



Intellihot

This document concerns the projected operational savings gained by switching to Intellihot gas-fired tankless water heaters for a condo complex in Ontario, Canada.

The hot water fixtures & assumptions described to Intellihot are as follows:

- Incoming Water Temperature: 40 °F
- Unit Setpoint: 140 °F
- Shower/Sink Fixture Temperature: 110 °F
- Intellihot Equipment: (6) iQ751 units
- Other Equipment: (6) tank-type water heaters from a competing brand
- 612 condos

In most applications, hot water use is sporadic. Based on multiple similar applications, we find that 71% of the time, the water is being consumed at low draws, 23% at medium draws, and only 6% at either high or peak draws.

Thus, it is apparent that an on-demand system and one with high turndown ratios like Intellihot is necessary to achieve true high system efficiency.

Based on the information provided, the analysis predicts that 40,000 gallons of hot water will be consumed in this building per day. The table below breaks down how water is consumed in applications similar to yours.

	Duration (Minutes/day)	%	Cumulative Flow (Gallons)
Low Draw	1022	71%	28,400
Med Draw	331	23%	9,200
High Draw	72	5%	2,000
Peak Draw	14	1%	400
Total Gallons per day			40000

Based on real-world water usage, a traditional tank-type system achieves only 61% operational/conversion efficiency (only 61 cents for every dollar you spend), while Intellihot achieves 94% conversion efficiency. Using typical operating conditions (e.g., cost of \$1.50 per therm), we estimated the operational savings to be \$42,947.34 per year when compared to a traditional tank-type system.

The table on the next page summarizes the performance analysis of the competing storage system vs. the proposed Intellihot system.

24 Hr Cycle Results	Units	Other Equipment	Intellihot
Total Gas Input	btu	22,344,262	14,500,000
Total Heat Output	btu	13,630,000	13,630,000
Standby Losses	btu	2,793,033	0
Purging Losses	btu	3,441,016	14,500
Efficiency Loss	btu	2,726,000	1,290,500
\$ Conversion Efficiency	%	61%	94%
Therms used per day	Therms	223	145
MBTU used per day	MBTU	22	15
Cost per therm	\$	\$1.50	\$1.50
Cost (per day)	\$	\$335.16	\$217.50
Annual Savings	\$	\$42,947.34	
Annual Therms Saved	Therms	28,632	
Pounds of CO2 Saved	lbs	343,579	

In addition to efficiency and gas savings, the Intellihot system has many other advantages:

- Remote Monitoring: Intellihot gas fired units have TelliCare connectivity to monitor the units remotely.
- Legionella Reduction: Due to lack of storage, the possibility of Legionella growth is much lower. So, the set point temperature can be lower (~125 °F) to achieve more gas savings.
- Redundancy: Most of our units have multiple individual heat exchangers (engines), that not only communicate with each other, but also work autonomously. There is no master, so there will be no single point of failure (i.e. pump, single boiler, etc.). In this selection, the engines communicate with each other and work together, but should one engine go offline for any reason, the others will continue to function seamlessly while isolating that specific engine.
- Equipment Lifespan – On average, our tankless water heaters last longer in the field when compared to a tank style water heater.

If there are any questions or concerns, please contact us.

Respectfully,

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