STEAM ENGINEERING

Product Portfolio

THERMAX

RIFOX
A Thermax Group Company

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

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

THERMAX

RIFOX
A Thermax Group Company

OptiSteam™
Steam Audit Services

auditherm®
Thermic Fluid Audit Services

CompAirCon™
Compressed Air Audit Services

iConserve™
Comprehensive 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 & Cooling Towers
- Electrical Power & 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 & 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

Utilities Covered -

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

What we are aiming for -

- Efficient & 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.

Our Products

Steam Engineering Products

Bellow Seal Valve

Features –

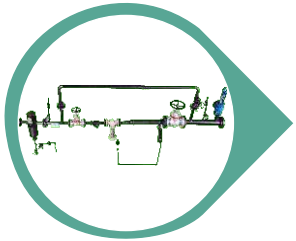
- IBR approved bellow seal valves
- Available in the entire size range upto 250 NB
- Zero leak, Zero maintenance valve
- Bellow seal valves with multiple points of sealing ensures safe operation
- Special integral stellited seat.

Pressure Reducing & Desuper Heating System

Features –

- Completely customized to suit various pressure & 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

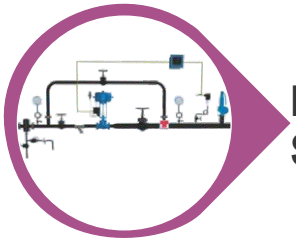
Steam Engineering Products



Pressure Reducing Station – Direct Acting

Features –

- Designed as per best steam engineering practices.
- Assured accurate consistent downstream reduced pressure irrespective of fluctuations at inlet
- Safety valve sized for full discharge capacity of the PRS
- Specially designed flow divider to ensure low noise level
- Both IBR certified & Non IBR PRS available

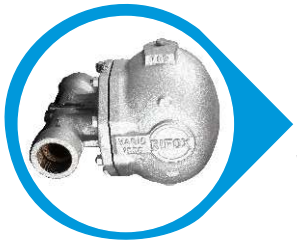


Pressure Reducing Station – Control Valve

Features –

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

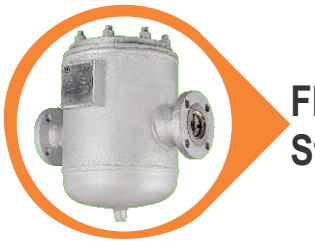
Steam Engineering Products



Float Controlled Steam Trap

Features –

- 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.

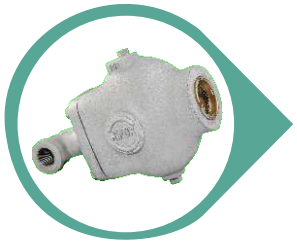


Float Controlled Steam Trap - WO

Features –

- 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 & very high condensate load condition.
- Increasing level opens and decreasing level closes the outlet port.

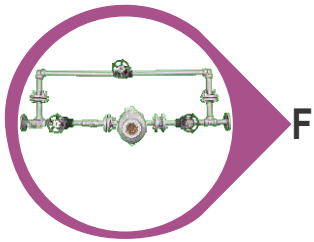
Steam Engineering Products



Float Trap with Integral Sight Glass

Features –

- 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

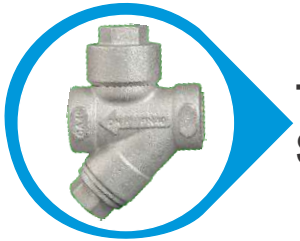


Float Trap Module

Features –

- 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

Steam Engineering Products



Thermodynamic Steam Traps

Features –

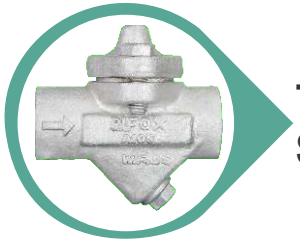
- Available in 15, 20, 25 NB sizes
- Maximum 250 bar / 550°C
- Only one moving part
- Hardening of the disc & seat ensures long life
- Available in single / three port design.
- Provided with an optional blow down valve
- Available in forged steel / SS body with SS hardened disc
- Easy to clean with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

Thermodynamic Trap Module

Features –

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

Steam Engineering Products



Thermostatic Steam Trap

Features –

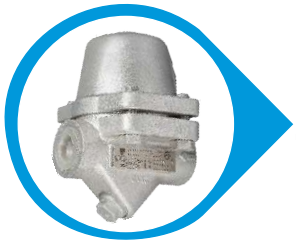
- Provided with built in strainer
- Membrane capsule regulator resists corrosion and is unaffected by water hammer
- Discharge condensate below saturation temp leading to increased heat recovery from condensate
- Available in forged carbon steel with SS internals
- Modulating discharge - designed for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

Thermostatic Trap (Minibody)

Features –

- 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.

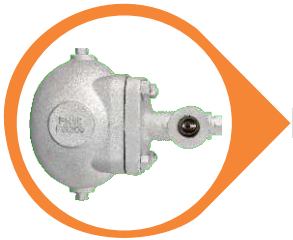
Steam Engineering Products



Bi-Metallic Steam Trap

Features –

- 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 & steam line tracing in Refinery & Petrochemical plants



Liquid Drain Trap

Features –

- Available sizes are : 15, 20, 25, 40 & 50
- The Rotary slide valve is both, swivel joint & 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.

Steam Engineering Products

Garment Iron Trap

Features –

- Economically cheaper option
- Adequate steam condensate discharge capacity
- Simple to install & operate
- Low maintenance
- Compact and better accepted as an alternative to conventional thermodynamic steam trap
- No special connectors required for connecting to steam irons
- Reduced steam leakages
- Reduction in startup time

Air Vent Module

Features –

- Prefabricated ready to install module with flanged ends
- Pre-engineered module reduces installation time & 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 & Non IBR modules are available.

Steam Engineering Products

Y Strainer

Features –

- SS construction with SS mesh screen
- Available sizes are DN15, DN20, DN25, DN40 & 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.

Sight Glass

Features –

- Available sizes are DN15, DN20, DN25, DN40 & DN50
- Enables an error free diagnosis of the steam trap performance
- Clearly distinguishes the steam and condensate flow
- Can be mounted in both horizontal & vertical flow directions
- No requirement of change in assembly for changing the direction of mounting.
- Available in cast iron and cast steel body.

Steam Engineering Products

Disc Check Valve

Features –

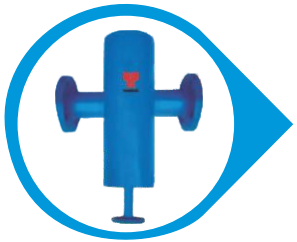
- Compact design & fast installation
- Available in SS body with SS internals
- Minimum allowable temperature – 10°C
- Installation possible in all positions
- Certification IBR / Non IBR
- High flow area low pressure drop
- Soft seal like EPDM available

Ball Valve

Features –

- Special 3 piece design
- Valve internals can be accessed and cleaned online
- Easy maintenance - valve need not be removed from the pipeline for maintenance
- Leakage free due to adjustable stem packing
- Designed to handle most severe service application
- Equipped with internally mounted blowout proof stem
- Higher product life cycle
- Improved seat design ensure longer life & bubble tight shut off offers low torque.

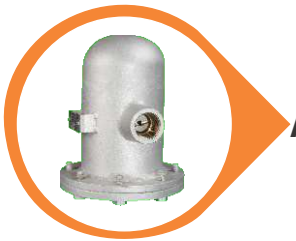
Steam Engineering Products



Moisture Seperator

Features –

- 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

Features –

- 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

Steam Engineering Products

Vacuum Breaker

Features –

- SS Body with SS internals
- Suitable for pressure up to 20kg/cm^2 and temperature up to 200°C.
- Compact and light weight
- Simple to install
- Suitable for preventing vacuum due to condensing of saturated steam in equipment
- Suitable for draining compressed air / compressed gas systems

Diffuser

Features –

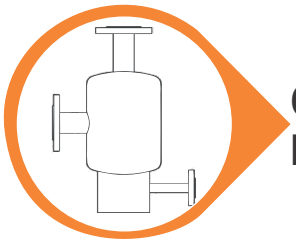
- All Stainless steel construction
- Suitable for high pressure application up to 63 kg/cm^2 pressure
- Compact and light weight
- Simple to install
- Suitable for application on intermittent type steam traps like Thermodynamic and inverted bucket
- Also suitable for steam condensate from saturated steam lines

Steam Engineering Products

Automatic Water Extractor

Features –

- Removes the accumulated steam condensate from the equipment while steam heating system starts up.
- Automatic in nature
- Low maintenance
- Suitable for steam heated equipment like heat exchanger, Rotary cylinder dryers, ball float steam trap assembly, etc.
- Built in SS strainer ensures no mechanical damage due to erosion to ball & seat assembly and elimination of steam leakage.



Condensate Dampening Pot

Features –

- Protects steam / condensate piping system, valves and plants from being damaged by water hammer.
- Simple and compact design
- No wearable parts
- No maintenance required
- Suitable for installing on condensate pipe lines

Steam Engineering Products

Automatic Condensate Transfer Pump

Features –

- Zero moving parts ensures high reliability and equipment availability, low maintenance, low downtime, low wear & 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

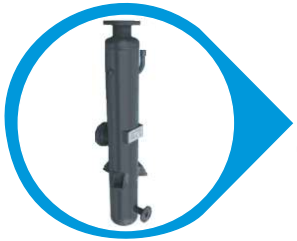
Atmospheric De-aerator Head

Features –

- 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.

Steam Engineering Products

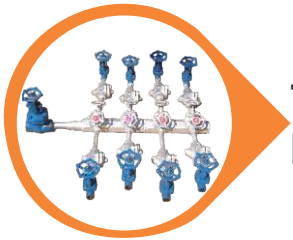
Flash Steam Generator



Features –

- 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

Thermax Valve Manifolds



Features –

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

Steam Engineering Products

Steam Flow Meter

Features –

- 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 & re-calibrate at site.
- Retransmission to PLC / PC on MODBUS RTU protocol, RS 232 or RS 485

Water Flow Meter

Features –

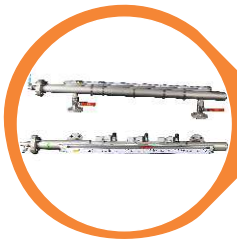
- Capability to read two additional analog input (0 to 1.25 V DC)
- RS-485 port to interface with field equipments
- Equipped with operator menu based interface for setting up and servicing
- Pre-amplifier can be located in the signal convector enclosure or can be separated for longer distances between sensor head & converter
- Retransmission (4-20 mA) & Remote transmitter / Display is possible (Optional)

Steam Engineering Products

Effimonitor

Features –

- PLC based controller
- Displays Co2 and flue gas loss in steam boilers
- Indicates boiler's health by displaying the operating efficiency as per BS 845, and helps take corrective action
- Add on feature of web based monitoring
- Provision of alarms and alarm reports.
- Stores boiler performance data for long periods for review
- Tailor-made reports / trends (as optional)



Magnetic Level Gauge

Features –

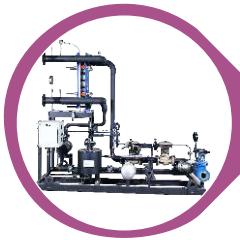
- It is a safe device designed with the basic principle of buoyancy and magnetic attraction / repulsion
- Stainless steel tube and float
- Clear display by red and white flaps
- Typical applications include continuous monitoring of level in steam boilers, liquid tanks, for chemical industry both above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

Steam Engineering Products

Surface Automatic Blow Down Control System

Features –

- 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.



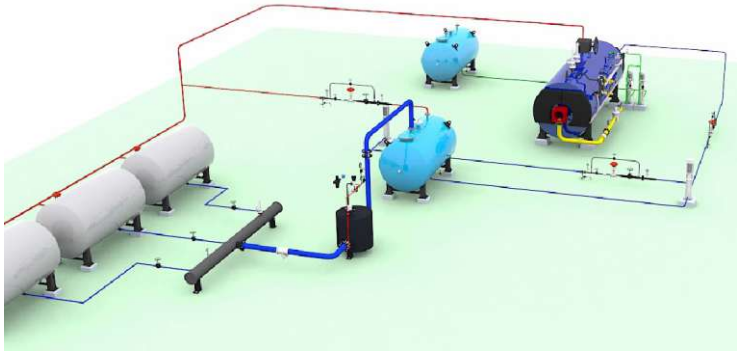
Instantaneous Hot Water Generator

Features –

- Skid mounted unit - Easy and quick installation & commissioning.
- Fully automatic operation - No manual intervention required
- Pump and trap combination used.
- Compact & 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

Steam Engineering Products

High Pressure Condensate Recovery System (HPCRS)



Features –

- 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

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

Best Savings Achieved In –

- Corrugated Box manufacturing
- Plywood industry / Laminates industry
- Tyre manufacturing / Rubber Vulcanizing / 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

THERMAX

Steam Engineering Products

RIFOX
A Thermax Group Company

Other Offerings

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 & petrochemicals, brewery & distillary, edible oil in solvent extraction plant, dairy evaporators, rubber for vulcanizers, pharmaceuticals, paper, steel plants

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.

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 & pharma industry, etc

Blow Through Systems

Application –

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

Industry –

- Paper

THERMAX

Steam Engineering Products

RIFOX
A Thermax Group Company

Other Offerings

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

Specification –

- 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 upt0 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

Dye Liquor Heat Recovery System

Application –

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

Industry –

- Textiles plant / dye house

Oil Flow Meters

Application –

- Gear type oil flow meters to measure flow rate of fuel oil like Furnace oil (FO), High speed diesel (HSD), Light diesel oil (LDO)

Specification –

- All boilers and furnaces using the specified fuels. Sizes available are 20, 25, 40 and 50 mm NB.

THERMAX

Contact us

RIFOX
A Thermax Group Company

THERMAX
Sustainable Solutions in Energy & Environment

Registered Office

D-13, MIDC Industrial Area,
R D Aga Road, Chinchwad, Pune 411019, India

Tel : +91 20 66122999 / 66155000
Fax : +91 20 27472049

enquiry@thermaxglobal.com

www.thermaxglobal.com

SteamEngineering@thermaxglobal.com

Thermax Business Portfolio

- Heating
- Cooling
- Power Generation
- Air Pollution Control
- Chemicals
- Water and Wastewater Solutions
- Solar
- **Steam Engineering**

Publication No : SSBU/2015/DIV -PP