



An ISO-9001:2015 Certified Company

Steam and Water Analysis System

“One Stop Solution
for Analysers and
Sampling Systems
in Liquid, Gas and
Ambient Air”

Rich Experience in Power Plants
15 MW to 800 MW



Analysis | Monitoring | Performance

Company Profile



Steam Equipments Pvt. Ltd. is involved in manufacturing, designing, distribution and development of high quality and precise analytical instrumentation, Sample Handling System and Shelter Houses. Operating from headquarters in Pune, India, the company has established its sales and service operation in 40 countries. The company is dedicated to produce high quality instrumentation package backed by its world class 24 X 7 customer service.

Steam Equipments manufactures all products in development of its Steam and Water Analysis System, CEMS, AAQMS, Process gas analyzer systems and other associated accessories.

Products

- Steam and Water Analysis System (SWAS)
- Process Gas and Liquid Analysers
- Sampling Systems and Walk-in Shelters
- Continuous Emission Monitoring Systems (CEMS)
- Pressure Reducing & Desuper heating Stations (PRDS)
- Ambient Air Quality Monitoring Systems (AAQMS)
- Steam Accesories: Steam Trap, Steam Valves, strainer, Temp/Pressure/Control System.

Our Vision

Steam Equipments will strive to be a World Class supplier of Gas and liquid Analytical Systems. We will achieve this through :

- Innovation in the products we manufacture and distribute.
- Investment in our people.
- Achieving customer satisfaction.
- Maintaining world-class product quality.
- Shipping products that meet or exceed customer's expectations for performance and deliver.

Quality Policy

SEPL is dedicated for commitment in improving the quality of products and satisfaction of customers through:

- Products that consistently meet or exceed expectations on performance, reliability, and durability.
- Service to customers that is prompt and courteous.
- Deliveries on time.
- Involvement and accountability of entire management team.

Our employees pledge to meet this through a quality process based upon a solid foundation of ethical principles, conscientious attention, detail and proven product engineering and state of art manufacturing practices.



INDUSTRIES SERVED

- Power Generation
- Petrochemical
- Refineries
- Nuclear
- Waste Water Treatment
- Chemical Industries
- Food & Beverage
- Steel
- Pulp & Paper
- Cement

**PRODUCTS OFFERED BY
STEAM EQUIPMENTS IN
POWER INDUSTRIES**



An ISO-9001:2015 Certified Company



**Steam & Water
Analysis System**



In-Situ CEMS



AAQMS



**Water Quality
Analyzers**



**EQMS
Systems**



**Degassed Conductivity
Analyzer**



**Zirconia
Analyzer**



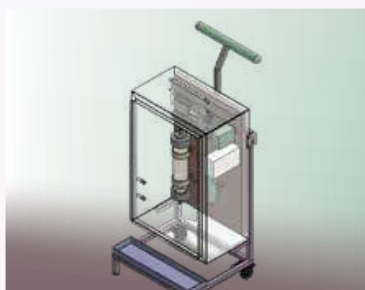
**Opacity (PM)
Monitor**



**Dewpoint
Transmitter**



Chiller



**Portable After Cation
Conductivity Analyser**



**Steam Traps, Valves,
Strainers etc.**

Steam and Water Analysis System (SWAS)



Monitoring purity of boiler water and steam is very important. Failing to accomplish this may lead to major break down/shut-down of the power plant. A major goal of plant chemical control is to prevent the solids build up and corrosion in the plant. The water used in power plant threatens the integrity of the plant equipment such as steam turbine, boiler, condensers, heater, pump and other apparatus. These equipments are under constant attack from erosive and corrosive element such as Silica, Sodium, Chlorides, Calcium, Dissolved Oxygen etc. Without accurate monitoring of water chemistry, the plant may suffer heavy mechanical damages, reduced efficiency/deposition on the turbine blades and corrosion of pipe line.

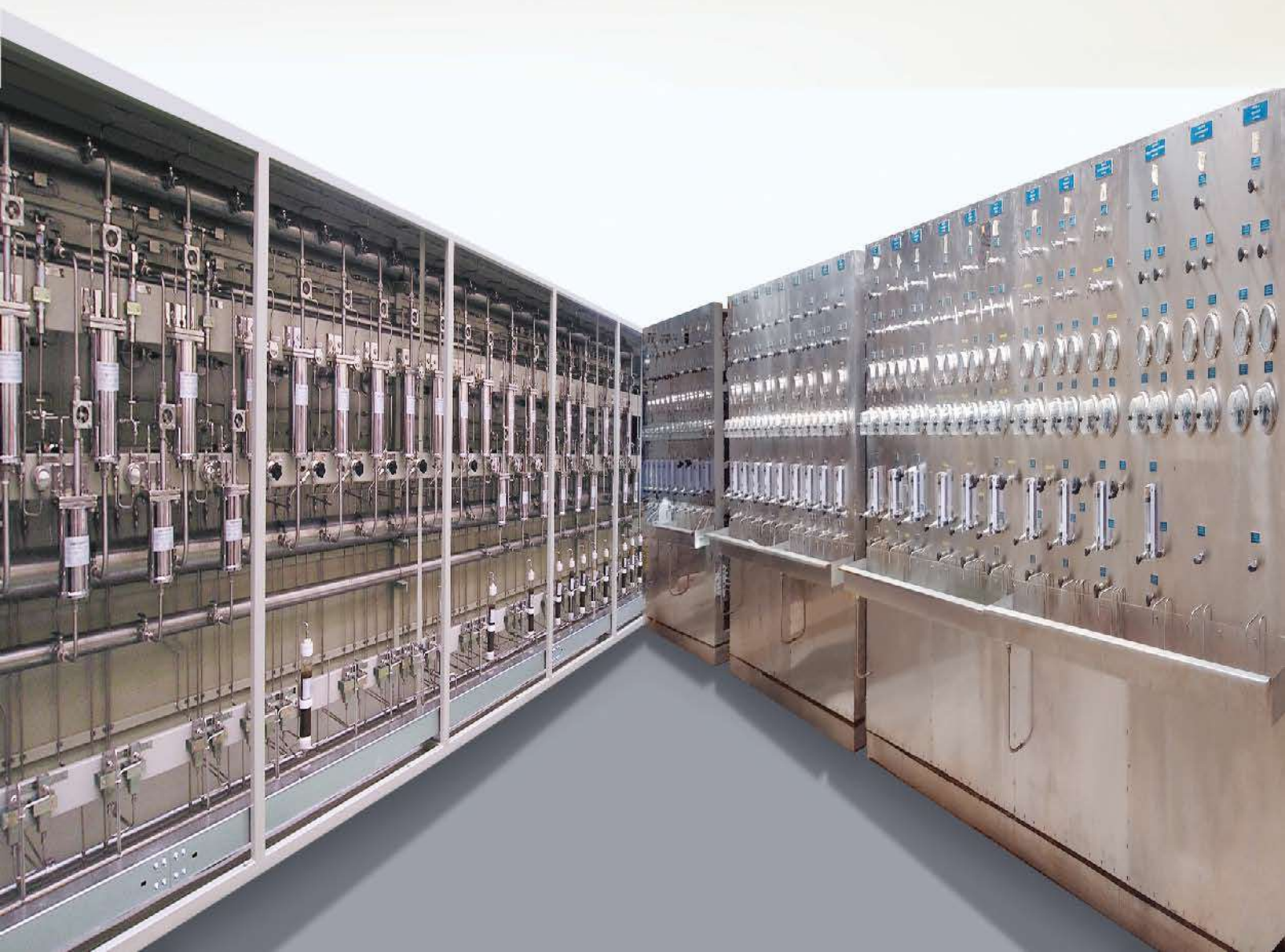
To keep the power plant healthy and running with minimum corrosion and scaling, on - line monitoring of Steam and Water Quality is mandatory. The temperature and pressure of steam used for power generation is around 650°C & 325 Bar. Most of the analyzers used in the steam and water analysis system (SWAS) cannot withstand such a high temperature & pressure. We have designed and developed Steam and

water analysis system (SWAS) in accordance with the recommendations of ASME PTC 19.11 Part-II, water & steam in power cycle.

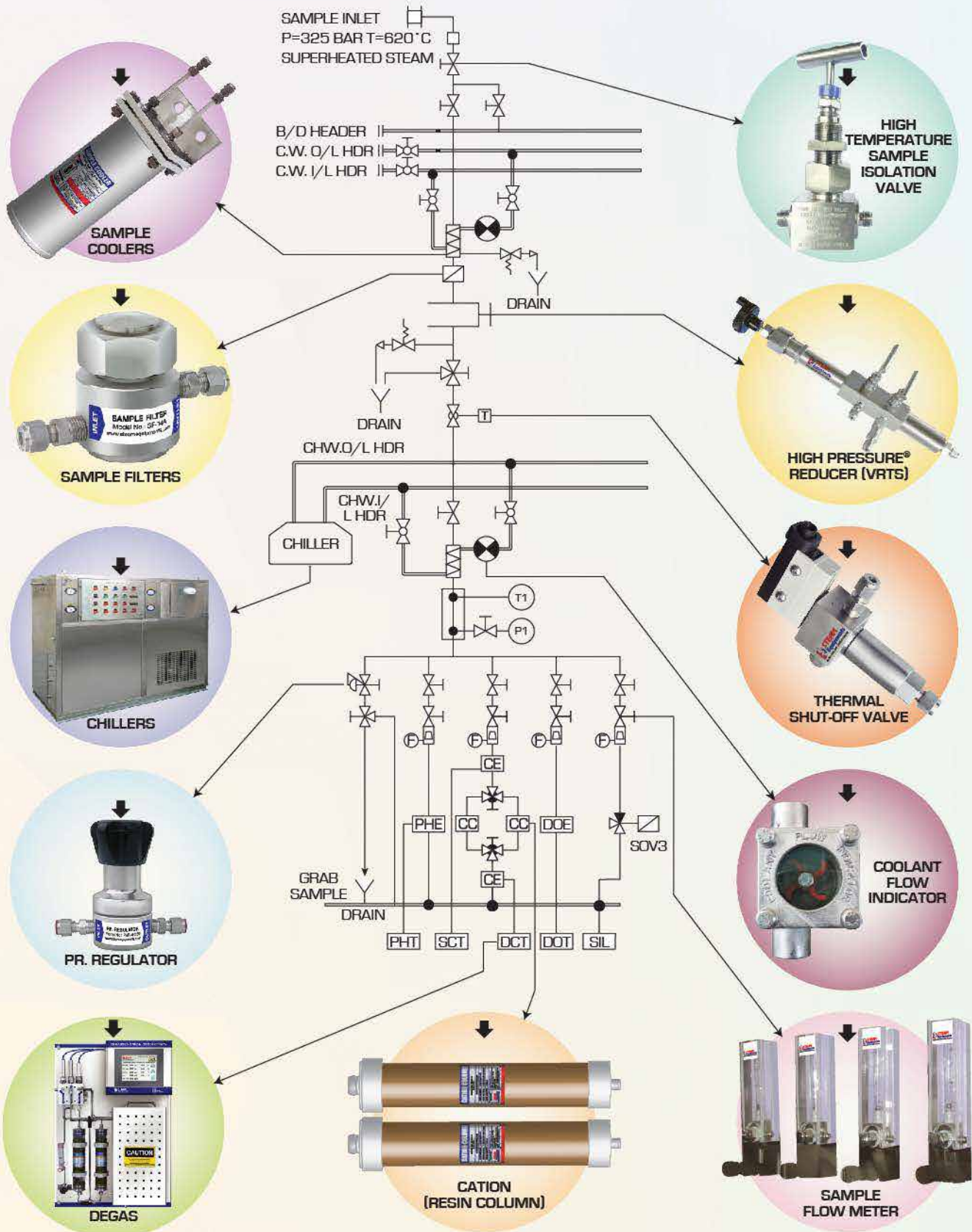
The SWAS panel and shall comprise of Sample Conditioning panel and Analyzer Panel (Dry Sections) shall house cells, all analyzers, monitors, recorders etc.

Wet Panel: these panels are generally designed for wet conditions having no electrical components and house sample coolers, pressure reducing elements, high temperature thermal shut-off valves, back pressure regulators, pressure & temperature gauges, flow indicators as shown in the typical drawing. In this system, the sample is cooled and depressurized using sample coolers, pressure reducers and other safety, flow controls. indicating devices are installed in this system.

The construction is designed as per customer requirements like open frame free standing design, fully enclosed walk-through type design, skid mounted design, wet and dry panel housed together. We take utmost care for proper layout, easy to maintain and proper selection of materials.



Typical P & I Drawing



Sampling System Components

Sample Cooler

Sample Coolers are used to reduce the temperature from 650 °C to 45 °C.

Features :

- Design Temp : 650 °C & Pressure : 400 Bar
- Very Close Approach Temp
- Sample cooler coils with 100% traceability with MTC
- Truly Counter - flow design
- Compact Design
- On - Line shell cleaning
- Built - in Safety Valve for CW line
- 3 stage cooling in one shell design
- Fully Stainless Steel material
- Removable Coil & shell, No Welded Joints
- Suitable for SWAS & Gas applications
- More than 7000 coolers installed worldwide.
- SS-316 / Inconel - 625.



High Pressure Reducer (Vrts)

VRTS is used to reduce the sample pressure from 400 bar to 3 bar

Features :

- Rob - in Tube Pressure Reducer
- Designed for High Pressure 400 Bar, Temperature : 650 °C
- Outlet pressure 0 to 30 Bar Adjustable
- Built - in Thermal Shut - off valve.
- Built - in Pressure relief valve.
- Built - in Temp contacts
- On line grab sample valve
- On line blow down valve
- No Filters Required
- 6 components in one assembly
- Maintenance free with online clearing arrangement.tt



Back Pressure Regulator

Back Pressure Regulators are used for uninterrupted, regulated flow at constant pressure to analyzer. These regulators are generally used at outlet of Grab Sample.

Features :

- Set Pressure : 3 Bar, Temperature = 120 °C (Max)
- Very Compact design
- Stainless Steel Diaphragm
- Fully Stainless Steel Construction
- 1/4" OD/3/8" OD end connections.



Sampling System Components

High Temperature Sample Shut - Off Valve

The high temperature thermal shut - off valve is used to protect the analyzer sensor during failure of cooling water supply to sample cooler. This equipment is replacement for typical electrical circuit consisting of temperature switch, solenoid valve, junction box and other associated wiring.

Features :

- Automatic Reset : No Operator involvement required.
- No outside Power Source required.
- Reliable Shut - off : Ram - type plug design.
- Operating temperatures unaffected by pressure.
- Wide Choice of Set points.
- Operates in any orientation.
- Maintenance less.
- Easy to install and long life.



Sample Filter

High Pressure sample filter is used to trap the Particles upto 40 Micron and prevent choking of the sampling lines.

Features :

- Design pressure 400 Bar, temperature 650 °C
- 40 Micron Sintered Stainless Steel filter element
- Compact Design
- Spring Loaded, Easy to clean
- Stainless steel body material

Cation (Resin) Column

Cation Columns are filled with H⁺ ions and used to measure cation conductivity.

Features :

- Slim Design for better performance.
- Color indicating type of resin.
- Optional quick - disconnecting kit.
- Designed for Max Pressure upto 10 Bar
- Design Temperature : 80 °C
- Easy replacement of resin.
- More than 3000 Cation Columns installed worldwide.



SAMPLING SYSTEM

Lab Sampling Module

This plate mounted sampling system occupies very less space & is easy to install.

- Designed as per ASME PTC 19.11 Recommendations.
- Pre-Engineered, Ready to Install
- Compact Sample Conditioning Module
- Suitable for Stand-Alone pH/Cond/DO Analyzers
- Design Temp : 650 °C & Pressure : 400 Bar
- Single Sample Cooler
- Compact double helix type, shell & tube sample coolers.
- No Power Supply required. No wiring.
- Easy access to components.



Rack and Plate Mounted pH/Cond/DO Analyzers



Walkway Type Systems

Quick Overview

Walk in type sample conditioning systems are best suited for mid-size and large plants. These are safe for use, provide separate interface for user & system expert, thus protecting the equipment from unauthorised usage/fiddling. The deliveries of such systems can be given in a medium span.

Features

- Closed type construction
- Separate interface for operator
- Easy access for operator to all essential indicating instruments
- Design provides safety to the equipment ensuring longevity and trouble-free operation.



SAMPLING SYSTEM

Combined System



Quick Overview:

It consists of both wet panel and dry panel combined into one system. It is customer built panel which includes Primary and Secondary sampling components in one skid with indicating and control instruments like Isolation Valves, Blow Down Valves, Pressure Regulator; Pressure Gauge, Temperature Gauge, Rotameter, Grab Sample Valves are in front of the panel mounted on SS sheet with common Tundish. Wet panel components such as Sample Cooler, Filter, Cooling and Chilled Water Isolation Valves, Thermal Shut Off Valve, BPRV, Cation Column etc. are on the back of the panel. Flush mounted analyzer panel is adjacent to sample panel which makes combined panel compact and easily serviceable.

Open Frame Free Standing Racks

Quick Overview:

Open frame free standing racks are best suited for smaller plants. These are easy to assemble, commission & use. The deliveries of such systems can be given in a short span.



Applications:

- Captive Power Plants
- Co-generations Plants
- Combined Cycle Power Plants
- Chemical/Petrochemical/Fertilizer/Refinery applications of sample conditioning and analysis.



Shelters (Containerised Systems)

Quick Overview:

Shelters (or some call it Containerised systems) are the best suited for large plants. These are safe for use, provide good working area for user & system expert, yet protects the equipment from unauthorised usage / fiddling. Shelters save space, civil work, field work & lot of time on site, as these are plug and play type systems. The deliveries of such systems can be given in a medium span.

Features:

- Totally enclosed construction
- Analysers and Sampling system at one place
- Easy access for operator to all instruments
- Design provides safety to the equipment ensuring longevity and trouble-free operation
- Can be installed and commissioned in record time

Benefits:

- Longer life of equipment ensured.
- High degree of safety to the operator ensured.
- Unauthorised usage totally prevented.
- Saves lot of time at site in terms of installation as well as commissioning.
- Saves lot of civil work, tubing, piping and cabling.
- Plug and play construction.
- Saving in manpower and material costs at site, thus reducing project costing substantially.
- Saving in utilities transport.



Degassed Cation Conductivity

A new design for conductivity measurement for power cycle chemistry monitoring. By providing conductivity measurement, in compliance with ASTM D4519, this system provides assurance of water purity to maximize power production and minimize corrosion. Unambiguous measurement of trace levels of corrosion causing contaminants is enabled with effective operator supervision. A must product for startup and supercritical Boilers.

Features :

- All conductivity measurements
- No External Cooling Water Required
- Dual Redundant Columns
- Stainless Steel Construction
- Multi-parameter transmitter with single-screen display of all measurements
- Very High Accuracy
- Auto Ranging
- Integrated flow sensor with automatic heater shut-off if flow stops
- Precise detection of corrosive contaminants
- Inferred pH and CO₂
- Trend Graphs for all measurements
- Universal PCB
- Digital Sensors
- Emergency Stop Button
- Low Flow Cutoff

Benefits

- Faster Plant Startups and simpler turbine warranty compliance
- Easy displaying and monitoring of sample conditions
- Protects the system from thermal damage and maintenance
- Understand plant characteristics better and plan maintenance, avoiding plant shutdowns
- Colour Indicating Resin for depletion
- Alert for changeover of Cation Column

Applications

- Feed Water and Steam Monitoring
- Power Plant Steam Quality Monitoring
- Power Plant Condensate Monitoring



Universal Transmitter



Overview

Model LXT-330 Universal Transmitter measures the following:

- pH
- Conductivity (Contacting and Toroidal)
- Resistivity
- ORP
- Dissolved Oxygen
- Specific Ion (pION),
- Turbidity
- Chlorine Dioxide



The transmitter is a single or dual channel, universal, multi-parameter transmitter designed for the continuous online measurement of pH, conductivity, resistivity, dissolved oxygen, specifaion or turbidity in a general purpose environment.

- The communication protocol enables separation distance from transmitter to probe of up to 1000 feet.
- 4-20mA loop output and MODBUS are standard output options, with optional HART protocol.

Features:

- Cover a wide range of analytical applications.
- Single transmitter can be used for a variety of applications.

Benefits:

- The SP-3X sensors consist of rebuildable cartridges that are simply replaced as required, eliminating the cost and hassle of rewiring new probes for replacement.
- Simple Menu Structure: Intuitive, Easy to Navigate and Configure
- Graphic LCD Display: Easy to Read Graphical and Numerical Information

Conductivity Analyser (ATEX Certified)



Overview

For hazardous area installations, the Model LXT-380 offers a Class I Div 1 (Zone 1) and Class I, Div 2 (Zone 2) approved transmitter with NEMA-4 or NEMA-4X ingress protection. The explosion-proof enclosure is listed with FM and CSA as well as ATEX and IECEx as Ex d. Magnetic switches allow for menu navigation and access to transmitter functions.

Steam and Water Analysis System (SWAS)

Free Chlorine Analyser

Quick Overview

It is designed to monitor free chlorine in seawater, drinking water, rinse water, cooling water or other fresh water samples from 0.05ppm to 20 ppm chlorine as the standard range or 0.01 to 5 ppm with the low range sensor.

Features

- Panel Mounted System
- Plumb and Play Design
- Automatic pH compensation
- LXT330 /LXT380 Smart Transmitter
- Compliant with EPA method 334.0



TOC Analyser

Quick Overview

The 6700 series covers a complete range of Total Organic Carbon (TOC) Analysers capable of addressing a variety of industrial applications for process and environmental compliance purposes. It has a robust and reliable Infrared CO₂ at the heart of each design.

Features

Complies with EPA, ASTM and other standard approved methods for continuous TOC analysis.

- Rapid response
- Separate electronics and liquid compartments
- Low maintenance and easy access for service.

Colorimeter

Quick Overview

It uses Colorimetric or Ion Selective Electrode (ISE) technologies to perform an analysis. They are easy to start up and use, simply connect the sample, waste and reagent lines and then power up the Factory Calibrated analyzer.

Measures parameters such as Silica, Sodium, Phosphate, Hardness, Hydrazine, Chloride Chlorine etc.

Features

- Easy Installation
- User Friendly Menu Structure
- Touchscreen Interface
- Easy Process Configuration
- Epoxy Powder Coated Rugged
- Sample Low Reagent Alarms



Water Chiller

These Chillers are available in various combination



SEPL's chiller is designed with sufficient refrigeration capacity to ensure that sample stream temperature is up to $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. It is fabricated with complete stainless-steel construction. Chiller is in accordance with the ASME code. Refrigerant circuit consists of components such as thermostatic expansion valve, liquid line solenoid valve, sight glasses, filter-dryer, refrigerant shut-off and charging valves.

Features :

- Isothermal Bath type, Water/Air cooled type.
- Compact Design.
- Stand by Compressor & Pumps.
- Sample Coils of Stainless steel.
- Stainless steel Tank.
- Available upto 10 Tons capacity.
- Hermetically Sealed Compressor.
- Chillers are fully automatic with tried & tested controls.
- Truly 2x100% construction suitable (1W+1S).
- Wide range - 0.3 TR to 30 TR capacity
- Automatic switch over-Optional
- Energy Efficient design with VFD control- Optional
- Environment Friendly refrigerant Internationally available makes of components. Water Cooled and Air-Coaled Condenser Complete Stainless-Steel Construction- Optional
- Models for Hazardous area application - Optional.

- Evaporator - Shell & tube and Plate Heat Exchanger (PHE) type as per choice.
- Isothermal bath design - available on request.
- Truly sample outlet temperature off 0.5°C .
- Refrigerants - 134a, R407C, R22

Applications:

In sample handling systems, chillers are used to achieve outlet temperature of sample at 25°C . Chiller package is one of the important & valuable element of SWAS Unit.

Closed Circuit Water Circulation System

Features :

- 100% Stand - by Pump, Motor & Heat Exchangers.
- Auto - Change Over Facility.
- Fully Stainless Steel Construction.
- Capacity : Upto 120kw.
- Easy to Maintain.



**SWAS • CEMS • AAQMS • SHELTERS • ANALYZERS • EQMS • WQMS • CHILLERS
STEAM TRAPS • BALL FLOAT TRAP • PISTON VALVES • STRAINERS • PRDSH**



WORLDWIDE CUSTOMER BASE

| | | | | |
|------------|----------|--------------|-------------|--------------|
| Indonesia | Japan | Malaysia | Philippines | South Korea |
| Singapore | Thailand | Bangladesh | Nepal | Sri Lanka |
| Kazakhstan | Russia | Bahrain | Egypt | Iran |
| Jordan | Kuwait | Oman | Qatar | Saudi Arabia |
| Turkey | UAE | England | Finland | France |
| Greece | Hungary | Italy | Spain | Brazil |
| Chile | Colombia | Ecuador | Algeria | Rwanda |
| Sudan | Uganda | South Africa | Nigeria | Australia |
| | Canada | Mexico | USA | |



Steam Equipments Pvt. Ltd.

Plot No. - 44, Tiny Co-Op Ind. Est., Kondhwa Budruk, Pune - 411048, Maharashtra, India
 • Website : www.steamequipments.com
 • e-mail : sales@steamequipments.com
 • Phone : +91-20-26930908/60/61