



### **HISTORY**

Zamkon company - manufacturer and supplier of industrial valves, was founded in 1989 by Waldemar Zamczewski - power engineer. Thanks to his creativity, passion, many years of experience and technical insight, he patented and implemented into production one of our first products - inverted bucket steam trap type WZ. Until now, Zamkon company is the only polish manufacture of steam traps.

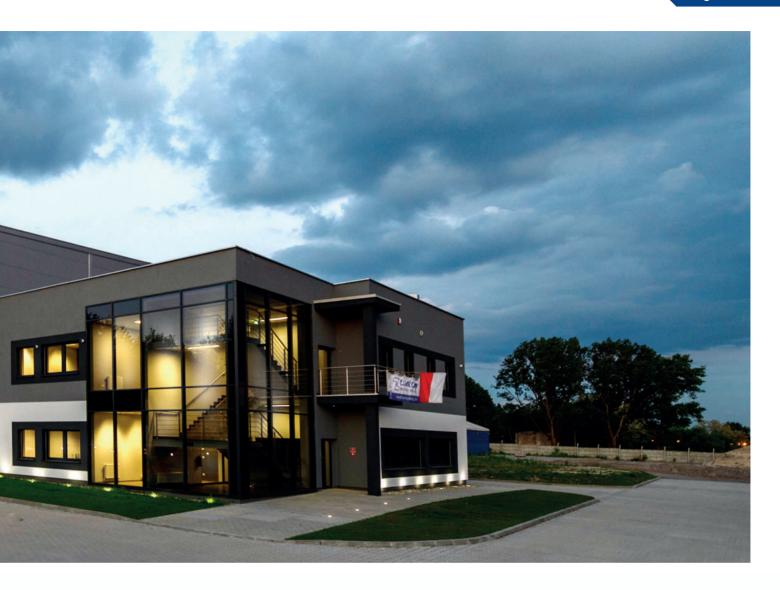
In carrying out the needs and requirements of our customers over the years, range of products and services is constantly expanded: from the steam traps through the shut-off valves, from drainage systems through the complete pressure equipment.

However, according to the basic idea, the effects of the company has always helped customers effectively use the energy of condensing steam.

A significant achievement of the company and its employees was and is to develop the idea of self-improvement, the pursuit of a systematic increase in the quality and expanding the product range of simple solutions to the most complex technologically.

The customer portfolio includes thousands of recipients of light industry and heavy industry.

ZAMKON is a family business, where the next generation is developing business model organization based on passion and commitment of the owners.



### **Steam traps and separators**

Inverted bucket, thermostatic, ball float and thermodynamic steam traps Steam and compressed air separators

### Isolating and control values

Globe values
Wedge gate values
Eccentric butterfly values
Pressure reduction values
Control values

### Skids and EPC projects

Steam distribution and condensate collection stations
Pressure reduction and cooling stations
Condensate recovery units
Flash vessels
Trat – type deaeration stations
Condensate drain systems

### Steam tracing systems

Ready to install, prefabricated systems Executive design As-built projects Execution

### **Engineering & consulting services**

Projects for use of secondary steam from expansion
Steam pipelines
Designs of industrial steam and condensing heating installations and water heating systems
Steam trap measurements
Trainings



### INVERTED BUCKET STEAM TRAP Type: WZ PN40 -63; T max: 400°C; DN15 - 50

- · condensate removal on saturation line
- most robust steam trap type, thanks to closing part In upper area
- high hydraulic hammer resistance; bucket made of stainless steel
- · work without loose of primary (life) steam
- quick reaction at variable condensate load
- self ventina
- optional integral check value, screw or drain value
- ideal for draining of pipelines and process equipment
- 100% Polish



### BALL FLOAT STEAM TRAP Type: WZU/CNU PN16 – 160; T max: 550°C; DN15 – 100

- · condensate removal on saturation line
- high draining efficiency
- vertical and horizontal installation (reversible body)
- automatic venting with thermostatic element
- non-return valve
- controller change possible without removal from installation
- ideal for draining process equipment with high efficiency



# THERMOSTATIC STEAM TRAP WITH BIMETALLIC CONTROLLER, WITH EASY TEMPERATURE CONTROL

**Type: ZTB** 

PN40 - 400; T max: 580°C; DN15 - 25

- condensate removal under saturation line (sub-cooled)
- discharge temperature can be adjusted during work
- · works with superheated steam
- closing the needle according to the flow (down)
- continuous condensate removal at set temperature, even for variable pressure
- inside strainer



### STANDARD THERMOSTATIC STEAM TRAP WITH BIMETALLIC CONTROLLER Type: CU(Y)

PN40 - 630; T max: 650°C; DN15 - 50

- condensate removal below saturation line
- works with superheated steam
- counter-current to flow plug closing direction
- internal strainer in standard, external strainer Y-type (optional)
- automatically adjusting discharge temperature, even for variable pressure

### THERMODYNAMIC STEAM TRAP (DISC) Type: WTD PN40 – 63; T max: 400°C; DN15 – 25

- · condensate removal on saturation line
- reduced price
- small dimensions
- stainless steel execution for food industry
- external strainer in standard
- ideal for low loads of condensate
- 100% Polish



### STEAM AND GAS SEPARATOR (DRYER) Type: SPZ-12 DUO PN16 – 40; T max: 300°C; DN15 – 300

- assembly directly on the pipeline, as close to device as possible
- high separation efficiency of condensate and solid practices, thanks to doublespiral swirl
- small dimensions compared with high load capacity
- · high hydraulic hammer resistance
- 100% Polish



# SAMPLE COOLER Type: CHP PN 10 – 40, T max: 300°C

- material stainless steel 1.4541, other materials in option
- two types of coil for optimal selection
- · connection threaded do flanged
- counter current exchanger
- support plate
- 100% Polish



### WATER HAMMER DAMPER Type: TUW PN16-40; T max: 250°C; DN25 -100

- protects pipelines against water hammer and pressure spikes
- installation in lowers pipeline points, right before stream
- · wide range of size
- 100% Polish





### **GLOBE VALVE**

PN10 - 40; T max: 550°C; DN15 - 250

- body made of carbon steel or stainless steel
- round shape of the bonnet enabling the use of standard seals
- plug design with relief for diameters DN125 and above, significantly reducing the opening torque
- seats with an 18% chromium, significantly increasing chemical resistance, optionally satellite
- the cover gasket in the groove prevents it from being damaged by pressure
- backseat bushing allowing replacement of the package on the working pipeline
- gland parking made of graphite or PTFE
- flow control plug type R or L
- tightness class A in option



### GATE VALVE WITH RISING STEM PN16 – 100; T max: 550°C; DN40 – 600

- body made of carbon steel or stainless steel
- round shape of the bonnet enabling the use of standard seals with an 18% chromium, significantly increasing chemical resistance, optionally stellited
- the cover gasket in the groove prevents it from being damaged by pressure
- backseat bushing allowing replacement of the package on the working pipeline
- gland parking made of graphite or PTFE
- tightness class A in option
- optional construction with relief (By-pass)



# FOUR ECCENTRIC BUTTERFLY VALVE PN10 - 160; T max: 800°C; DN80 - 1000

- available sizes up to DN1000 (and more)
- available pressure up to PN160 (and higher)
- working temperatures from -270°C to +800°C
- 100% tightness even in cryogenic
- · double tightness even in full pressure in standard
- tightness in high temperature differences thanks to fixing disk to the stem on grooves
- · very low torque
- round shape hole in body
- higher Kus factor compared to triple eccentric butterfly values
- chemically resistant Inconell seat
- sealing types: graphite or full metal lamela, O-ring Inconell, O-ring PTFE



### TRIPPLE ECCENTRIC BUTTERFLY VALVE

PN16 - 25; T max: 400°C; DN50-600, double tightness in option (DS)

- body made of carbon steel or stainless steel
- metal / metal sealing, 1.4301 + grafit lamela
- double flange connection (Z3M-K), butt weld ends (Z3M-S) and LUG type (Z3M-M)
- · assembly in any position
- gear box with hand wheel or with electric / pneumatic actuator

### MEDIUM AND HIGH PRESSURE GLOBE VALVE PN63 - 500, T max: 670°C, DN15 - 200 (DN15 - 100 for PN250 - 500)

- · body made of carbon or high-alloy steel
- fixing the cover to the body with a threaded connection
- the gland bolts prevent the cover from rotating
- corrosion-resistant seat, optionally stellited
- one-piece body construction
- proper bearing reduces torque
- 100% tightness in both flow directions

### HIGH PRESSURE GATE VALVE PN160 - 400, T max: 670°C, DN50 - 350

- · body made of carbon or high-alloy steel
- optional titanium alloy stem, extending service life
- seat and wedge satellite by plasma plating, which differentiates its hardness (wedge - seat)
- the self-sealing cover with a suitable sealing system ensures 100% tightness of the honnet
- proper bearing reduces torque
- forged welded construction
- 100% tightness in both flow directions
- · optional construction with relief (By-pass)

# CONTROL VALVE DN15 - 400, PN10 - 630, KVS 0,01 - 800m3/h (2160m3/h in version with a rotating plug)

- · body made of cast iron, nodular iron, cast steel, stainless steel and alloy steel
- for difficult applications
- working temperatures from -196°C to +650°C
- plugs: profiled, piston-perforated, multistage, with throttling cages
- 3 tightness clases: IV, V i VI (soft seat PTFE)
- wide range of actuators: pneumatic diaphragm or piston, electric, hydraulic, hand operated in option
- different equipment available, for example positioner or solenoid valve
- unlimited possibilities of re-equipping the valves with accessories: filter-regulator, booster, quick-release valve, etc.
- constructions limiting the noise and increasing resistance to cavitations and flashing
- possibile ATEX executions

# REDUCTION VALVE DN15-200, PN40 / CL300, KVS 1-400m3/h

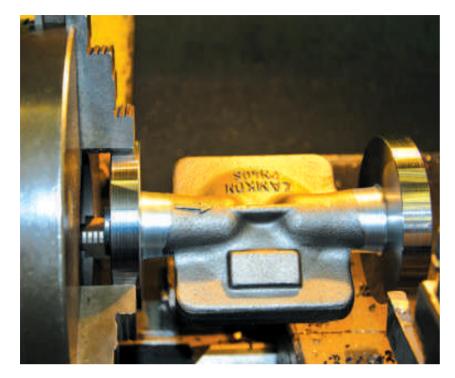
- body made of cast iron, nodular iron, cast steel, stainless steel and alloy steel
- high temparatures up to 340°C for metal seats and up to 240°C for soft seats
- pressure-balanced globe and stem sealed with spring bellow
- diaphragm, bellows and piston actuators for higher pressure control
- tightness class VI for globes with PTFE, EPDM and NBR seals
- constructions limiting the noise and increasing resistance to cavitations and flashing
- possibile ATEX executions
- bigger DN, PN and Kus possible, depending on the application
- 100% Polish











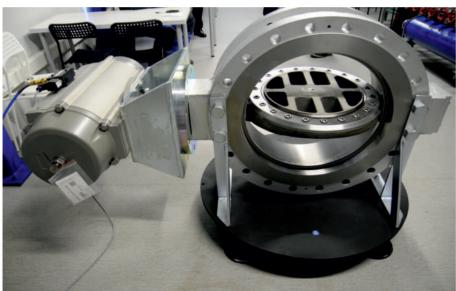
















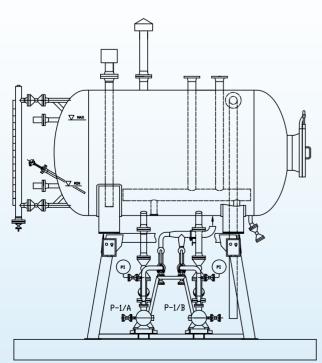
### PREASSURE REDUCTION AND COOLING STATION type: SRP



Steam (air) pressure reduction stations are used to reduce or stabilize the pressure of the medium at the outlet. Zamkon designs, manufacture and delivers a package that includes standard:

- reducing valve
- cooling water injection (only in the case of a reduction and cooling station)
- safety value
- separator
- steam trap
- shut-off values
- · control and measurement equipment
- supporting structure

### **CONDENSATE RECOVERY UNIT Type: WZZ**



Condensate recovery units are used to receive and accumulate hot (max. 98°C) or cold condensate from steam powered heat receivers or steam tracing system. The condensate is then pumped via rotodynamicpumps from the tank to the place of secondary use.

Zamkon designs, produces and delivers a package that includes in standard:

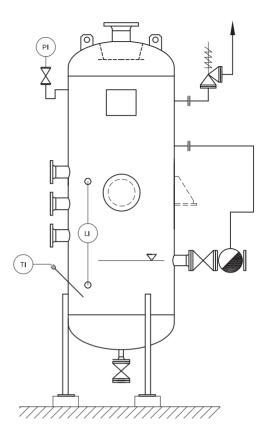
- condensate tank placed on a support frame
- condensate pumps (main and reserve)
- piping for the suction and forcing pumps
- automatic control instruments and measuring instruments

### FLASH VESSEL Type: RWZ-1

The flash vessel is used for expansion of the hot pressure condensate returning from the installation which cannot be used at a given pressure. Inside the unit a violent expansion of condensate takes place, down to a lower operating pressure which causes the release of secondary steam. It can be carried away to the low steam pipelines and then used in further technological processes or for heating purposes. The advantage of the expander is that several pipelines with condensate at different pressure and temperature parameters can be collect in it.

Zamkon designs, produces and delivers a package that includes in standard:

- tank
- connections
- values
- steam trap
- support and support legs
- measuring instruments



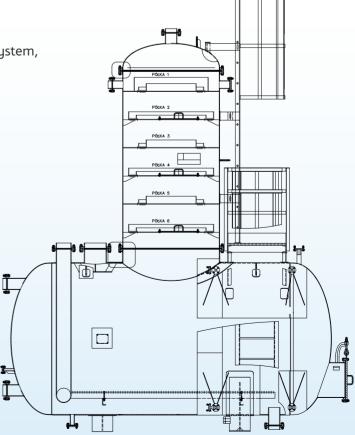
### TRAT-TYPE DEAERATOR STATION

The two-stage water degassing station includes:

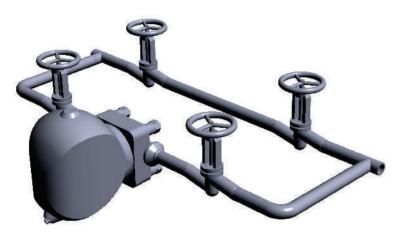
- cascade degasser (shelf)
- water supply tank

In addition, Zamkon offers a complete degassing system, except to the above, they also include:

- $\bullet\, steam\, supply\, reduction\, station\\$
- technological pipelines
- siphon system
- control and measurement equipment
- digital control system



### CONDENSATE DRAIN SYSTEM



Compact condensate drainage systems for steam pipelines. Depending on needs, it can be made in many mounting positions and in full range of pressures. They can be equipped with any type of steam trap, depending on drainage place characteristics, type of installation, user preferences, etc. Ready to instal, compact systems greatly simplify and accelerate the design phase of industrial installations and their construction.

# PREASSURE DISTRIBUTION STATION type: RFM CONDENSATE COLLECTION STATION type: ZFM



Compact elements of steam tracing (satellite) system, equipped with steam traps, manifolds with built-in shut-off valves, stop valves, piping, fittings and support elements. Their compact design saves space on the installation, and thanks to the workshop prefabrication method, construction, execution or corrosion protection is incomparably better, and the assembly itself becomes much faster and easier.

The use of ready-made solutions simplify and accelerates the design process, and the stations can be easily modified in terms of number of individual modules, equipment or connection method. The piping can be equipped with quick connectors enabling mounting to the stainless steel tubing system made of thin-walled stainless steel pipes.

### **STEAM TRACING SYSTEM (SATELLITE)**



Steam tracing system protects industrial installations from negative climate influence, cooling or crystallization of medium flowing through pipelines and fittings. System provide viscosity stabilization, preventing from pressure losses. The practical construction down to the assembly of many sections of steam tracers at the same time. For this purpose, a system of steam distribution station is used to ensure the effective steam distribution. Condensate collection station collects the condensate to the main condensate collector. This solution ensures the simplicity of further operation and easy access to all drains.

The design of steam tracing system, the support installation, does not belong to simple issues. On average, several dozen kilometers of tracers located on the installation must be linked to an optimally distributed system of steam distribution and condensate collection stations, so as not to exceed the recommended lengths of active tracers, while minimizing the length of passive tracers at the same time. All this to optimize the efficiency and cost of the entire investment as much as possible. In our projects, Zamkon uses modern, completely equipped steam distribution stations (RFM) and condensate collection (ZFM). Unlike to traditional old method, ZAMKON offers new types of stations, in which the most important part is the manifold. The manifold has built-in valves, what provides space saving. The stations are delivered with all the necessary equipment, such as: steam traps, valves, drain valves and support structure. Thanks to that solution the assembly on the site takes place much more efficiently.



Thanks to our educated and experienced team of specialists, we are able to design a tracing system not only as-built, but also during the process of creating a base project. This makes it possible to design the steam tracing system "at a distance" and the assembly of the components themselves is extremely easy thanks to prefabricated, ready-made elements of the system. This allows for a significant reduction of the time needed for assembly on the site and affects for technological and aesthetic final result. An extremely important element is also the correct addressing of all installed steam tracers for proper further work. Using the standards developed over the years of experience, Zamkon is one of the few companies able to design, deliver and make an effective, complete satellite heating system.

In the above scope, we have become known as a worthy business partner of companies like. Lurgi S. A., Lurgi GmbH; Fluor SA, Grupa Lotos SA or KT Kinetic Technology SpA, Orlen Projekt Sp. zo.o., etc.















### RESEARCH AND DEVELOPMENT CENTER



ZAMKON company implements a project co-financed by the European Regional Development Fund called "Activities in the field of strengthening scientific research, technological development and innovation".

The subject of the project was the construction of an independent research and development facility covering the research and production zone of the prototype with its full equipment, including CNC machining center, flow test stand, X-ray test stand, 3D coordinate measuring machine or pressure test stand. The project assumes carrying out industrial and development works aimed at developing a new one type of industrial equipment in the form of innovative pressure reduction and cooling station.

The main purpose of the project is to implement new technologies for the production, which are an innovative product, not yet existed on the domestic market and has new functional features. The implemented project is to ensure the strengthening of the enterprise being at the next stage of market expansion, through its extension and support of the research process, which in consequences will make it possible to achieve market success. The project will give a opportunity to create a modern, self-sufficient research and development unit. As a result, the research project will increase the research activity of the company, gain new scientific experience and contribute to the implementation of further research projects based on the results of the project. In addition, as a result of the mentioned project, dissemination of research results will take place through their presentation at scientific conferences or through their publication in specialized press.

### TRAINING FACILITY

As part of its activities, Zamkon organizes trainings and presentations concerning energy efficiency. The main issues discussed during the presentation are those in the field of:

#### I. STEAM TRAPS

- types, operation, advantages, disadvantages, application, assembly
- thermodynamic basis of steam trap use
- steam trap selection program presentation
- separators (steam dryers) type SPZ-11, SPZ-12 DUO

#### II. STEAM TRACING SYSTEM (SATELLITE)

- the general idea of steam tracing system
- design basiscs
- compare of traditional drainage collection system and innovative Zamkon systems

#### III. CENTRIC AND ECCENTRIC BUTTERFLY VALVES

- the history of butterfly value designs and their change over the years
- construction solutions for individual types
- eccentricity the basic principles
- · applicability, standards, admission
- different types of seals and their selection for the medium

#### **IV. SKIDS & IPC INSTALLATIONS**

- condensate recovery units
- preassure & cooling stations
- flash vessels
- heating centers
- others

#### V. STEAM TRAPMONITORING STATION

The training room has been equipped with a testing station for steam traps. A suitable pipe-valve connection is a compact device that allows simultaneous testing of several types of steam traps. It is also possible to compare the work of a trap operating correctly with a deliberately damaged one.

The station consists of a support structure on which the collector (pressure vessel) separating the steam condensing mixture to the trap stations, six trap stations, a condensate collecting chamber and a condensate cooling collector (non-pressure tank) are installed.



### **DESIGN OFFICE**







Thanks to an educated team of specialists: designers and constructors, in the field of Energy and Process Engineering ZAMKON offers its clients the highest quality engineering and consultancy services:

- steam tracing systems
- steam distribution systems
- condensate recovery systems
- use of steam generated during expansion of condensate
- condensate pumping stations
- steam transfer pipelines
- industrial heat distribution centers and consulting:
- documentation of suggested changes, increasing efficiency of installation taking in to consideration 2-nd law of thermodynamics
- expertise of industrial installations in regard to proper work
- non-invasive examination of steam traps

### **TRAININGS**



ZAMKON has a modern training mobile training station, which allows to carry out training on client facilities.

Topics of our trainings include: build, installation, proper use and repairs of industrial fittings.

Our training installations allow to compare steam traps working properly and intentionally damaged.

### **STEAM TRAP MONITORING**



As a manufacturer of steam traps, we also provide services for their measurement (monitoring) on operating installations. Each of the steam traps is measured by ultrasonic and temperature methods, and the measurement results are entered into the computer system that processes the data. Thanks to accurate measurements, made with the utmost care and by qualified employees, we are able to obtain knowledge about the steam loss generated by the installation, and what is directly related to it, including costs. This is a great way to constantly monitor installations, departments or the entire plant.

### **CERTIFICATES**





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