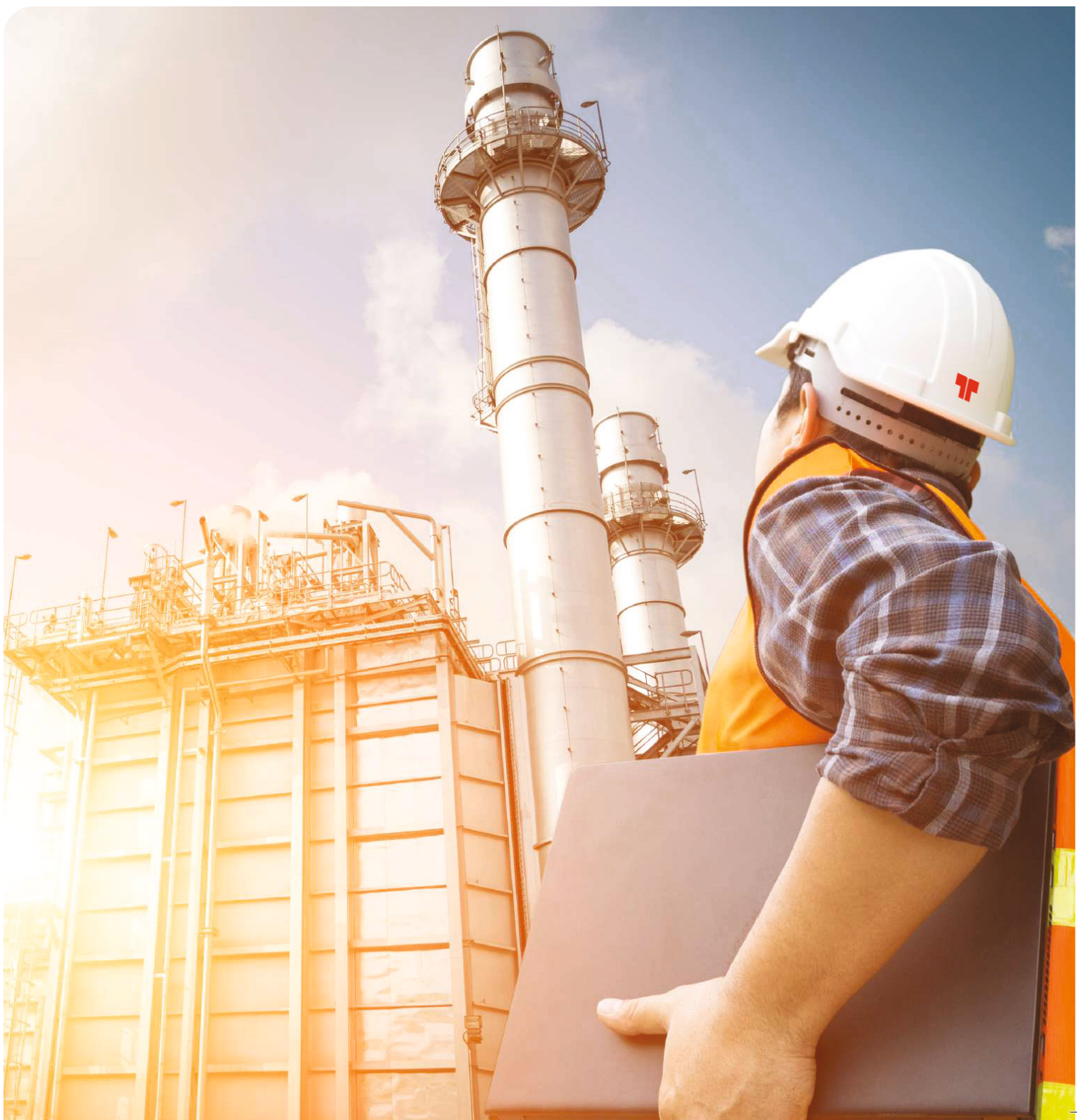




Steam Engineering



Comprehensive Steam Solutions for Diverse Applications



Conserving Resources, Preserving the Future.

Thermax is a USD ~1 Billion company offering solutions in the energy and environment space and a trusted partner in energy transition. Spanning over 90+ countries, Thermax provides essential solutions to industries for clean air, clean energy, and clean water, along with performance engineered chemicals and digital solutions.

Thermax's operations are supported by ongoing research and development, and tie-ups with global technology majors. Today, Thermax has a sales and service network spread over Asia, the Middle East, Africa, Europe, and the Americas. It has a network of 45+ Indian and international subsidiaries, and 16 manufacturing facilities - 12 of which are in India and four overseas – Denmark, Poland, Germany and Indonesia.

Business Portfolio



New steam systems

In large capital projects, such as the construction of new hospitals or factories, our expert sales engineers work with end users, their design consultants, or their contractors, to advise on, design or supply complete new steam systems.



Steam system audits

Detailed steam system audits, carried out by our sector specialist steam engineers, identify opportunities for improved efficiency in our end users' processes, including energy and water savings. Audits can identify the cause of known problems or uncover unrecognised needs.



Engineered solutions

Working directly with our customers, our sales engineers apply our deep applications and systems knowledge, breadth of products and expertise to create bespoke engineered solutions for energy and water savings, process efficiency, product quality and improvements in plant health, safety and regulatory compliance.



Maintenance, repair and operations

To maintain operational efficiency, production output and product quality, regular maintenance spending is required by our end users. We supply the replacement products required to keep our end users' steam systems operating at an optimum level and also offer service contracts.



Training

We offer training to our end users' technical and maintenance staff in training centre at Pune, the majority of which contain live steam systems. Our training courses equip our end users with the skills required to run their steam systems as efficiently and effectively as possible.



Energy Audit Services



OptiSteam[™]
Steam Audit Services

CompArCon[™]
Compressed Air Audit Services

At Thermax, we have a utility cost reduction team with experts from diverse disciplines. Our team is well equipped with technical and instrumental resources to undertake plant utility audit to optimize the present operational cost. We have the expertise to implement energy conservation solutions on a turnkey basis. We also undertake system and process study to improve productivity and bring down product costs.

The scope of utilities covered by us is as follows:

Steam
System

Thermic
Fluid
System

Compressed
Air System

Refrigeration,
Air Conditioning
and Cooling
Towers

Electrical Power
and Lighting
System



Our strengths

- BEE accredited energy service company
- Team of energy auditors, supported by experts from particular industry domain
- Accurate and calibrated instruments like flue gas analyzer, ultrasonic leak detector, ultrasonic water flow meter, TDS meter, pH meter, infra red temperature sensors, etc.
- Innovative approach and practically feasible solutions provider
- In depth technicality
- Strategic energy efficient proposals in congruence with the clients present and future needs

Utility Consultancy

Our utility consultancy helps business clients to design their systems on the best industry norms. It ensures optimum capital investment for expansion or for green field project requirements, and their timely completion. Our efficient systems for steam and condensate, thermic fluid, hot water and compressed air support various industry sectors, helping them to produce world class products at competitive cost.



Expertise Includes

- Selection of equipment
- Complete piping design
- Design of condensate recovery system
- Selection and sizing of pressure reducing stations
- Trap selection and sizing
- Insulation design
- Design of waste heat recovery systems

What we are aiming for

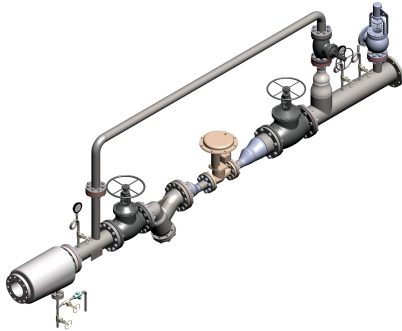
- Efficient and cost effective design
- Integrated approach results in shifting from simple engineering solution to a complete "Utility packaged solution"
- Engineering solution as per best industry norms considering energy conservation
- Developing preferred status for "Facility Energy Consultancy" in different industry segments

Utilities Covered

- Boiler house and steam distribution system
- Thermic fluid systems
- Chilled water systems
- Compressed air systems



Steam Engineering Products

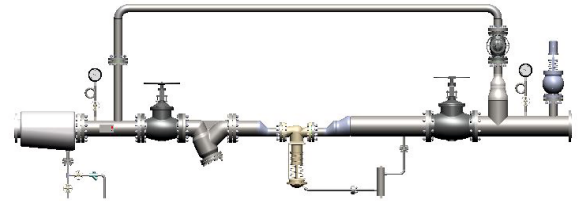


Pressure Reducing Station – Control Valve

- Suitable for both intermittent and continuous operation
- PID control loop ensures high accuracy and fast recovery from disturbance in downstream pressure
- Control valve trip heat treated and nitrated for higher life
- Operates even on low flow conditions
- Maintenance free and user friendly

Pressure Reducing Station - Direct Acting

- Suitable for both intermittent and continuous operation
- PID control loop ensures high accuracy and fast recovery from disturbance in downstream pressure
- Control valve trip heat treated and nitrated for higher life
- Operates even on low flow conditions
- Maintenance free and user friendly



Pressure Reducing and Desuper Heating System

- Completely customised to suit various pressure and temperature parameters
- Available upto Class 2500
- Designed superheated steam temperature upto 515 C
- Separate / combined systems based on technical feasibility
- Various designs of de-superheaters to get a turn down upto 40:1

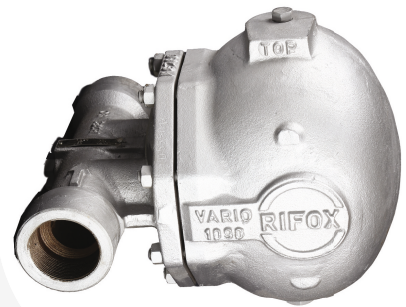


Bellow Seal Valve

- IBR approved bellow seal valves
- Available in the entire size range upto 250 NB
- Zero leak, Zero maintenance valve
- Bellow seal valves with multiple points of sealing ensures safe operation
- Special integral stellited seat

Float Controlled Steam Trap

- Available sizes are 15, 20, 25, 40, 50mm upto 100NB and PN 160
- Specially designed Rotary slide valve mechanism which operate effectively even at small differential pressure
- IBR approved float controlled trap
- Available in combination of Steam Lock Release (SLR) with Thermostatic air vent
- Designed for varying loads with continuous discharge
- Available in cast iron and WCB cast steel body with SS internals



Float Controlled Steam Trap - Wo

- Available sizes are 50, 80, 100 mm
- Specially designed Rotary slide valve mechanism ensures modulating flow controls at various loading conditions
- Very high resistance to water hammer.
- Highly recommended for very low differential pressure and very high condensate load condition.
- Increasing level opens and decreasing level closes the outlet port.

Float Trap With Integral Sight Glass

- The trap functioning can be monitored by the steam trap with integral sight glass and timely corrective action taken
- Modulating discharge
- Unique rotary slide valve design ensures modulating control of various load conditions.
- Operates at low differential pressure
- Discharges condensate at saturated temperature



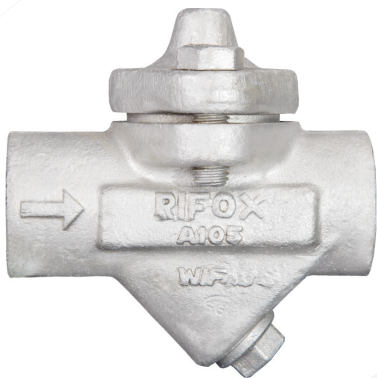
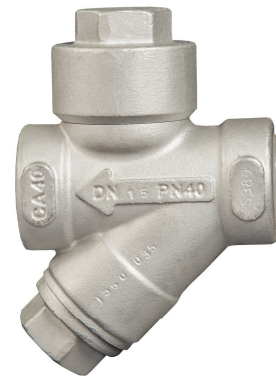


Float Trap Module

- Prefabricated ready to install module with flanged ends.
- Pre-engineered module reduces installation time, site engineering and eliminates problem of back pressure due to improper condensate pipe sizing.
- Module facilitates easy maintenance of steam trap and strainer cleaning
- Module is designed for effective condensate recovery
- Test valve for online performance checking of steam trap available

Thermodynamic Steam Traps

- Available in 15, 20, 25 NB sizes
- Maximum 250 bar / 550 C
- Only one moving part
- Hardening of the disc and seat ensures long life
- Available in single / three port design.
- Provided with an optional blow down valve
- Available in forged steel / SS body with SS hardened disc
- Easy to clean with built in SS 'Y' strainer
- Suitable for steam header drain application
- Disc can be replaced in field without removing trap



Thermostatic Steam Trap

- Provided with built in strainer
- Membrane capsule regulator resists corrosion and is unaffected by water hammer
- Discharge condensate below saturation temp leading to increased heat recovery from condensate
- Available in forged carbon steel with SS internals
- Modulating discharge - designed for varying loads with continuous discharge
- High air discharge capacity and can be used as air vent

Thermodynamic Trap Module

- Prefabricated ready to install module with flanged ends
- Pre-engineered module reduces installation time and site engineering activities
- Module facilitates easy maintenance of steam trap
- Recommended in steam mains and for steam header drain
- Both IBR certified and Non IBR TD trap module available
- Can also be supplied with bellow seal valves



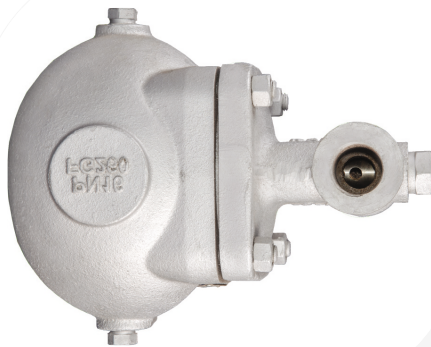


Thermostatic Trap (Minibody)

- Stainless steel body with SS internals
- Corrosion resistant internals
- Thermostatic membrane capsule regulator resists corrosion and water hammer
- Discharge condensate below saturation temperature (Sub-cooled condensate)
- Suitable for air venting application from saturated steam system

Bi-metallic Steam Trap

- Unique bow type corrosion resistant Bimetallic strip
- Hardened seating surface for erosion resistant
- Unaffected by water hammer and vibrations
- Integral Y type strainer provided
- Automatic air venting
- Installation in any position
- Suitable for main line drain for saturated and superheated steam and steam line tracing in Refinery and Petrochemical plants



Liquid Drain Trap

- Available sizes are : 15, 20, 25, 40 & 50
- The Rotary slide valve is both, swivel joint and shut-off device
- Discharges water from compressed air receiver/lines without any air loss
- Available in cast iron and cast steel body with SS internals.
- Suitable for compressed air and compressed gasses.

Y Strainer

- SS construction with SS mesh screen
- Available sizes are DN 15, DN20, DN25, DN40 and DN50
- This ensures an efficient and yet simple cleaning
- Different screen aperture sizes available on request
- The medium flows from the inside through the strainer, which retains any contaminant within the strainer instead of the housing
- Install before important equipment like pumps, pressure reducing stations, steam traps, control valves, etc.





Air Vent Module

- Prefabricated ready to install module with flanged ends
- Pre-engineered module reduces installation time and site engineering activities
- Module facilitates easy maintenance of steam trap
- Recommended at highest point of steam mains and dead end of steam lines
- Both IBR certified and Non IBR modules are available

Moisture Separator

- Removes suspended water particles from steam line and supply dry steam to equipment increasing the operational efficiency
- High efficiency due to removal of moisture particles upto 95%
- Dry steam increases process equipment efficiency
- Cyclonic type moisture separators are available
- Made from carbon steel ASTM A106 Gr. B
- Suitable for saturated steam applications



Air Eliminator

- Simplicity of design
- Corrosion resistant internals
- Maintenance free
- Rugged construction
- No spare parts required
- High quality precision internals
- Suitable for air elimination from liquid water systems

Disc Check Valve

- Compact design and fast installation
- Available in SS body with SS internals
- Minimum allowable temperature – 10 C
- Installation possible in all positions
- Certification IBR / Non IBR
- High flow area low pressure drop
- Soft seal like EPDM available





Automatic Condensate Transfer Pump

- Zero moving parts ensures high reliability and equipment availability, low maintenance, low downtime, low wear and tear
- High motive inlet pressure upto 10kg/cm² for pump. No need for pressure reducing and reduces initial cost
- High discharge per stroke
- High condensate temperature return
- No cavitation problems
- Skid mounted system - easy installation
- Weather proof design suitable for outdoor installation

Atmospheric De-aerator Head

- Stainless Steel de-aerator head with SS immersion tube prevents corrosion
- Efficient removal of dissolved oxygen and other gases from boiler feed water by thermal de-aeration
- Suitable for thermal de-aeration of boiler feed water



Flash Steam Generator

- Generates low pressure flash steam
- Not covered under Indian Boiler Regulation (IBR)
- Adequately sized to minimize pressure drop
- Steam trap sized to handle condensate at low pressure difference (to be fitted at condensate outlet)
- Designed with optimum separation velocity to get good quality steam
- Suitable for high pressure steam condensate

TACTS-Rx

- High reliability due to zero moving part
- No need of Pressure Reducing Valve / Station till 10 bar hence saving of installation cost
- Discharge condensate of 25 litres per stroke
- Weather proof IP52 and Ex-proof design option
- Skid mounted unit - easy to install
- High condensate temperature return - no cavitation
- issues as in electrical pump





PTCRS-Pump Trap Condensate Recovery

- Compact skid with inbuilt pumping and trapping unit
- Improved modulating condensate discharge through unique patented rotary slide valve design
- Operates at minimum differential pressure
- Higher condensate discharge capacities during pumping and trapping mode
- Negligible operating cost
- Longer equipment life due to reduced corrosion / erosion in heat exchanger
- Reduced maintenance

CPCRS-Compact Pressurised Condensate Recovery System

- Recovers loss of flash steam vented through condensate pump receiver to ensure condensate temperature exceeds above 100°C.
- Horizontal receiver with increased diameter results into better separation of flash steam from condensate.
- Higher hold up volume ensures efficient surge load handling without any overflow from tank.
- Compact skid - reduced foot prints. It helps to reduce water hammer in flash steam line.
- Conductivity based level control system - no moving parts in the system, high reliability and low maintenance. Built in SS strainer ensures no mechanical damage due to erosion to ball & seat assembly and elimination of steam leakage.



Thermax Valve Manifolds

- Compact design suitable where space is a constraint
- Fitted with integral piston valves as standard
- Sight fabrication avoided
- Suitable for steam and condensate applications
- Simple to install
- Forged steel construction with uniform stress distribution ensuring low maintenance and longer life
- Easy inspection & maintenance
- Tight shut off valves ensure no leakage of steam
- Suitable for saturated steam and condensate.

Steam Flow Meter

- Available range : 40 to 350 NB
- Zero maintenance cost due to zero moving part
- Orifice type steam flow meter
- User friendly programmable display unit, easy to install and re-calibrate at site
- Retransmission to PLC / PC on MODBUS RTU protocol, RS 232 or RS 485



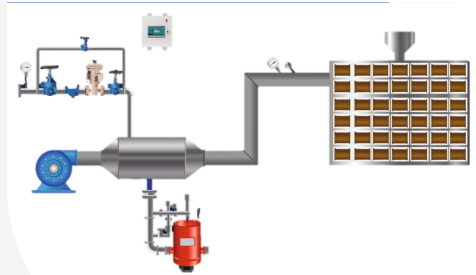


Realsteam - Dryness Measurement System

- Balanced all energies including Kinetic energy
- Rigorous testing done at various sites
- Certified by Indian Institute of Technology, Bombay
- Monitoring trends of key parameters
- Easy installation
- Plug and play - Flange to flange device

Ricemax - Rice Dryer Automation System

- The complete automatic system – no manual intervention
- Uniform Temp across the dryer
- Substantial Drying time reduction
- Improved product quality
- Steam saving – Reduced fuel cost
- 100% condensate recovery from dryer with PTCRS



Magnetic Level Gauge

- It is a safe device designed with the basic principle of buoyancy and magnetic attraction / repulsion
- Stainless steel tube and float
- Clear display by red and white flaps
- Typical applications include continuous monitoring of level in steam boilers, liquid tanks, for chemical industry both above ground and underground tanks

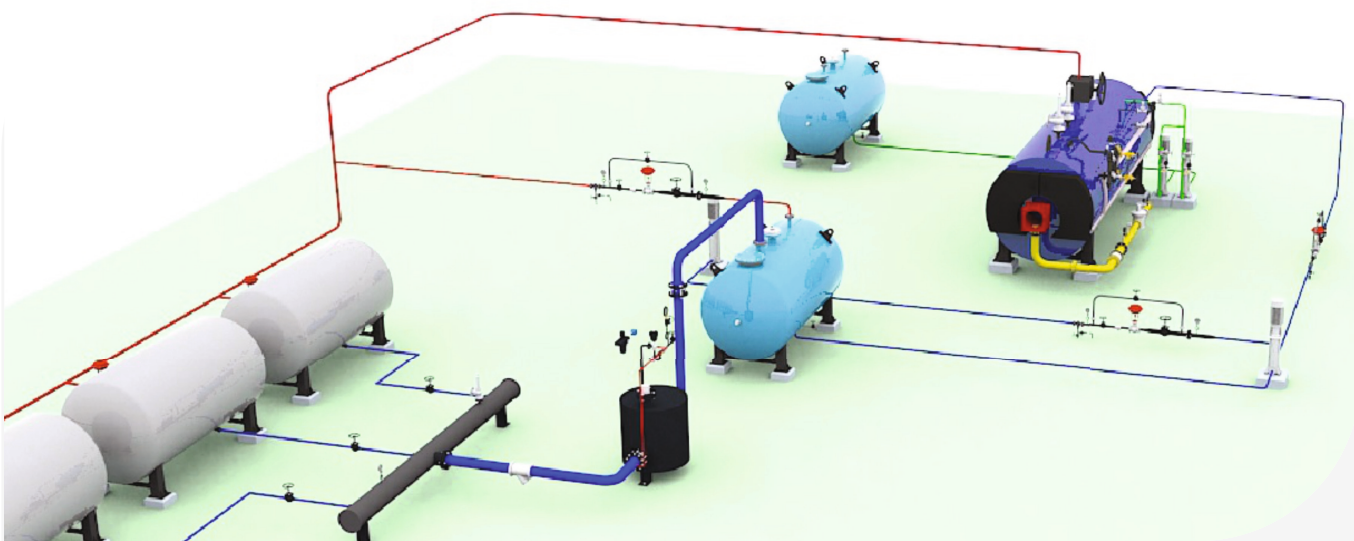
Surface Automatic Blow Down Control System

- Increases the boiler safety and efficiency
- Real time conductivity sensing and control avoids excessive blowdown of water from the boiler which has a very high heat value and excessive blowdown represents a loss
- Improved life of tubes and pressure vessel due to reduced scaling
- Enables accurate TDS control, since the TDS gets removed as it forms
- TDS control is most effective, if water is drained from near the steam water interface
- Avoids choking of the sensor chamber, which is otherwise common in bottom blowdown system.



Instantaneous Hot Water Generator

- Skid mounted unit - Easy and quick installation and commissioning
- Fully automatic operation - No manual intervention required
- Pump and trap combination used
- Compact and efficient PHE design ensures optimum stall heat transfer
- Efficient and complete condensate recovery, ensure minimum heat loss
- Range from 5 to 30 m³ of hot water flow rate; higher size available on request



High Pressure Condensate Recovery System (HPCRS)

- 100% Condensate heat and water recovery
- No flashing at feed water tank
- Enhanced boiler operating capacity
- Eliminates steam pressure fluctuations
- Improved steam dryness fraction
- Better boiler response to varying steam demand
- Water saving by flash recovery
- Reduced scaling of boiler tubes and wetted surfaces

Best Savings Achieved In –

- Corrugated Box manufacturing
- Plywood industry / Laminates industry
- Tyre manufacturing / Rubber Vulcanising / Tyre retreading / Rubber belt manufacturing
- Rice mills (Dryer)
- Tea Industry (Dryer)
- Paper Industry
- Fried Food Industry using steam (Chips, Potato products)
- Chicken Feed manufacturing plants with fish meal



National Award for HPCRS
by CII for Excellence in
Energy Management-2018

Steam Engineering Products- Other Offerings

01 Thermo-compressor

Application:

- To get intermediate pressure steam from low pressure steam like outlet of flash vessel by using high pressure motive steam

Industry:

- Chemical process, textile plants, food processing, sugar plant, refinery and petrochemicals, brewery and distillery, edible oil in solvent extraction plant, dairy evaporators, rubber for vulcanizers, pharmaceuticals, paper, steel plants

02 Hose Down Station

Application:

- To get jet of hot water at required temperature by mixing cold water and steam in a ventury mixing system and convey it to the using point through a high pressure hose

Industry:

- Cleaning application requiring high temperature cleaning like greasy surfaces. Examples are air craft food trolley cleaning, containers cleaning, fabric cleaning, etc.

03 Self Operating Temperature Controller

Application:

- SOTC are used for temperature control by using a temperature sensor, a thermostatic controller and a metallic capillary filled with a liquid. No additional utility like electricity or compressed air are required.

Industry:

- Feed water tank heating in a boiler, fuel oil tank heating, reactor heating, etc. are some of the applications. SOTC finds applications in chemical industry, food and pharma industry, etc



04 Control Valve

Application:

- To control flow of heating medium like steam or thermic fluid or cooling water or chilled water to control process temperature. Control valves form the final control element of the control system

Industry:

- 2 way and 3 way flow type mixing/diverting size Range 15 mm NB to 300 mm NB
- End connections both flanged and butt welding (socket weld and screwed upto 50 mm NB size)
- Valves are with cast steel body and SS 316 stellited trim with extended bonnet design for high temperature application
- Available with multi-spring diaphragm actuator or electric actuators

05 Dye Liquor Heat Recovery System

Application:

- To get hot water by recovering heat from waste water from dye house.

Industry:

- Textiles plant / dye house

06 Blow Through Systems

Application:

- To get higher speeds of steam heated rotary cylinders thereby getting higher production rates

Industry:

- Paper



Conserving Resources,
Preserving the Future.



Air Pollution
Control



Boiler and
Heater



Build-Own
-Operate



Chemical



Cooling



Projects and
Energy
Solutions



Process
Heating



Renewable
Energy



Water and Waste
Solutions

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