An Innovative Technology Company
Providing Energy and Emission Reduction Solutions

THERMAL ENERGY INTERNATIONAL

SUMMIT
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GEM® Condensate Return System

Product Catalog

GEM

Since the industrial revolution over 100 years ago, steam has been the backbone of manufacturing, helping to heat, mix, evaporate, distill, brew, cure and generally process materials within all aspects of the production process.

Now steam users are faced with new challenges…

- Ever-rising production targets
- Escalating fuel costs
- Shrinking margins and global price pressures
- Emission limits and regulations
- Growing maintenance costs
- Low steam trap reliability and high failure rates

The GEM™ Condensate Return System featuring GEM™ Steam Traps

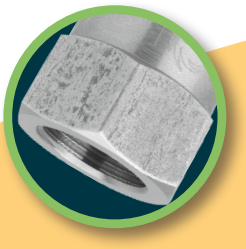
- Enhanced efficiency and reliability
- 10% to 30% reduction in steam costs
- Permanent energy savings backed by 10 year No-Fail Guarantee
- Avoided repair and maintenance costs

Condensate receiver vent at a hospital laundry before and after fitting GEM™ Traps.

BEFORE GEM™ Traps

AFTER GEM™ Traps

The GEM™ Trap has changed the way many view steam traps, providing a permanent solution with no moving parts to wear out or fail.



With nothing to wear out, we have been providing the GEM™ Trap with a 10 year guarantee for over 15 years. That's over 100,000 units with none returned. Since GEM™ Traps are guaranteed, maintenance is minimized and the cost of ownership reduced.

Advantages

Permanent energy savings

- 10% to 30% permanent reduction in steam costs
- Superior design resulting in enhanced efficiency
- 10 Year No-Fail Performance Guarantee

Excellent return on investment

- No moving parts = no trap failures = minimal downtime
- Simple paybacks typically range between 1 and 2 years
- Significant operational benefits from avoided repair and maintenance costs

Ultimate reliability and safety

- Elimination of water hammer, condensate back-up and/or explosions from failed valves
- Solid stainless steel construction
- No “wire draw” and/or wear of orifice

Increased production

- Faster system warm up = quicker batch times
- No back pressure from failed traps
- Less thermal shock = increased plant reliability

Minimal maintenance

- No spares required
- No kits to fit
- No endless trap surveys or test equipment and devices required
- Simple periodic cleaning of strainer and
- easy-to-clean bodies

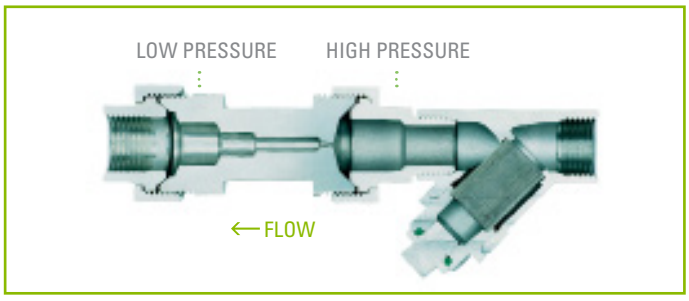
More control and heat output

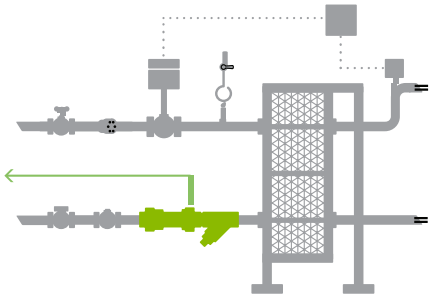
- Capable of operating under a full range of variable load conditions
- Self regulating vs. opening and closing of mechanical trap valves
- Constant vs. intermittent condensate drainage

Superior product and service

- Full range of traps available
- Full traceability – each trap has individual serial and batch number
- Compact size – less heat loss and reduced space requirements
- Flexible orientation and configurations
- Tailor made insulation bags – GEM Traps do not need to lose heat to operate
- Optimal performance guaranteed – GEM Traps are individually sized for your requirements

Functionality of GEM™ Condensate Return System





GEM™ Traps work by using the difference in density between steam and condensate. Condensate is 1,000 times denser than steam and will pass through an orifice much slower than steam.

The slow moving condensate squeezes out low density steam as it approaches the orifice. The high density, slow moving condensate is then preferentially discharged through the orifice, trapping the low density steam behind. The patented “venturi” orifice regulates condensate capacity over the full range of operating conditions.

Start up

- Air and non-condensables vent through the orifice at high velocity
- Cold condensate discharges at a rate of 2 to 3 times running load

Running load

- Steam is held back by liquid condensate forming a seal at orifice
- Hot condensate flows through venturi, moving from high to low pressure conditions
- A portion of the condensate re-evaporates as “flash” steam, creating localized back pressure
- The point of flashing moves in the venturi as a function of condensate flow rate regulating capacity in response to varying load conditions

RUBY STEAM TRAPS (Integral filter option for low duty applications)

Suitable for flanged applications

Operating Parameters:
PMA & PMO: 1450 psi (100 bar)
TMA & TMO: 935°F (500°C)

Flange rating:
Suitable for all standard flanges

Pipe Connections:
1/2" - 4" (15 mm - 100 mm)
With optional filter: 1/2" - 1" (15 mm - 25 mm)

Material:
303 Stainless Steel

TOPAZ STEAM TRAPS

For clean steam applications

- Crevice free
- Hygienic
- Smooth internal surfaces to 32 µin (0.8 µm)*
- Easy to clean and sterilize

Operating Parameters:
PMA & PMO: 145 psi (10 bar)
TMA & TMO: 392°F (200°C)

***Please request details**

Pipe Connections:
1/2" - 1" (15 mm - 25 mm)

Material:
316 Stainless Steel

QUARTZ STEAM TRAPS

For low load drip leg and trace heating lines

Operating Parameters:
PMA & PMO: 720 psi (50 bar)
when gasket fitted to torque of 37 lb.ft (50 N.m)
TMA & TMO: 935°F (500°C)

Pipe Connections:
BSP/NPT
1/2" - 3/4" (15 mm - 20 mm)

Material:
303 Stainless Steel

SAPPHIRE STEAM TRAPS

Suitable for threaded connections (insulation bags available)

Operating Parameters:
PMA & PMO: 250 psi (17 bar)
TMA & TMO: 750°F (400°C)

Pipe Connections:
BSP/NPT thread
1/2" - 2" (15 mm - 50 mm)

Material:

Trap body	303 Stainless Steel
Union & Strainer	316 Stainless Steel

Strainers not supplied for sizes larger than 1" (25 mm)

EMERALD STEAM TRAPS

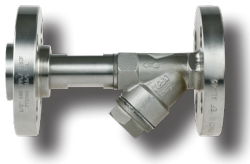
For use with any universal 2-bolt quick-fit connectors* (insulation bags available)

Operating Parameters:
PMA & PMO: 1450 psi (100 bar)
TMA & TMO: 935°F (500°C)

***Supplied with flanges upon request**

Pipe Connections:
BSP/NPT/SW
1/2" - 3/4" (15 mm - 20 mm)

Material:
316L Stainless Steel



DIAMOND STEAM TRAPS

For high pressure process applications

Operating Parameters:
PMA & PMO: 730 psi (50 bar)
TMA & TMO: 750°F (400°C)

Material:
316L Stainless Steel

Pipe Connections:
PN16/25/40
1/2" - 1" (15 mm - 25 mm)
ASME connections available

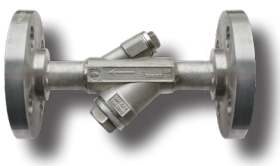
OPAL STEAM TRAPS

For low load line drainage and trace heating lines (insulation bags available)

Operating Parameters:
PMA & PMO: 730 psi (50 bar)
TMA & TMO: 750°F (400°C)

Material:
316L Stainless Steel

Pipe Connections:
BSP/NPT/SW
1/2" - 3/4" (15 mm - 20 mm)
Flanged connections available



FLANGED OPAL STEAM TRAPS

For low load line drainage and trace heating lines (insulation bags available)

Operating Parameters:
PMA & PMO: 730 psi (50 bar)
TMA & TMO: 750°F (400°C)

Material:
316L Stainless Steel

Pipe Connections:
PN16/25/40 ANSI 150/300/600
1/2" - 3/4" (15 mm - 20 mm)
1" (25 mm)

Thousands of GEM Traps have been installed worldwide, permanently cutting costs for blue chip international companies.

- Aesica
- Allergan
- BASF
- Bayer
- Boots
- Cadbury
- Carlsberg
- Chivas Brothers
- Coca-Cola
- Corus
- Diageo
- Dow Corning
- Dupont
- EON
- Exxon
- Ferrero
- Fruit of the Loom
- GlaxoSmithKline
- Glenmorangie
- Heinz
- Huntsman
- Interbrew
- International Paper
- Kerry Foods
- KNPC
- Kraft
- Loders Croklaan
- McCain Foods
- Merck
- Michelin
- Nestle
- NHS
- Novartis
- Pfizer
- Pirelli
- Premier Foods
- Rolls Royce
- Sappi
- Shell
- Tate & Lyle
- Unilever Uniqema
- Whyte & McKay
- Weetabix
- Wrigley

Thermal Energy: Supplying Innovative Award-Winning Energy Recovery, Conservation, Bioenergy and Emission Reduction Solutions

TEI is a full service, design-build firm with engineering accreditation, established in 1986. We have designed and built many energy and emission reduction solutions for our customers.

Our team of professionals is highly experienced in plant and process energy efficiency evaluations and innovative solution development. We conceptualize, design, manufacture and deliver custom solutions which reduce your energy costs, improve energy efficiency and reduce the environmental impact of your facility.

We pride ourselves on working with customers to gain an in-depth understanding of their business, corporate, social and fiscal challenges. With this sound footing, our team of professionals provides complete solutions from initial design concept to installation, to financing and servicing of varied technology solutions.

Typical applications include:

- Waste energy recovery (FLU-ACE® and other);
- Biomass and waste steam drying solutions (DRY-REX® and other);
- Steam and condensate system solutions (GEM® and other); and
- Burner/Boiler system improvements.

Contact Thermal Energy today to discover how GEM steam traps can revolutionize your company's production efforts!

British Assessment Bureau
UKAS MANAGEMENT SYSTEMS 8289
ISO 9001
QUALITY MANAGEMENT

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