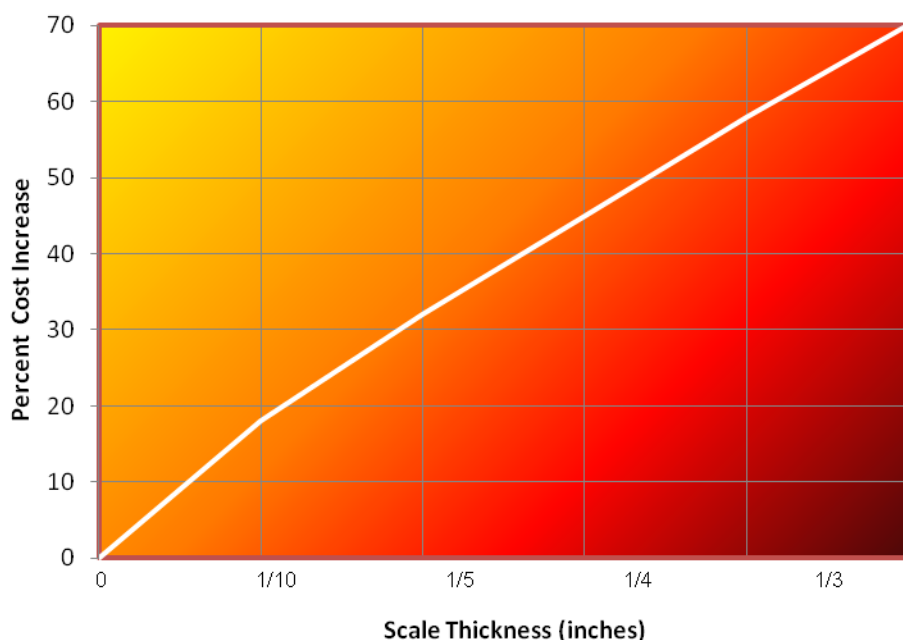




Effects of Scale Deposit in Boilers

Fuel Costs Increases Due to Boiler Scale



Results of tests made by University of Illinois and the U.S. Bureau of Standards

Additional Costs of Scale in Boilers

1. Increased fuel costs due to above-noted thickness of mineral scale
2. Increased operating costs caused by operating at higher chemical levels to remove scale.
2. Cost of boil out procedure including contractor, chemical and disposal cost.
3. Cost of repairing and returning boilers to operating condition.
4. Costs of boiler depreciation due to corrosion, pitting, cleaning, expansion, and contraction strains and other effects of scale.
5. Loss of time, inconvenience and delays due to excess scale in boilers.

Costs of Chiller Fouling: Energy Loss Factors

CONDENSER FOULING FACTORS

Fouling Factors	Inches of Scale	Energy Loss Factor
0.0005	0.0006"	5.3% (.053)
0.001	0.012"	10.8% (.108)
0.002	0.024"	21.5% (.215)
0.003	0.036	32.2% (.322)
0.004	0.048	43.0% (.430)

Scale assumed to produce a thermal conductivity of
1.0 BTU/(hr)/(sq.ft.) degree F. (per Carrier)

CONDENSER FOULING COSTS

Fouling Factor ►	Light	Moderate	Heavy
Inches ►	0.0001	0.0002	0.0003
System Tons	1/84 th	1/42 nd	1/32 nd
	\$	\$	\$
100	\$ 950	\$ 2,070	\$ 2,910
500	4,760	10,360	14,560
1000	9,520	20,720	29,120
2500	23,800	51,800	72,800
5000	47,600	103,600	145,600

Assumptions: 1. Unit operating 8 hours/day, 240 days/year
2. One ton of A/C consumes .7 KWH
3. Electricity costs 7.0 cents/KWH

Notice

The material provided in this bulletin is informational in nature and is not intended to be instructions for a particular location or installation. There is no guarantee, warranty or other assurance of fitness of purpose or operational performance or results either express or implied. The user assumes all risk in following the information provided. Always read and follow product safety and performance instructions on product labels, Material Data Safety Sheets and those provided specifically for your requirements by your **CE Water** representative.

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