

SMART Valves Inc

STEAM TRAP MANAGEMENT PROGRAM

Let SMART Valves Inc help you create a sustainable Steam Trap Management program

WHY STEAM TRAP MANAGEMENT PROGRAM?

In an effort to help our customers save money, we offer to perform steam trap surveys. A steam trap survey is essential to finding leaking or faulty steam traps and offering significant savings for the customer.

In steam systems that have not been maintained for 3 to 5 years, between 15% to 30% of the installed steam traps may have failed—which means the live steam is escaping into the condensate return system. In systems with a regularly scheduled maintenance program, leaking traps should account for less than 5% of the trap population.

A failed open (leaking) steam trap on a 145 psig steam line will cost up to an additional \$2,000 per year. Thus, for a site with 100 units and a conservative failure rate of 15%, there will be an additional cost of around \$30,000 per year in unnecessary steam losses.

Example: In a plant where the value of steam is \$10.00 per thousand pounds (\$10.00/1,000 lb), an inspection program indicates that a trap on a 150-pound-per-square-inch gauge (psig) steam line is failed open. The trap orifice is 1/8th inch in diameter. The table shows the estimated steam loss as 75.8 pounds per hour (lb/hr). After the failed trap is repaired, annual savings are as follows:

Annual Savings = 75.8 lb/hr x 8,760 hr/yr x \$10.00/1,000 lb = \$6,640

Leaking Steam Trap Discharge Rate*				
Trap Orifice Diameter, inches	Steam Loss, lb/hr			
	Steam Pressure, psig			
	15	100	150	300
1/32	0.85	3.3	4.8	—
1/16	0.34	13.2	18.9	36.2
1/8	13.7	52.8	75.8	145
3/16	30.7	119	170	326
1/4	54.7	211	303	579
3/8	123	475	682	1,303

*From the Boiler Efficiency Institute – Steam is discharging to atmospheric pressure through a re-entrant orifice with a coefficient of discharge equal to 0.72

Source: US Department of Energy, "Energy Tips: STEAM," January 2012

Annual Cost of One Failed Steam Trap*				
Cost of Steam, \$ / 1,000 lb.	Steam Pressure, psig			
	15	100	150	300
\$ 5.00	\$ 599	\$ 2,312	\$ 3,320	\$ 6,344
\$ 6.00	\$ 718	\$ 2,775	\$ 3,984	\$ 7,613
\$ 7.00	\$ 838	\$ 3,237	\$ 4,648	\$ 8,881
\$ 8.00	\$ 958	\$ 3,699	\$ 5,312	\$ 10,150
\$ 9.00	\$ 1,078	\$ 4,162	\$ 5,976	\$ 11,419
\$ 10.00	\$ 1,197	\$ 4,624	\$ 6,640	\$ 12,688
\$ 11.00	\$ 1,317	\$ 5,087	\$ 7,304	\$ 13,956
\$ 12.00	\$ 1,437	\$ 5,549	\$ 7,968	\$ 15,225
\$ 13.00	\$ 1,557	\$ 6,012	\$ 8,632	\$ 16,494
\$ 14.00	\$ 1,676	\$ 6,474	\$ 9,296	\$ 17,763
\$ 15.00	\$ 1,796	\$ 6,936	\$ 9,960	\$ 19,031



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To request a Steam Trap Survey or get additional information, please send us an email at info@smartvalvesinc.com and we will get back to you as soon as we can.

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WHAT SMART Valves Inc. STEAM TRAP MANAGEMENT PROGRAM OFFERS?

Through our Steam Trap Management Program, you get:

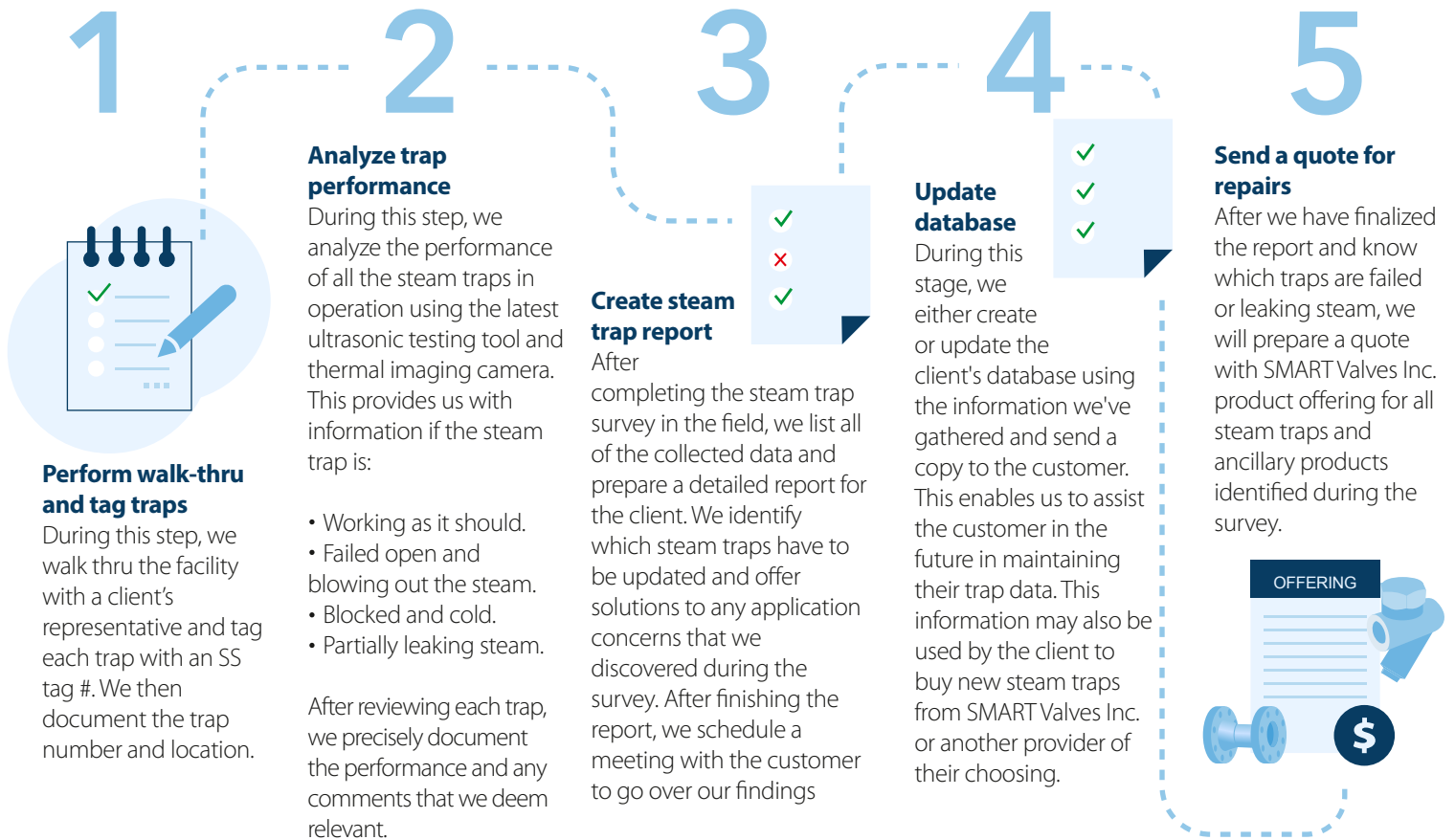
- Reduction in steam and condensate losses
- Reduction in water treatment chemicals
- Prevention of coil and heat exchanger damage
- Minimization of water hammer hazard
- Reduction of CO2 emissions and steam energy consumption
- Improvement in heat transfer performance
- Information on exactly how your steam system is performing
- Preferred pricing for all repair materials and free product delivery

Our Process from Start to Finish

During a survey, we examine, tag, and record all the steam traps at your facility and generate a report highlighting the results of our review. Our goal during a steam trap survey is to analyze your steam system and make sure you are efficiently and effectively using your steam.

During our survey, we will perform the following:

Examine the production process and expectations, as well as develop a broad game plan - During this stage, we go over how we conduct the surveys. We start by learning about the customer's manufacturing process and how they utilize their steam. We next assess the customer's expectations and begin planning for any safety requirements. Finally, we define a timetable for performing and finishing the task.



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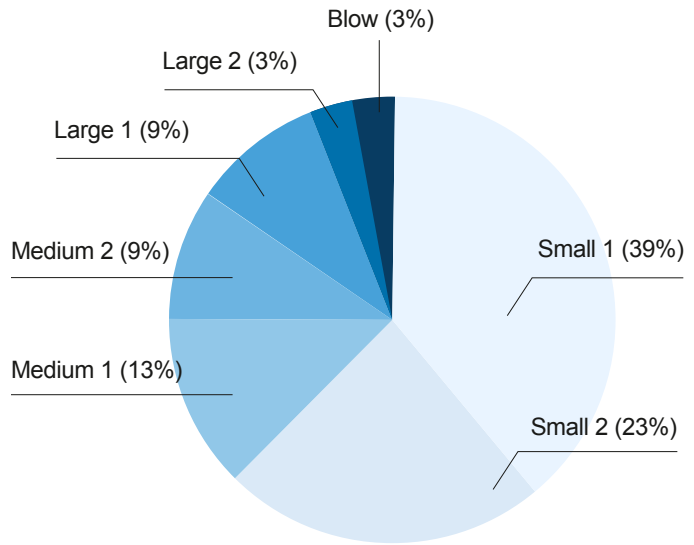
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WHAT WE INCLUDE IN OUR REPORT

Breakdown of Leak level (Total)

Survey List Name: Client name
Group All Area: City

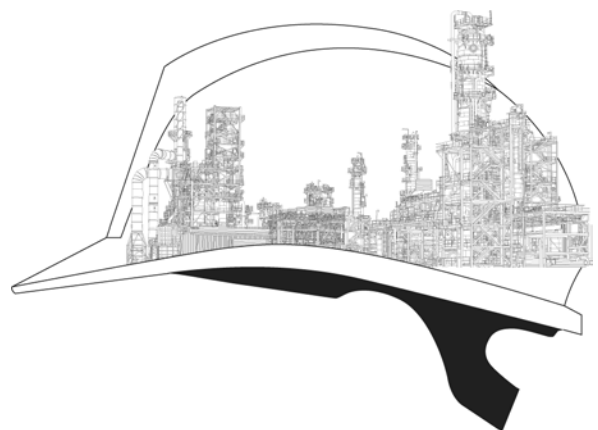


- Listing all data recorded during the survey, such as the location of the trap, trap size, manufacturer's model number, service of the trap, trap's operating condition, steam loss per year, and monetary loss per year.
- Suggestions for steam system improvements, including changing or adding steam traps and changing piping in certain situations.
- Very precise report giving the state of all steam traps tested.
- Identification of all traps in failed open or failed closed state.
- For all leaking steam traps, defining the estimated rate of leakage under 6 groups.

Steam Traps

Leak Level	Small-1	Small-2	Medium-1	Medium-2	Large-1	Large-2	Blow	Total
Quantity	25	15	8	5	6	2	2	63
Stem Loss (lb/Year)	3,685,332	2,259,204	2,319,648	2,328,408	1,956,108	1,433,136	741,096	14,722,932
Monetary Loss (USD/Year)	14,892	9,125	9,370	9,407	7,902	5,790	2,994	59,480
CO2 Emissions (lb/Year)	582,540	356,532	368,796	370,548	310,104	226,884	117,384	2,332,788

- Giving a full steam loss analysis and potential savings if suggestions/changes are implemented.
- A defined ROI. Defined priorities where you would save the most money from replacing traps first, second, third, etc.
- Estimated savings realized immediately after implementing our traps.
- Tagging traps that have missing tags and including them in a database for your future needs.
- Showing reduction in CO2 emission and savings in fuel costs.



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1st Hierarchy	Size [inch]	Total	OOS	No Survey	In Operation											Steam Loss [lb/yr.]	Money Loss [USD/yr.]	CO2 Emissions [lb/yr.]	No Decision
						Good	Failure	Leak	Plugged	T-Low	T-Prbm	C-Prbm	Ext Leak	Others					
Client name	1/2	29	0	0	29	5	24	24	0	0	0	0	0	0	0	2,925,740	14,628	461,652	0
	3/4	23	0	2	21	0	21	20	1	0	0	0	0	0	6,568,248	32,840	1,041,564	0	
	1	16	0	0	16	1	15	14	1	0	0	0	0	0	2,056,848	10,286	325,872	0	
	1 1/2	7	0	0	7	0	7	5	2	0	0	0	0	0	3,171,996	15,895	503,700	0	
	Total	75	0	2	73	6	67	63	4	0	0	0	0	0	14,722,932	73,613	2,332,788	0	
Total		75	0	2	73	6	67	63	4	0	0	0	0	0	14,722,932	73,613	2,332,788	0	

What Does It Cost?

The cost is entirely related to the number of steam traps at the site and their accessibility, which determines the level of effort expected on our behalf to complete the survey. We charge by the trap rather than by the hour. This way, our clients can be confident that the price they pay is fixed and will not change regardless of whether the survey takes 8 hours or 80 hours to complete. We also ask the client to cover any travel and lodging expenses that may be incurred while performing the survey, and in some cases, if the lift is required to access some valves, we either ask the site maintenance team to provide the necessary equipment or we can add the rental amount to the final bill at the actual cost plus our administration fee for this transaction.

What Is Required From The Customer?

Before we can conduct a survey, you must have at least 40 traps. We also require a customer representative to be there at all times to guide our representative through the facility. This is usually the most efficient approach to save time because we don't always know where all of your traps are.

Steam Trap Installation

For sites larger than 100 steam traps, we are able to offer competitive steam trap installations to carry out the corrective work.



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