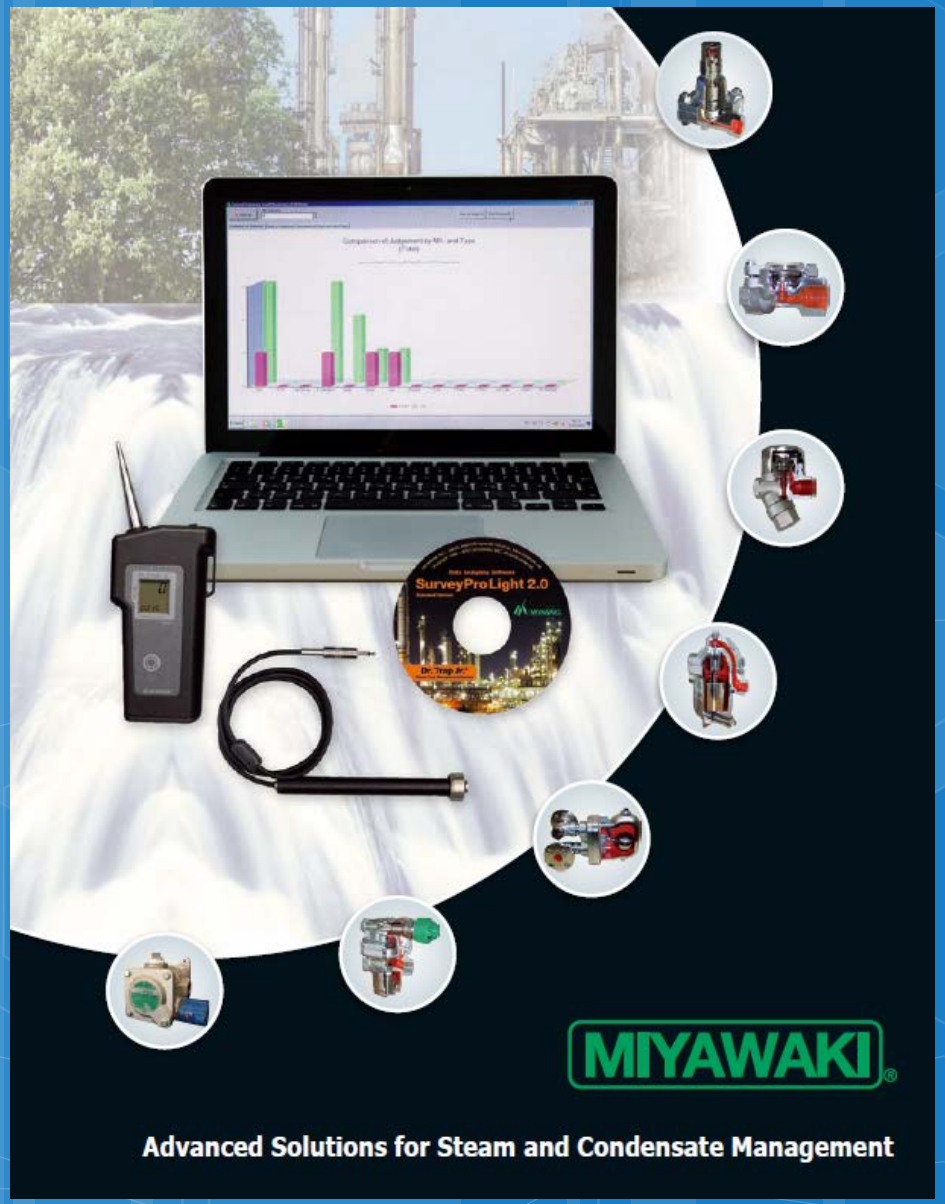


TECHMATIC CONTROLS

18 April 2024

Energy Saving with Steam Trap Management

Techmatic Controls

Ignatius Lim

Who are we?

- Techmatic Controls was founded in 1990.
- Supply of industrial valves on pipeline focusing on fluid control
- Provide engineering solutions for our customers
- Local authorised distributor and representative for various brands in SEA

Miyawaki Company Profile

- Started in 1933 designing steam traps
- Manufactures a wide range of steam traps and other valves used in many industrial areas.
- More than 200 patents in Japan and overseas

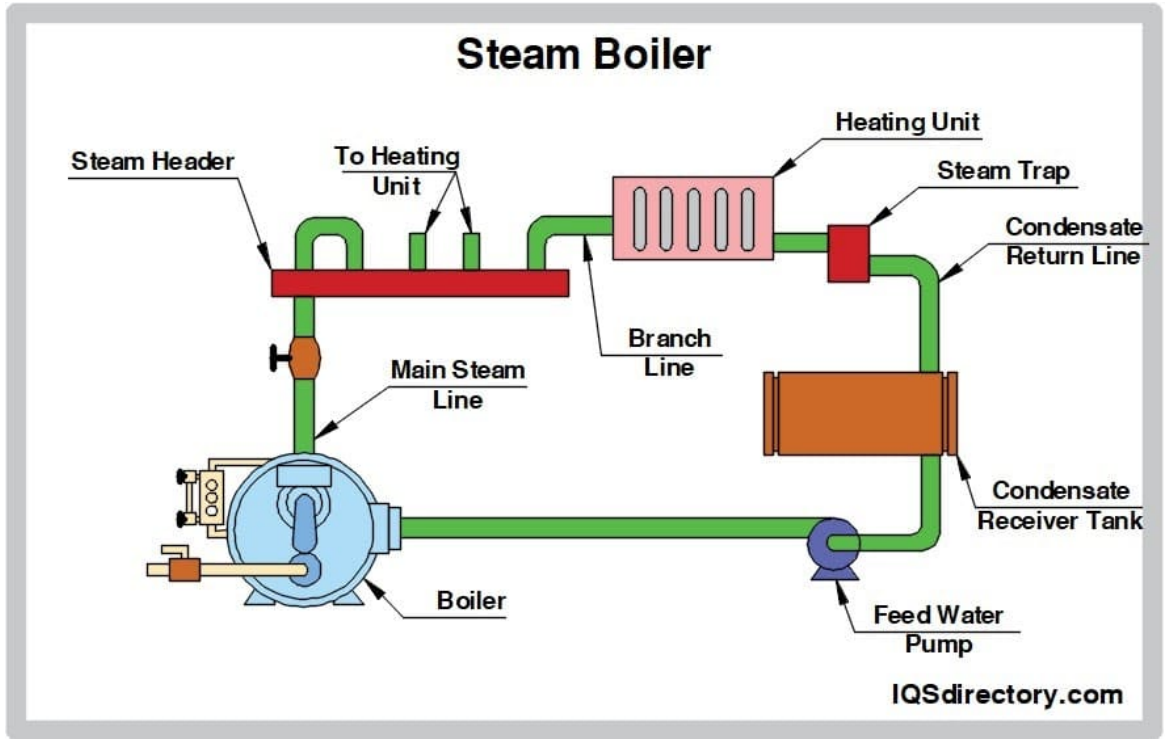
Agenda

- Basic information on steam traps
- How can steam trap management help you save energy
- What is a steam trap management plan

Steam as an energy transfer system

- Steam is commonly used in industries to transfer energy to processes
- Once steam has released its energy, it will return back to condensate
- Condensate in steam lines must be removed

Steam as an energy transfer system



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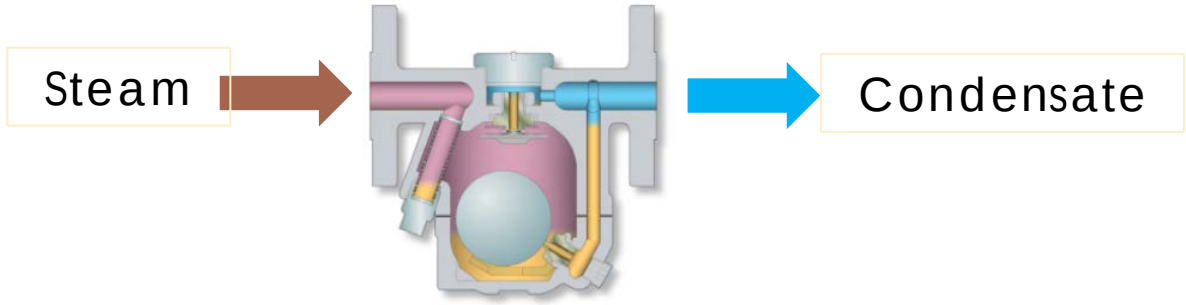
What is a steam trap?

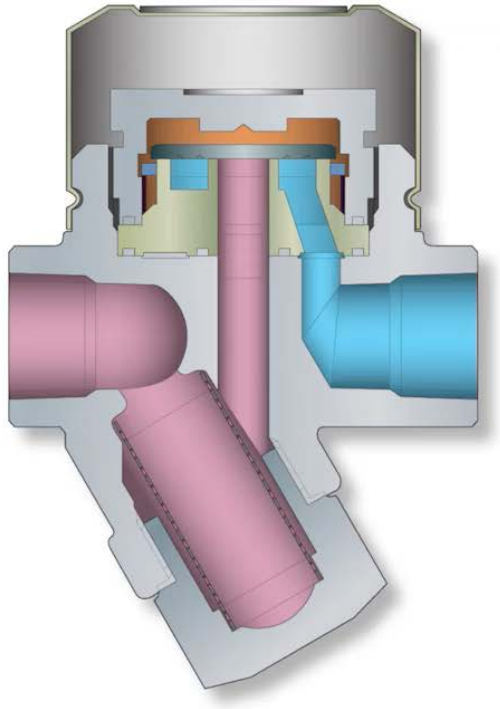
- Automatic valves to discharge condensate and keep the steam in.
- Can be found in steam pipes and equipment.



How does a steam trap work?

Model SC31

Startup



MIYAWAKI INC.

Steam
Hot Condensate
Cold Condensate
Air

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Why is steam trap management important

- It can save you MONEY
  - ✓ Reduce downtime and maintain production efficiency.
  - ✓ Saves energy costs
- Prevents environmental & safety hazards

Why happens when a steam trap fails

- Stuck in Open position: Leaking / Passing
- Stuck in Closed position : Plugged / Choked

Why happens when a steam trap fails

1) Steam Trap Leak

- Due to Wear & Tear
- Steam Cuts on disc & seat
- Pinhole on body

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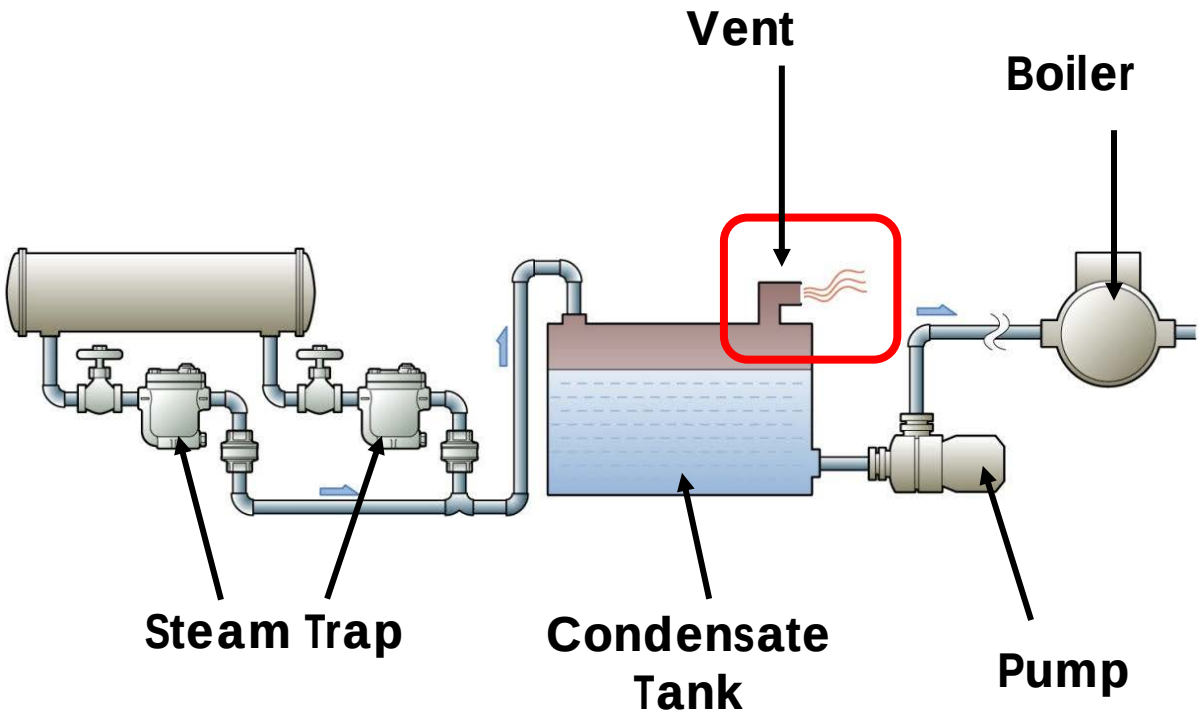
Why is steam trap management important



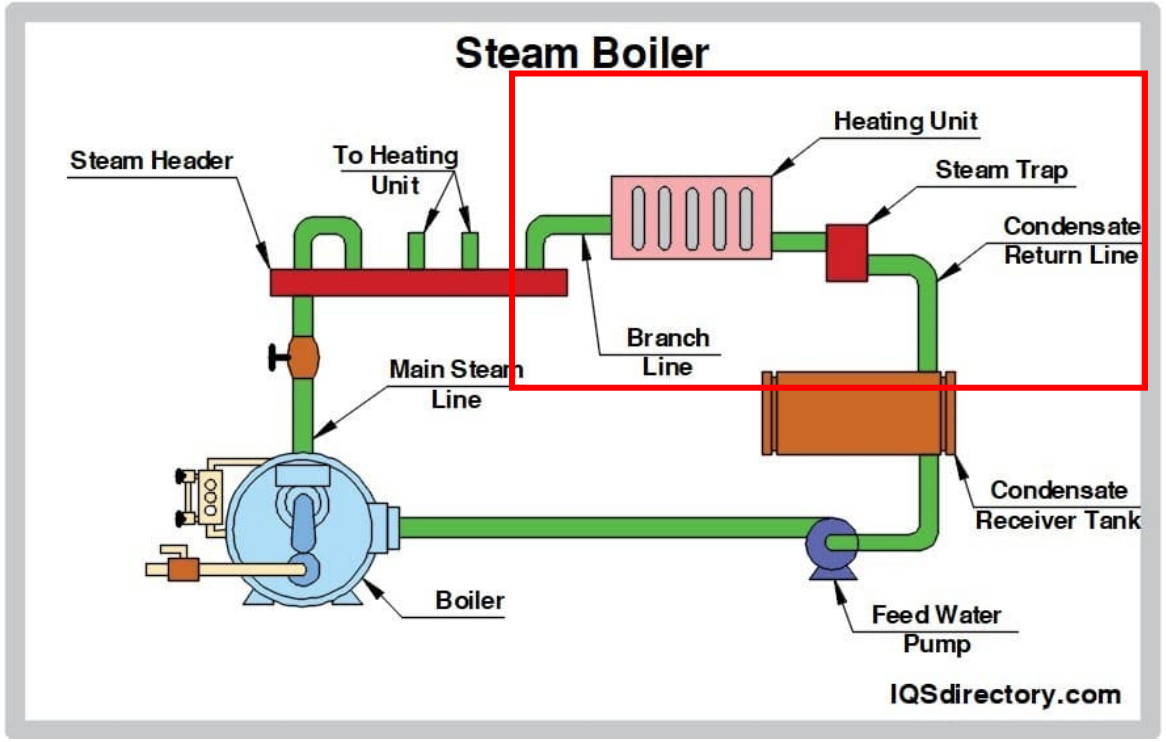
Why is steam trap management important

2) Steam Trap Plugged

- Plugged trap cannot discharge water to remove condensate
- Due to pipe scale , rust
- Affects heating process

Why is steam trap management important

2) How can a plugged steam trap affect the heating



Why is steam trap management important

- Damage to due water hammer

Why is steam trap management important

Summary

- ✓ Lower Utility Costs
- ✓ Reduce equipment downtime
- ✓ Improve heating efficiency
- ✓ Reduce long term maintenance costs
- ✓ Improve overall plant safety

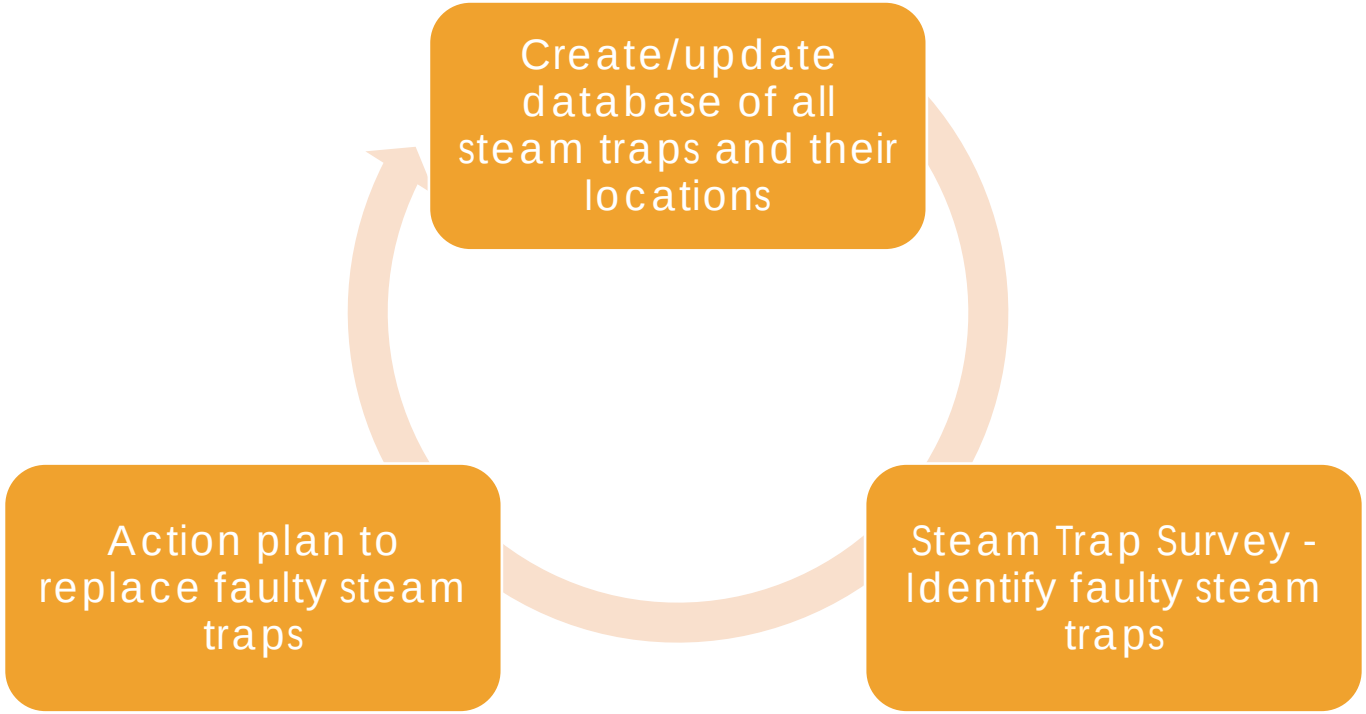
What is steam trap management?

Objectives of steam trap management

- Systematic approach to manage all steam traps in a plant
- Preventive maintenance by detecting deteriorating steam traps
- Reduce consumption of energy in the form of steam
- Reduce overall maintenance cost

Steam Trap Management

Proper steam trap management :



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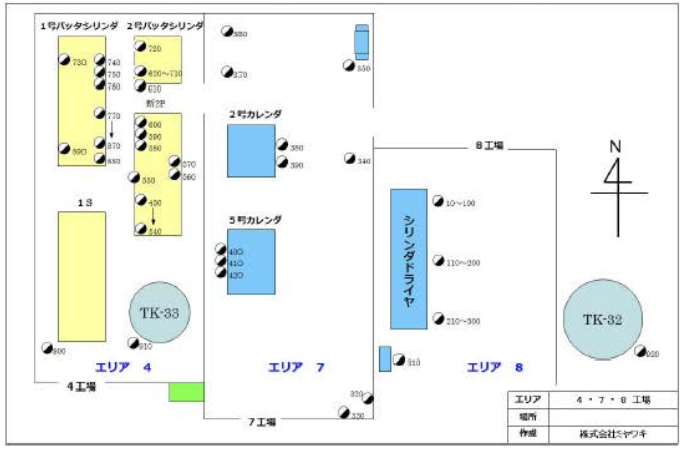
Create Steam Trap Database

- Create Steam Trap Database
- Map out location of steam traps
- Tag all steam traps for easy identification

Trap Layout Drawing



Steam Trap tag

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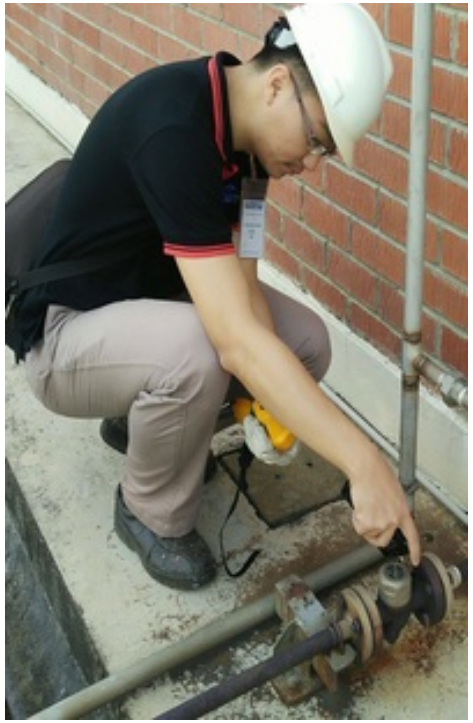
Perform Steam Trap Survey

- Identify faulty steam traps
- Plan for replacement of steam traps



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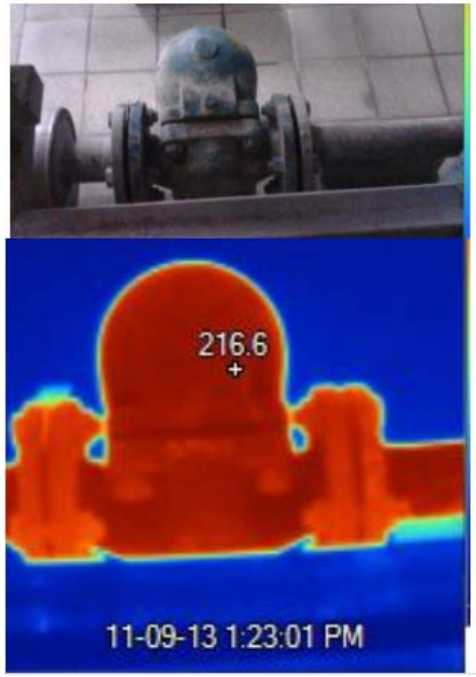
Perform Steam Trap Survey

Thermal Imaging



Ultrasonic Detector

Listening Rod

Dr. Trap Software

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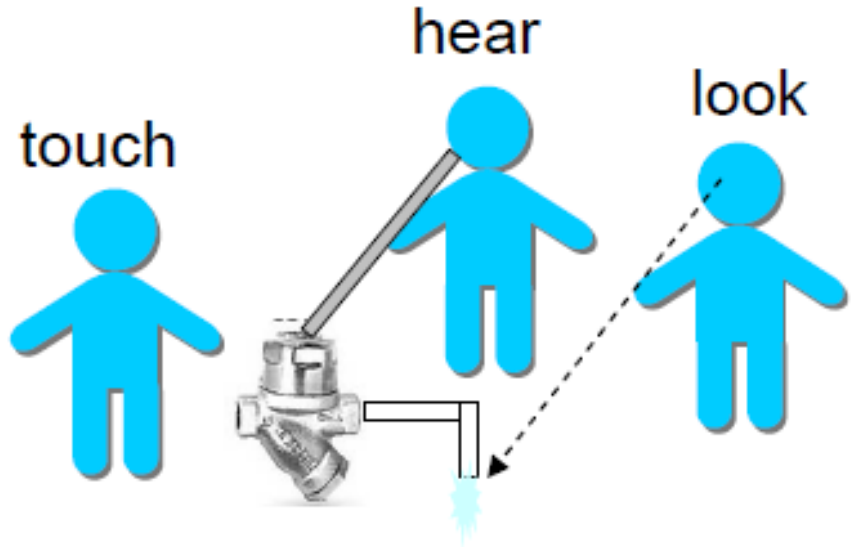
Perform Steam Trap Survey

Before starting any diagnosis

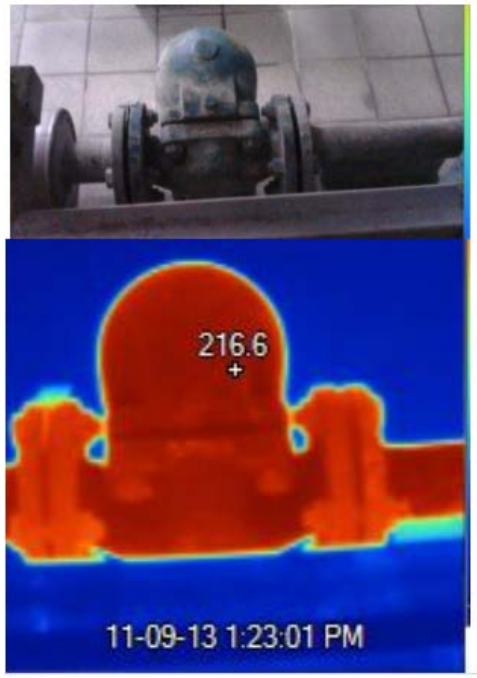
- Access the steam trap and its surroundings first.
- Look out for safety hazards and how to approach the steam trap
- Observe the discharge (if possible)



Perform Steam Trap Survey

1) Temperature Method

- Use of thermal imaging and infrared temperature gun
- Check upstream and discharge temperature



Perform Steam Trap Survey

2) Ultrasonic Detector

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Perform Steam Trap Survey

- Useful for closed system
- Using industrial stethoscope
- Requires experience

Perform Steam Trap Survey

What happens after doing the steam trap survey?

- Data analysis to generate steam loss report
- Plan to replace faulty steam traps
- Update Steam Trap database after replacement

Steam Trap Analysis

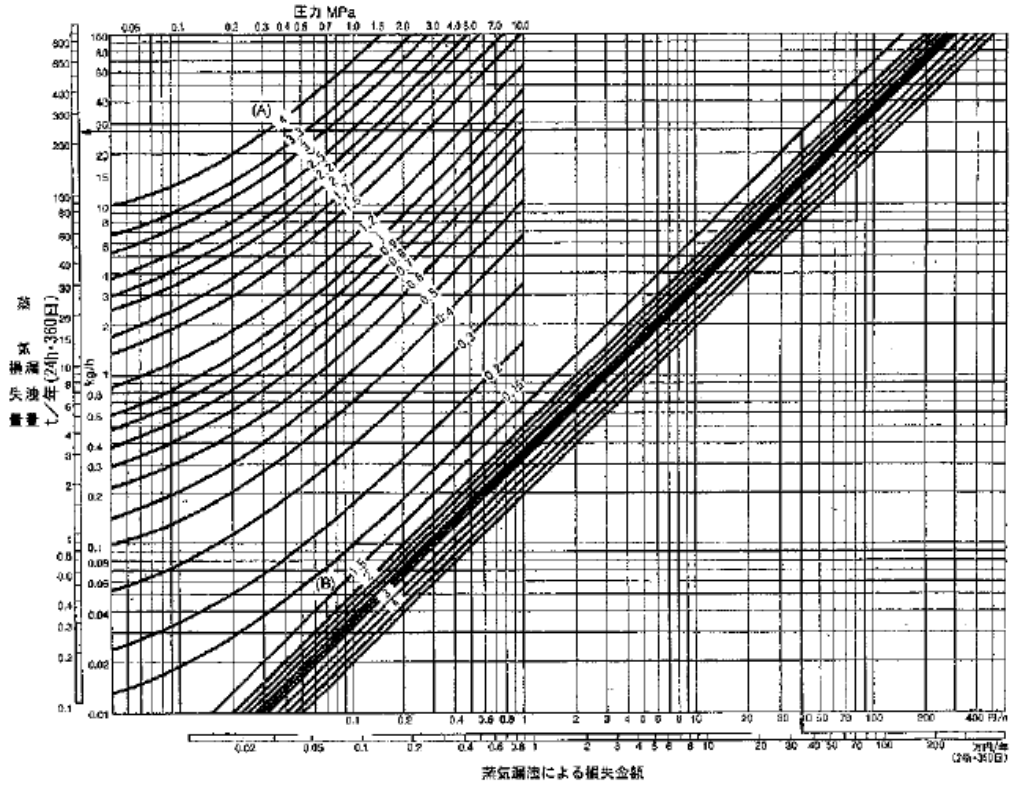
Miyawaki Dr. Trap Steam Trap Management Software

- Database Management
- Keep track of individual steam trap historical records
- Generate reports
- Track financial loss over time

Steam Trap Analysis

- Calculate the leak amount and cost
- Depends on pressure, time, *nozzle port and steam cost.

Type	nozzle port (mm) (value from our products)	
	passing	leak
Disc	Φ3.3	Φ0.8
Float	Φ3.0	Φ0.8
Inverted Bucket	Φ1.7	Φ0.3



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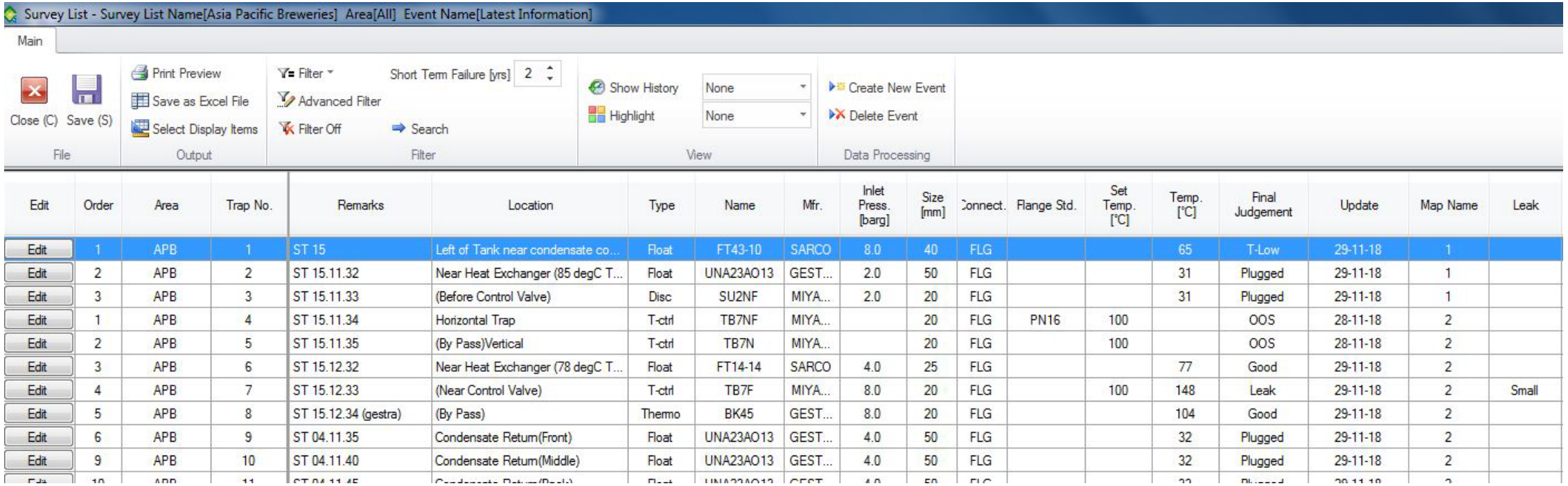
Dr. Trap Steam Trap Management Software



Edit	Order	Area	Trap No.	Remarks	Location	Type	Name	Mfr.	Inlet Press. [barg]	Size [mm]	Connect.	Flange Std.	Set Temp. [°C]	Temp. [°C]	Final Judgement	Update	Map Name	Leak
Edit	1	APB	1	ST 15	Left of Tank near condensate co...	Float	FT43-10	SARCO	8.0	40	FLG			65	T-Low	29-11-18	1	
Edit	2	APB	2	ST 15.11.32	Near Heat Exchanger (85 degC T...	Float	UNA23AO13	GEST...	2.0	50	FLG			31	Plugged	29-11-18	1	
Edit	3	APB	3	ST 15.11.33	(Before Control Valve)	Disc	SU2NF	MIYA...	2.0	20	FLG			31	Plugged	29-11-18	1	
Edit	1	APB	4	ST 15.11.34	Horizontal Trap	T-ctrl	TB7NF	MIYA...		20	FLG	PN16	100		OOS	28-11-18	2	
Edit	2	APB	5	ST 15.11.35	(By Pass)Vertical	T-ctrl	TB7N	MIYA...		20	FLG		100		OOS	28-11-18	2	
Edit	3	APB	6	ST 15.12.32	Near Heat Exchanger (78 degC T...	Float	FT14-14	SARCO	4.0	25	FLG			77	Good	29-11-18	2	
Edit	4	APB	7	ST 15.12.33	(Near Control Valve)	T-ctrl	TB7F	MIYA...	8.0	20	FLG		100	148	Leak	29-11-18	2	Small
Edit	5	APB	8	ST 15.12.34 (gestra)	(By Pass)	Thermo	BK45	GEST...	8.0	20	FLG			104	Good	29-11-18	2	
Edit	6	APB	9	ST 04.11.35	Condensate Return(Front)	Float	UNA23AO13	GEST...	4.0	50	FLG			32	Plugged	29-11-18	2	
Edit	9	APB	10	ST 04.11.40	Condensate Return(Middle)	Float	UNA23AO13	GEST...	4.0	50	FLG			32	Plugged	29-11-18	2	

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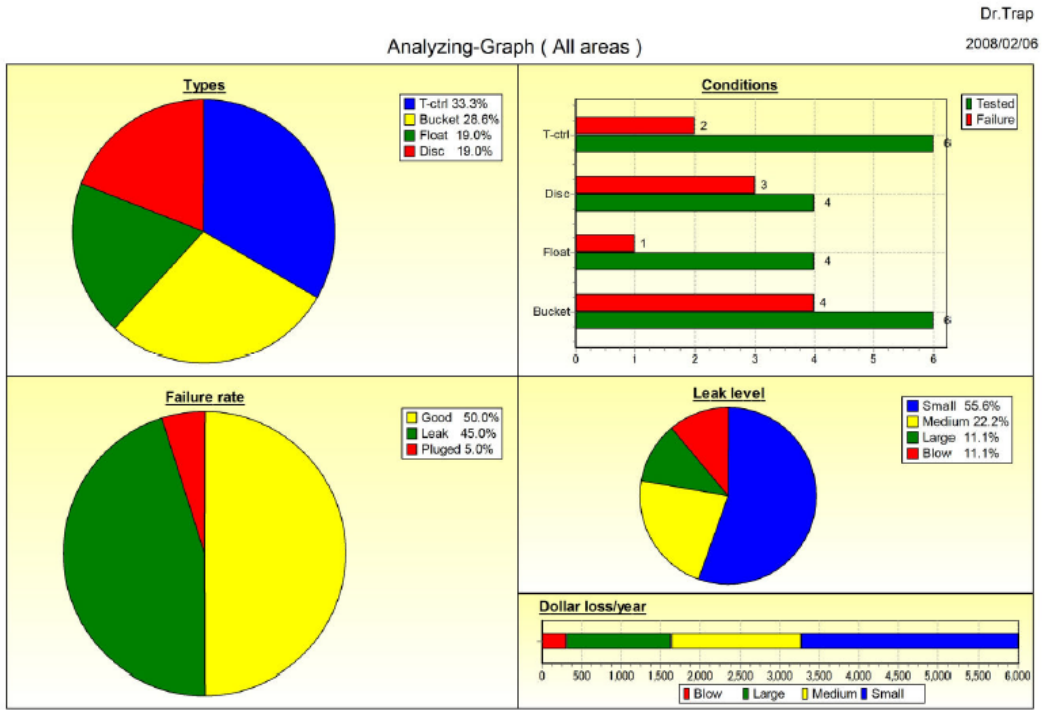
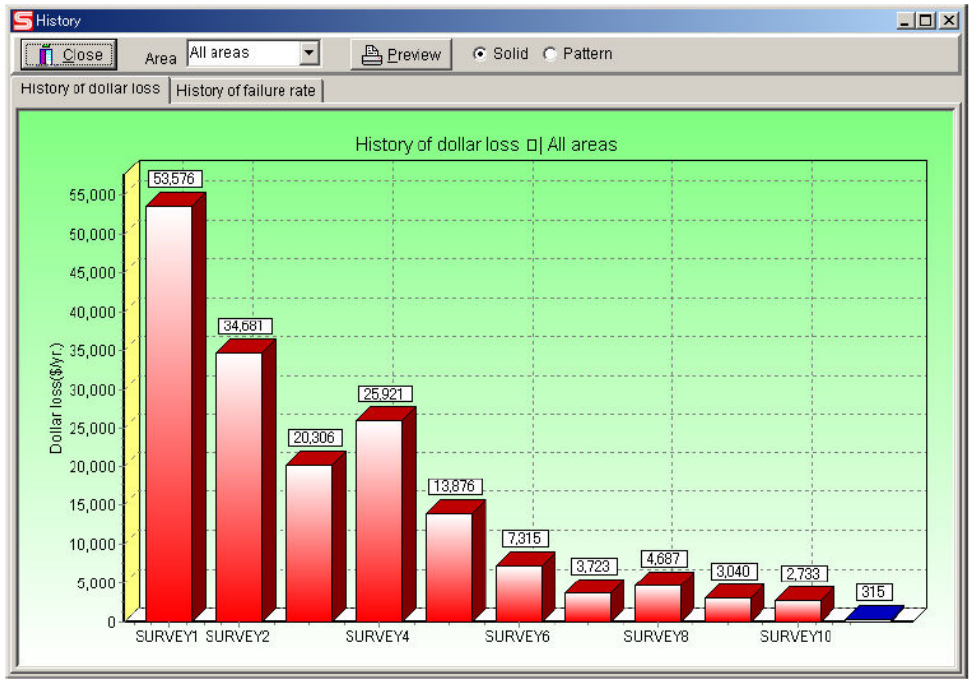
Dr. Trap Steam Trap Management Software





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Steam Trap Analysis

- Why engage a professional to do steam trap survey?
  - Experience needed to interpret the results.
  - Knowledge of steam traps needed.
  - Capturing of the data and subsequent analysis of the results is laborious

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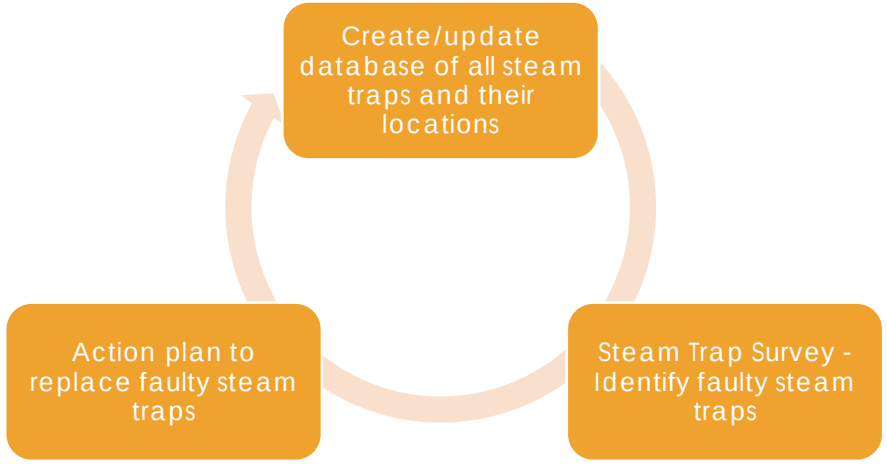
Summary

- How does steam trap management help you:
  - ✓ Reduce costs
  - ✓ Reduce equipment downtime
  - ✓ Reduce long term maintenance costs

Summary

- How to do proper steam trap management



- There is no such thing as zero failure.

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