,282	$7,707	$6,166	$4,933	$3,948	$3,156	$2,805	$2,805	$2,809	$2,805	$1,404
Net After Tax Cash Flow	($42,819)	$22,650	$24,020	$23,403	$22,910	$22,516	$22,199	$22,059	$22,059	$22,061	$22,059	$21,499
Cumulative Net After Tax Cash Flow		$22,650	$46,670	$70,073	$92,983	$115,499	$137,699	$159,758	$181,816	$203,877	$225,936	$247,435

FINANCIAL ANALYSIS
SOLUTIONS IMPLEMENTED ON BOILER 1

HIGH TURNDOWN BURNER CONVERSION

TOTAL ANNUAL SAVINGS: $26,487

PAYBACK: 15.0 Months
NPV: $79,387
IRR: 78.7%

Product Cost: $15,379
Installation: $6,152
Rebates: $0
TOTAL COST: $21,531

Depreciation Period: 10 Years
Tax Rate: 40.0%
Internal Discount Rate: 10.0%

HIGH TURNDOWN BURNER CONVERSION CASHFLOW												
YEAR		1	2	3	4	5	6	7	8	9	10	11
Product Cost and Installation	($21,531)											
Annual Incremental Pre-Tax Savings		$26,487	$26,487	$26,487	$26,487	$26,487	$26,487	$26,487	$26,487	$26,487	$26,487	$26,487
Less Depreciation		($2,153)	($3,876)	($3,100)	($2,480)	($1,985)	($1,587)	($1,410)	($1,410)	($1,412)	($1,410)	($706)
Before Tax Savings		$24,334	$22,612	$23,387	$24,007	$24,502	$24,901	$25,077	$25,077	$25,075	$25,077	$25,781
Less Tax		($9,734)	($9,045)	($9,355)	($9,603)	($9,801)	($9,960)	($10,031)	($10,031)	($10,030)	($10,031)	($10,312)
After Tax Savings		$14,601	$13,567	$14,032	$14,404	$14,701	$14,940	$15,046	$15,046	$15,045	$15,046	$15,469
Add Back Depreciations		$2,153	$3,876	$3,100	$2,480	$1,985	$1,587	$1,410	$1,410	$1,412	$1,410	$706
Net After Tax Cash Flow	($21,531)	$16,754	$17,443	$17,133	$16,885	$16,686	$16,527	$16,457	$16,457	$16,457	$16,457	$16,175
Cumulative Net After Tax Cash Flow		$16,754	$34,196	$51,329	$68,213	$84,900	$101,427	$117,884	$134,340	$150,797	$167,254	$183,429

ENVIRONMENTAL METRICS

17%

Reduction in Carbon Footprint

750

Metric Tons CO_2 Reduced

17%

Reduction in NOx

YOUR YEARLY GREENHOUSE GAS REDUCTIONS ARE EQUIVALENT TO:

135 cars not being driven for one year.

105 homes not using electricity for one year.

19212 tree seedlings grown for 10 years.

8 acres of forest preserved from deforestation.

255 tons of waste being recycled.

BOOST
BEFORE AND AFTER

BOILER ROOM IMPROVEMENT PLAN: BEFORE AND AFTER

	CURRENT OPERATING SUMMARY	AFTER IMPROVEMENT PLAN	SAVINGS	CHANGE
Total Energy Cost	$529,748	$441,300	$88,447	16.7%
Total Units of Fuel Natural Gas Oil	 854,432 Therms -	 711,775 Therms -	 142,657 Therms -	 16.7% -
Thermal Efficiency	82.1%	88.7%	6.6%	8%

COMMITTED TO PROVIDING

HOT WATER AND STEAM
BOILER SOLUTIONS WITH THE

HIGHEST EFFICIENCY & LOWEST EMISSIONS