

Steam and Water Analysis System

SWAS



In any Power plant running on steam, the purity of boiler feed water and steam is crucial; especially to steam turbines, steam boilers, superheaters, condensers, and other steam equipment. To prevent damage to the steam turbine, steam boiler, and other equipment due to scaling and corrosion, online steam and water analysis of critical parameters such as pH, Conductivity, Dissolved Oxygen, Silica, Sodium, Hydrazine, and Phosphate, etc is a must. Steam can be as hot as 560°C. Pressures can be as high as 250 bar. To keep the power plant up and running with minimum erosion and corrosion of the steam turbine, steam boiler, and condenser, we have developed a fully integrated Steam and Water Analysis System (SWAS) that provides exact, precise measurements of all these critical parameters. Samples are at high temperatures & pressure. Sample conditioning is required to bring down the temperature & pressure to the desired level.

FOLLOWING MEASUREMENT ARE DONE WITH THE HELP OF SWAS

- » pH
- » Conductivity
- » Dissolved Oxygen
- » Silica
- » Sodium
- » Hydrazine
- » Phosphate



AXIS has designed SWAS –Steam and Water Analysis System to keep you in power.

SWAS PACKAGE HAS TWO TYPES OF PANELS.

1. Wet Panel:

Sample coming from different points are fed to this panel. Contains sample conditioning components like a Thermal shut off valve (TSV), Cooler, Back pressure regulator(BPR), Pressure regulating valve(PRV), SOV, Temperature switch, Pressure & Temperature gauges, Rotameters, etc. The sensor is in the same panel, and the output of the sensor goes to the dry panel.

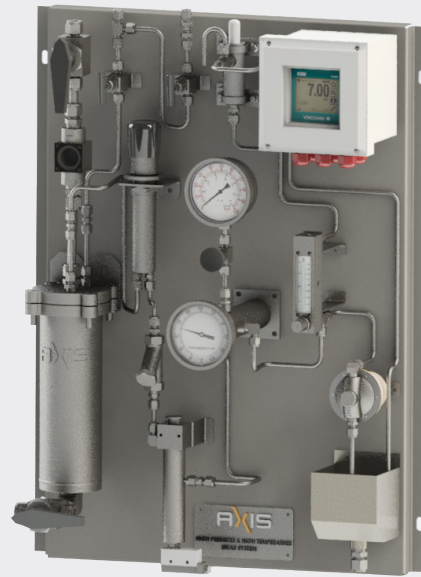
2. Dry Panel:

It contains Analysers, Transcontrol matters, Annunciator, indicators, etc. All remote signals go from this panel to the control room.

Single Line SWAS System



**SINGLE LINE SWAS WITH
COMPOSITE MANIFOLD**



**SINGLE LINE SWAS WITHOUT
COMPOSITE MANIFOLD**

FEATURES

- » Economical
- » Self-Standing (Optional)
- » Ease of maintenance
- » Ease of Installation
- » Compact Design

APPLICATIONS

- » Power plant
- » Refinery
- » Chemical
- » Pharmaceutical
- » Food & Beverages

DESCRIPTION

Axis single-line SWAS systems are pre-tubed assemblies used to simplify the conditioning of steam, water, or non-hazardous process samples. With the addition of cooling water, safe and representative samples can be obtained from individual sampling sites that are remotely located throughout the plant or from a small number of samples in a central location.

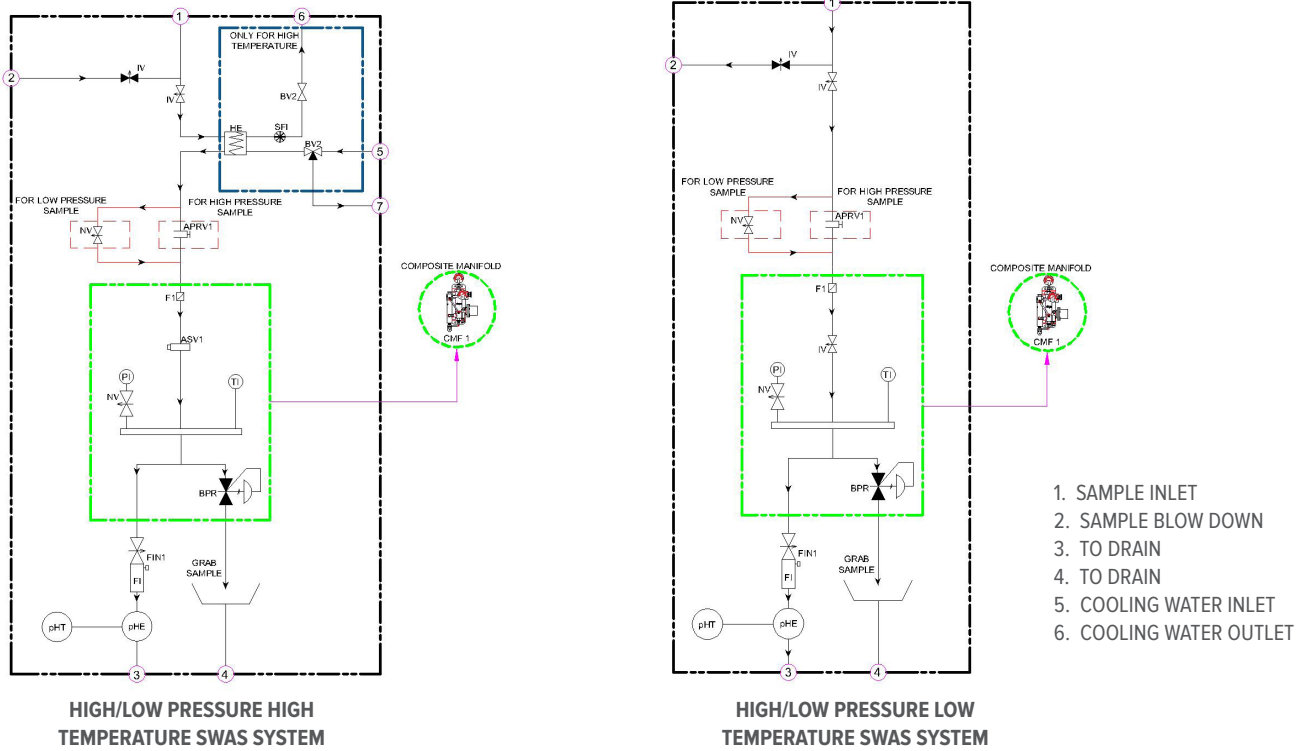
ADVANTAGES

- » Add an analyzer or other analysis product
- » Create a complete sample system with analyzers and conditioning on the same rack
- » Use the back side of a freestanding floor rack to mount analysis equipment
- » Combine critical conditioning and analysis on a portable skid
- » Effective Temperature & Pressure reduction with constant flow regulation to improve analyzer reliability
- » Efficient cooler design - suitable to all industry conditions
- » Sampling system with ASME PTC-19.11 STANDARD
- » Automatic High Temp. Shut-off valves are used for high-temperature protection
- » The composite manifold used in SWAS can reduce the size of the rack

There are two versions of Axis single-line SWAS systems — one for grab samples only and the other for both grab samples and to condition the sample for online analysis. These two versions are available for four types of the stream. 1) HPHT 2) HPLT 3) LPLT 4) LPHT. Axis single-line panels can be mounted on a variety of walls and come with full-width workable sinks and pre-piped cooling water headers to reduce installation time and cost.

Whether an individual single-line sample mounting plates solutions are completely engineered to meet the application requirement

SCHEMATIC OF SINGLE LINE SWAS SYSTEM



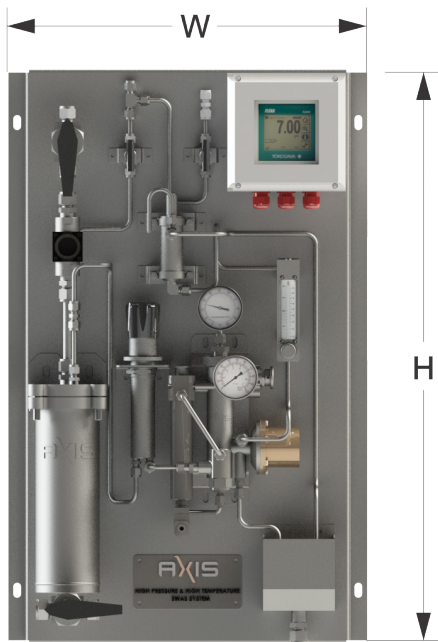
TYPICAL TECHNICAL SPECIFICATIONS

OPTIONS	HPHT	HPLT	LPLT	LPHT
Sample Temperature	537 Dec °C (MAX)	50 Dec °C (MAX)	35 Dec °C (MAX)	200 Dec °C (MAX)
Sample Pressure	393 bar g (MAX)	150 bar g (MAX)	10 bar g (MAX)	30 bar g (MAX)
Sample Flow (Grab Sample)	25 LPH	25 LPH	25 LPH	25 LPH
Sample Flow	50 LPH	50 LPH	50 LPH	50 LPH
Strainer (Filter) Retention Rate	40 Micron	40 Micron	40 Micron	40 Micron
Flow Meter	2.5-25 LPH	2.5-25 LPH	2.5-25 LPH	2.5-25 LPH
Sample Cooler*	HBRIX MM	HBRIX MM	HBRIX MM	HBRIX MM
Sample inlet connections	1/4" OD tube	1/4" OD tube	1/4" OD tube	1/4" OD tube
Sample outlet connections	1/4" OD tube	1/4" OD tube	1/4" OD tube	1/4" OD tube
Cooling water inlet connections**	3/4" NPT (F)	3/4" NPT (F)	3/4" NPT (F)	3/4" NPT (F)
Cooling water outlet connections**	1/2" NPT (F)	1/2" NPT (F)	1/2" NPT (F)	1/2" NPT (F)
Pressure Gauge Size	63 mm, 100 mm Press Range (0-7 Bar)	63 mm, 100 mm Press Range (0-7 Bar)	63 mm, 100 mm Press Range (0-7 Bar)	63 mm, 100 mm Press Range (0-7 Bar)
Temperature Gauge Size	63 mm, 100 mm temp range (0-100 °C)	63 mm, 100 mm temp range (0-100 °C)	63 mm, 100 mm temp range (0-100 °C)	63 mm, 100 mm temp range (0-100 °C)
APRV1	Min. 35 bar & Max. 350 bar	Min. 35 bar & Max. 350 bar	Min. 35 bar & Max. 350 bar	Min. 35 bar & Max. 350 bar
BPR	1.4 Bar g	1.4 Bar g	1.4 Bar g	1.4 Bar g
ASV set point	50°C ± 2°C	50°C ± 2°C	50°C ± 2°C	50°C ± 2°C
Fittings	SS, double compression type	SS, double compression type	SS, double compression type	SS, double compression type
Mounting Plate	SS-304	SS-304	SS-304	SS-304

Note : (*) Please contact AXIS SOLUTIONS for cooler selection

(**) Cooler connections will be changed as per the model, please check the Sample cooler data sheet for the connections details.

GENERAL ARRANGEMENT DRAWINGS FOR SINGLE LINE SWAS WITH AND WITHOUT MANIFOLD



SINGLE LINE SWAS SYSTEM WITH MANIFOLD



SINGLE LINE SWAS SYSTEM WITHOUT MANIFOLD

GA DRAWING

SR.NO.	SLSW XXXXXXXXXX	HPHT/QTY		HPLT/QTY		LPHT/QTY		LPLT/QTY	
		00111110	011000110	10011110	110000110	20111110	211000010	30011110	310000110
1	Mounting Plate (MM)	W=550 H=800	W=450 H=800	W=500 H=700	W=350 H=700	W=550 H=800	W=450 H=800	W=500 H=700	W=350 H=700
2	2 Way Ball Valve (BV2)	1	1	NA	NA	1	1	NA	NA
3	Sight Flow Indicator (SFI12)	1	1	NA	NA	1	1	NA	NA
4	Sample Cooler (HE)	1	1	NA	NA	1	1	NA	NA
5	3 Way Ball Valve (BV3)	1	1	NA	NA	1	1	NA	NA
6	Isolation Valve (IV)	2	2	2	2	2	2	2	2
7	Direct Acting Pressure Reducing Valve (APRV1)	1	1	1	1	NA	NA	NA	NA
8	Needle Valve (NV)	NA	NA	NA	NA	1	1	1	1
9	Composite Manifold (CMF1)	NA		NA		NA		1	
10	Strainer (STR14)	1	1	1	1	1	1	NA	1
11	Temperature Indicator (TI)	1		1		1		1	
12	Pressure Indicator (PI)	1		1		1		1	
13	Auto Shut-Off Valve (ASV1)	1	1	NA	NA	1	1	1	NA
14	Flow Indicator (FIN)	1	1	1	1	1	1	1	1
15	Back Pressure Regulator (BPR1)	1	1	1	1	1	1	1	1
16	Grab Sample	1	1	1	1	1	1	1	1
17	Double Compression Type Fitting	AR	AR	AR	AR	AR	AR	AR	AR
18	SS 304 Tubing	AR	AR	AR	AR	AR	AR	AR	AR