Cost Justification Chart

Chillers are the single largest energy-using component in most facilities, and can typically consume over 50% of the electrical usage. Chillers running inefficiently result in substantially higher energy costs, decreased equipment reliability and shortened life span. A chiller operating at 70% efficiency can consume approximately 30% more energy to produce the same cooling. The slightest decrease in chiller performance can have a majo impact on efficiency. For instance, a 1°F increase in condenser water temperature can decrease chiller efficiency by 2%.

The following chart is an example of how much an inefficient chiller can cost over a year of operation. This chart is based on a chiller running 24 hours per day, 220 days per year (typical chiller season), design spec of .7 Kw/Ton and Energy Cost at $0.06/Kw.

Chiller Average Tons per Hour	100% Efficiency	90% Efficiency		80% Efficiency		70% Efficiency		60% Efficiency		50% Efficiency	
	Annual Energy Cost	Annual Energy Cost	Dollars Lost to Inefficiency	Annual Energy Cost	Dollars Lost to Inefficiency	Annual Energy Cost	Dollars Lost to Inefficiency	Annual Energy Cost	Dollars Lost to Inefficiency	Annual Energy Cost	Dollars Lost to Inefficiency
125	$27,720	$30,492	$2,772	$33,264	$5,544	$36,036	$8,316	$38,808	$11,088	$41,580	$13,860
250	$55,440	$60,984	$5,544	$66,528	$11,088	$72,072	$16,632	$77,616	$22,176	$83,160	$27,720
500	$110,880	$121,968	$11,088	$133,056	$22,176	$144,144	$32,264	$155,232	$44,352	$166,320	$55,440
750	$166,320	$182,952	$16,632	$199,584	$33,264	$216,216	$49,896	$232,848	$66,528	$249,480	$83,160
1,000	$227,185	$249,904	$22,719	$272,622	$45,437	$295,340	$68,156	$318,059	$90,874	$340,778	$113,592
1,500	$332,640	$365,904	$33,264	$399,168	$66,528	$432,432	$99,792	$465,696	$133,056	$498,960	$166,320
2,000	$443,520	$487,872	$44,352	$532,224	$88,704	$576,576	$133,056	$620,928	$177,408	$665,280	$221,760
3,000	$665,280	$731,808	$66,528	$798,336	$133,056	$864,864	$199,584	$931,392	$266,112	$997,920	$332,640

Conclusion

Even the smallest chiller, producing 125 average tons per hour, running at 90% efficiency can cost an additional $2,772 per year. Conversely, a large chiller, producing 3,000 average tons per hour, running at 50% efficiency can cost an incredible, additional $332,640 per year! That equates to $45,567 per month (based on 7.3 months)! This is a dramatic example of the importance of diagnosing chiller efficiency and establishing a world-class HVAC program. Contact EffTec and get efficient today.

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