

ARI-Systems

SYSTEMS, VESSELS AND MODULES FOR THERMAL PROCESSES



W. T. Maye, Inc. (WTMI)

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ENCOSys®

Heat exchanger systems



Energy-efficient
steam pressure control

Heat exchanger systems

With energy-efficient steam pressure control for heating systems or fast steam-side control for process applications

Both ARI-ENCOSys® systems are built on a stainless steel frame. The safety devices which DIN EN 12828 requires (or acc. to country regulations) to be installed in heat generating systems are selected and integrated according to the system's heat capacity. The use of smart control technology ensures that the upstream flow temperature is maintained at precisely the set value. When a safety component trips, the primary energy is reliably shut off and the system is transferred to an operationally safe condition. The heat capacity, materials to be used, design of control valves, etc. are individually adjusted to the local condition according to the customers application.

If necessary, the systems are equipped with actuators in acc. with DIN EN 14597 (temperature control devices and temperature limiters for heat generating systems).

Temperature control in a process-safe design – **we handle it!**



**Fast steam-side
power control**

Energy-efficient condensate accumulation control for heating systems

The heat transfer process is achieved using a vertical, high-performance shell-and-tube heat exchanger. It is controlled by a control valve on the primary side (condensate outlet from the heat exchanger). The control valve regulates the level of condensate in the vertical heat exchanger. The condensate level in the heat exchanger rises or falls depending on the system load case. This ensures a precise upstream temperature on the secondary side.

- Energy-efficient solution
- CO₂ reduction through up to 15% less steam consumption
- No flash steam– no water hammer!
- Compact design
- Engineering – Sizing – Design – Commissioning – our one-stop-shop philosophy!

Fast steam-side power control for process applications and heating systems

The heat transfer process is realised by a horizontal high-performance shell-and-tube heat exchanger. It is regulated by a control valve on the primary side (steam inlet to the heat exchanger). This system is ideal for applications with low hysteresis and discontinuous processes with rapid load changes.

- Fast reaction to load changes (discontinuous processes)
- Efficient control for processes
- Robust and operationally reliable design thanks to shell-and-tube heat exchanger
- Engineering – Sizing – Design – Commissioning – our one-stop-shop philosophy!

PREsys®

Pressure reducing systems



Pressure reducing systems

Assembled as a complete unit

The PREsys® systems reduce an inlet pressure (primary pressure) to a constantly adjustable outlet pressure (secondary pressure) for various consumers. The pressure is reduced either by a self-acting regulator or by a control valve with pneumatic actuator and digital positioner. The pressure reduction systems are calculated and designed exactly according to the operating conditions. The materials, nominal diameters, system components and

safety equipment are designed specifically for the customer in compliance with the harmonised regulations. A control cabinet with compact controller (ARI process controller) can also be part of the scope of delivery.



- Precise engineering and process-safe design
- Customized design
- No thermal shocks due to line drainage
- Selection and sizing according to process engineering requirements
- Plug & Work complete system

- Precise and simple setpoint adjustment
- Engineering – Sizing – Design – Commissioning – our one-stop-shop philosophy!

Pressure reduction in safe hands –
we handle it!

CORsys® E

Condensate recovery and return system



Compact condensate recovery and return system

For collecting and returning condensate, for reuse in the boiler house.

The material and size of our systems are designed specifically for the customer according to the operating data and the local space conditions. By means of hydrostatic level detection, the collected condensate is returned by multistage centrifugal pumps. The control cabinet and valves are also part of the system. The CORsys® E condensate return systems are rectangular (TAW profile design) or cylindrical (upright/lying). Rectangular tanks in compact design are welded directly

to the pump plate on a steel or stainless steel base frame. The systems can be designed with a non-pressurised or pressurised container greater than 0.5 bar(g) in accordance with the PED 2014/68/EU with CE marking. Please enquire about the approvals valid in your country by contacting the company responsible for you. Optionally, we insulate the systems. To increase energy efficiency, we recommend using the re-evaporation through an exhaust vapour condenser.



- No cavitation due to the use of low-NPSH pumps
- Compact base frame construction with pump module
- Safe level measurement & pump control
- Plug & Work
- High system safety even in the event of pump failure (overflow)

- High stability even with rectangular tanks due to TAW profile design
- Protected against dry running and flooding
- Engineering – Sizing – Design – Commissioning – our one-stop-shop philosophy!

Electrical recirculation of condensate – **we handle it!**

CORsys® M

Condensate recovery and return systems



Compact condensate recovery and return systems

With mechanical condensate pump for the return of condensate

The condensate produced is collected in a cylindrical tank above the condensate pump before it flows into the mechanical condensate pump where it is subsequently conveyed back to the boiler house in combination with the motive medium (mainly steam, alternatively compressed air). The systems are completely pre-piped and mounted on a stainless steel base frame.

The CORsys® M systems are particularly suitable for use in potentially explosive areas that are subject to EX protection (ATEX zone).

- Compact design
- Applicable in ATEX zone
- No power supply required
- Engineering – Sizing – Design – Commissioning – our one-stop-shop philosophy!

Mechanical recirculation of condensate – **we handle it!**

Pure Steam Generators



Pure Steam Generators

For sterilisation and air humidification as well as for use in the food industry, e.g. for the production of milk powder

Process steam, hot water or heat transfer oil is used as the primary medium (energy supply) to generate the pure steam from demineralised water. All components, fittings and field instruments on the "pure" side are made of austenitic stainless steel. The tanks comply with the PED 2014/68/EU and are customised, designed and manufactured to meet local space requirements.

- Compact solution in horizontal design
- Durable system with maintenance-free valves
- High safety due to permanent conductivity monitoring
- Long service life due to welded tubes in the tube plate
- Engineering – Sizing – Design – Commissioning – our one-stop-shop philosophy!

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Pure steam generation –
we handle it!

Control and Regulation Systems



Control and Regulation Systems

Individual control cabinet construction for ARI-Systems

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In connection with the ARI-Systems installations, our customers also have the option of obtaining the control and regulation technology through ARI. For this purpose, the required control cabinets are adapted to the needs of our customers.

We offer a wide range of options, from the simple stand-alone controller to the full-fledged PLC with operation and visualisations on a touch panel as well as communication via various bus systems.

- Individual design
- Touch panel or LCD display
- Signal transmission via various bus systems, e.g. Profibus, Profinet, BAC Net and many more.
- Engineering – Sizing – Design – Commissioning – our one-stop-shop philosophy!

Individual control cabinet construction – **we handle it!**

Feedwater Tank

with deaerator dome



Feedwater Tank

For heating and keeping feed water warm

Boiler feed water is preheated and kept at set temperature in the feed water tank before it enters into the steam boiler (open feed water tank approx. 104°C / 0.2 bar). In addition, inert gases such as oxygen and CO₂ are expelled from returning condensate to protect the steam boiler from corrosion. In the counterflow principle, the returning condensate is introduced at the highest point of the deaerator dome. The steam flowing in the opposite direction binds the inert gases and ejects them. The feed water is kept at set temperature in the feed water tank directly via a steam lance or via steam injectors. The steam supply for discharging the inert gases is realised by an additional steam connection at the lowest point of the deaerator dome or on the top of the feedwater tank.

Centrifugal pumps feed the thermally processed feed water to the steam boiler/evaporator.

- Safe degassing (CO₂ and O₂)
- Removable (flanged) deaerator dome
- High operational safety
- Plug & Work
- Engineering – Sizing – Design – Commissioning – our one-stop-shop philosophy!

Feedwater processing –
we handle it!

Mixing Cooler



Mixing Cooler

For cooling hot waste water (boiler water from blowdown and desalination processes)

The prescribed temperature for discharge into the public sewage networks is a maximum of 40°C (depending on the country).

A mechanical temperature controller regulates the flow rate of the cold water required for cooling. The waste water cooled to the target temperature is discharged into the waste water network as waste. The design and construction of the mixing cooler are carried out in consultation with the plant representative and in consideration of the local conditions.

- Compact design
- Smoothly controlled cold water supply
- No thermal shocks
- Includes controller without auxiliary power

Mixing coolers for cooling hot waste water – **we handle it!**

Flash Vessel



Flash Vessel

To use the re-evaporation energy

The re-evaporation is fed into a steam network that is operated at a lower pressure than the injected condensate. Condensate flash vessels are ideal components for increasing energy efficiency in industrial plants that require different steam and condensate pressures for production.

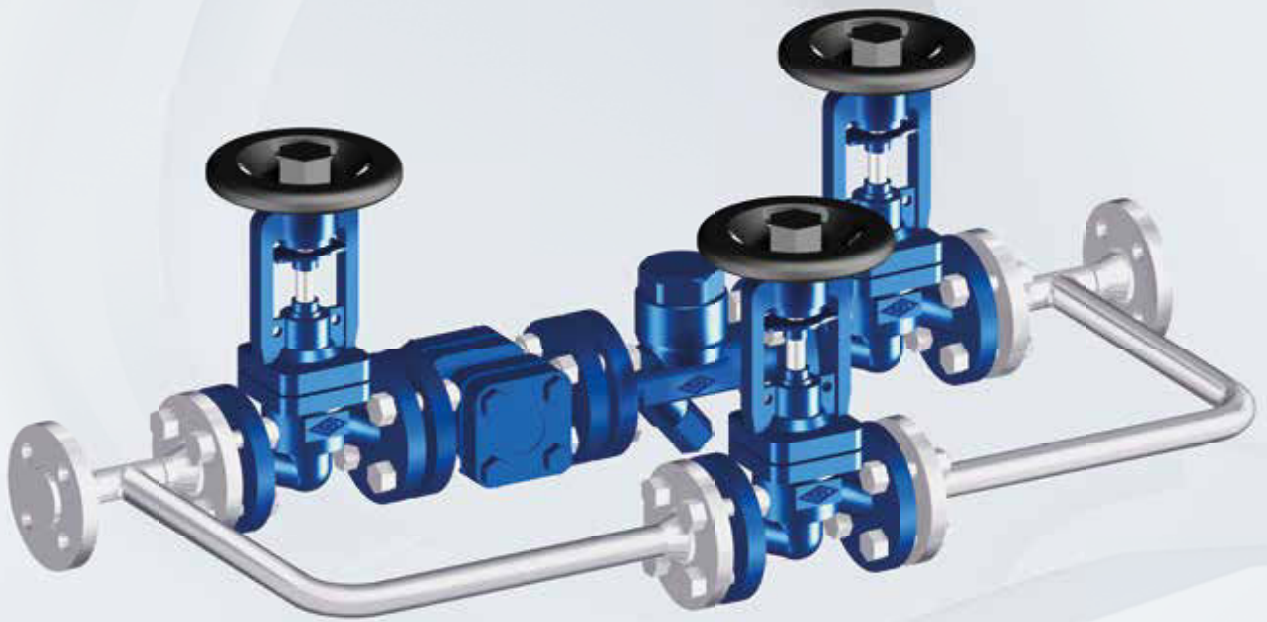
Function: The incoming high-pressure condensate automatically expands in the flash vessel to the lower pressure level of the downstream consumer. The resulting re-evaporation is supplied to the consumer in terms of energy.

The remaining low-pressure condensate is fed via a float steam trap, ARI-CONA® S, to the steam and condensate circuit or to another flash vessel.

- Reduced operating costs
- CO₂ saving
- Effective use of relaxation energy

Flash vessel –
we handle it!

Steam Trap Stations



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Steam Trap Stations

For draining steam users, separators and manifolds as well as for conventional pipeline drainage

The condensate produced is discharged through the ARI steam traps, which are precisely designed for the amount of condensate produced, and fed directly or indirectly via condensate recovery systems to the steam-condensate circuit. The design and dimensioning of the steam traps takes particular account of thermodynamic processes such as re-evaporation and pipe velocity. The steam trap stations are manufactured as a pre-assembled unit, with bypass if required, in the material to be considered.

The design and operating principle of the steam traps are specified for the corresponding applications and operating data.

- Completely assembled Plug & Work unit
- Safe construction
- Many additional options available

Discharge of condensate –
we handle it!

Separators

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Separators

To separate the water droplets from the saturated steam

By draining off the water droplets, the service life of the downstream valves and components, such as control valves or pressure reducing valves, is considerably increased. A cyclone separator is a pressure-bearing vessel, designed in accordance with PED 2014/68/EU, in which the steam flow is diverted into a rotary motion. Due to the centrifugal force that occurs, the water droplets are flung against the outer wall of the separator and discharged downwards.

- Approx. 98% degree of dryness due to cyclone design
- Low pressure loss due to large-volume jacket
- Safe discharge of condensate

High-performance separator –
we handle it!

Sample Coolers



Sample Coolers

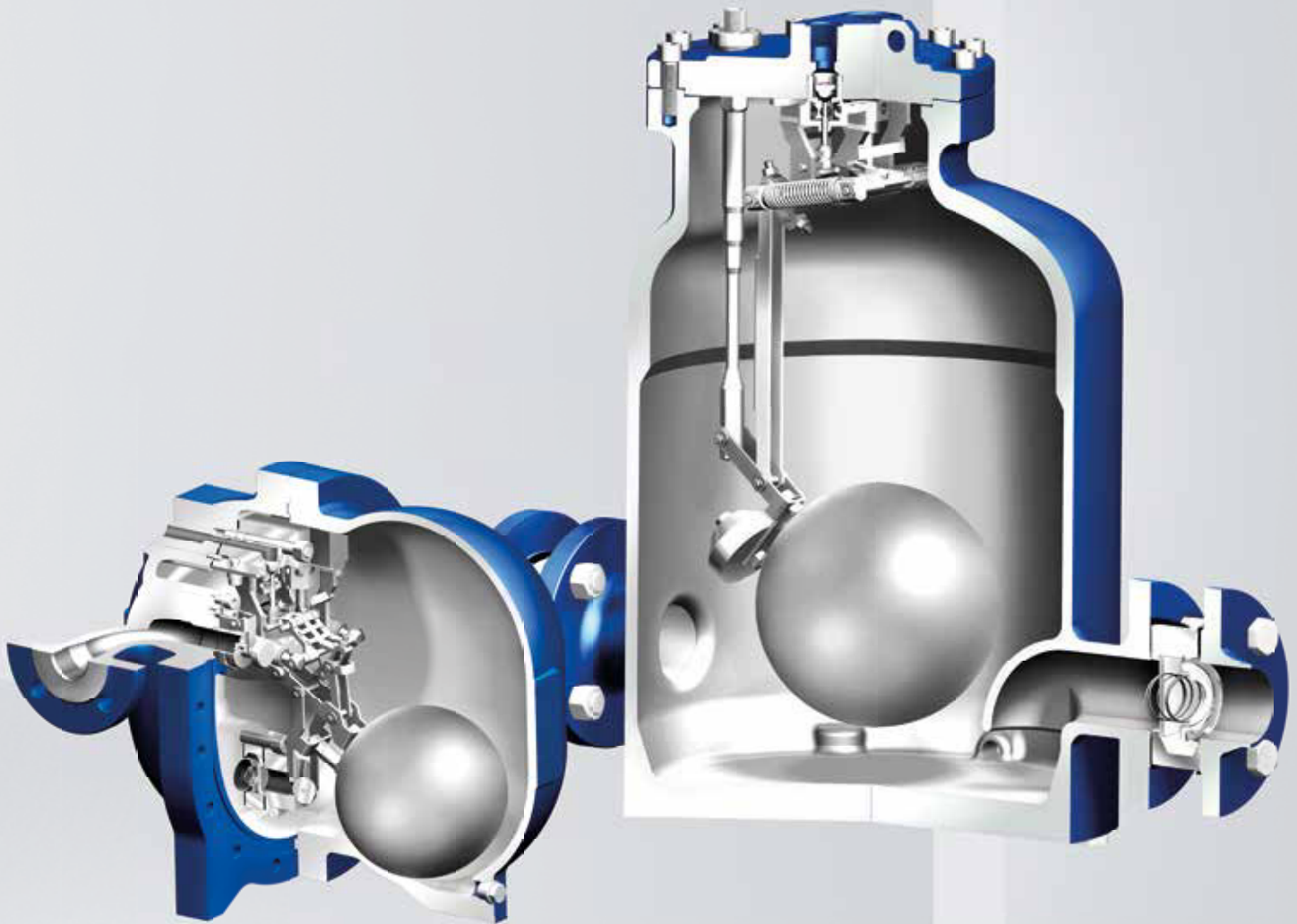
To cool a media sample for further analysis

A sampling cooler is used for sampling hot, pressurised, liquid media. Due to the counterflow principle, the medium to be extracted is cooled down with the help of cold water, so that there is no risk of scalding for the operating personnel. Correct values of the medium can then be determined. Sample coolers are made exclusively of stainless steel.

- Compact design
- With cup holder
- High-quality stainless steel design

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CONLIFT®/CONA® P



Condensate Recovery

By means of the motive steam pump ARI-CONLIFT® or pump trap ARI-CONA® P

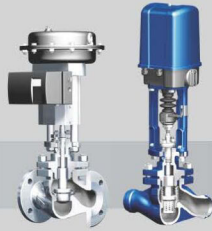
Condensate collecting vessels are used for the central collection of various condensates. These are collected in a cylindrical tank and returned to the boiler house via mechanical lift pumps. Steam or compressed air are used as the motive medium.

- Versatile, suitable for all load cases
- Powerful due to large lifting volume
- Easy to handle due to low filling head
- Energy-saving due to automatic function without electrical energy
- Service-friendly due to maintenance work without dismantling the pipelines
- Durable due to internal parts made of stainless steel and wear parts made of hardened stainless steel

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ARI Product Diversity

Control



Control Valves
STEVI®

Pneumatic & Electric Actuators
DP & PREMIO®



Mixing & Diverting Valves
STEVI® Smart



Pressure Control
PREDU®, PREDEX®, & PRESO®



Temperature Control
TEMPTRON®

Isolation



Bellows Seal Globe Valves
FABAs®



Gland Seal Globe Valves
STOBUs®



Triple Offset Butterfly Valves
ZETRIX®



Soft Seal Butterfly Valves
ZESA® / GESA® & ZIVAs®

Double Offset Butterfly Valves
ZEDOX®

Safety



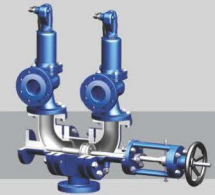
Semi-Nozzle Safety Relief Valves
SAFE SN (ANSI & DIN)



Full-Nozzle Safety Relief Valves
REYCO® R (API 526)



Safety Relief Valves
REYCO® RL (ANSI)



Changeover Valves
COMBI C (ANSI & DIN)

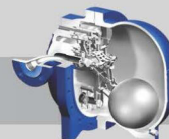
Steam



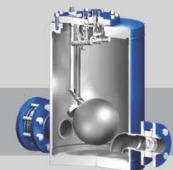
Steam Traps: Mechanical, Thermodynamic, & Thermostatic
CONAs®



Steam Traps: with Multi-Valving Technology
CONA® All-in-One



Mechanical Pump Trap
CONA® P



Mechanical Condensate Pump
CONLIFT®

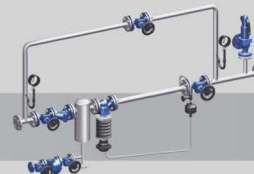
Systems



Heat Exchanger Packages
ENCOsys®



Condensate Return Systems
CORsys®



Pressure Reducing Stations
PREsys®



Flash Steam Systems
FLASHsys®

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