

JS.C LING[®]

.more than cooling

EPC CONTRACTOR

ENGINEERING | PROCUREMENT | CONSTRUCTION



www.jscooling.pl



Dairies



Chemical industry



Public buildings



Fish processing



Meat establishments



Breweries



J.S.COOLING offers comprehensive services in the field of industrial cooling and ventilation of turnkey projects as a General Contractor also for Industry 4.0. Over 32 years of presence on the market, extensive experience gained through completed projects and a staff of specialists guarantee an individual approach to each client. We are the only Polish manufacturer of ammonia chillers.

The equipment we manufacture includes:

- ammonia refrigeration plants with large capacities
- spray - evaporative condensers
- compressor units based on screw and reciprocating compressors
- pressure tanks
- evaporators
- ice water tanks
- process piping
- cooling tunnels
- pallet conveyors
- ventilation, air-conditioning and heating units

Due to the fact that **our company is a manufacturer of industrial cooling and ventilation devices**, our systems are always perfectly tailored to the customer's needs. We offer a comprehensive service for your investment, from the creation of the design, through the implementation, to the maintenance of the installation 24 hours a day.



Thanks to many years of experience, our company offers individually tailored solutions. Once the cooling capacity requirement has been established, we select the type, size and number of units required for efficient operation of the installation. We then create a sketch of the installation in 3D view to present to the customer for approval.

Based on the offer guidelines, the equipment is completed and then assembled and connected by means of piping. All joints of individual pipeline components such as elbows, pipes, valves are welded by qualified welders.

Visual, magnetic particle and radiographic surveys are carried out to verify the quality of the pipeline welds. After the test results are positive, a pressure test is performed with a test pressure adapted to the type of pipeline in question (18–26 bar). All the automation components installed in the plant will be connected to a common management system, which manages the parameters of the equipment so as to achieve the set coolant outlet temperature. The system also has a manual control mode so that the operator can set the basic operating parameters of the equipment himself. Once the plant has been put into operation, we provide training for the personnel operating the machine room.

Our installations are also equipped with notification systems (e-mail, sms), informing the staff and service of any errors or failures.



Refrigeration



**Cooling
aggregates**



INSTALLATIONS

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SERVICE

We offer a **comprehensive warranty and post-warranty service for installations and equipment.**

- refurbishment of piston and screw refrigeration compressors (we are a certified service for BITZER refrigeration compressors),
- cleaning of plate heat exchangers - condensers, oil coolers, etc.

As one of the few companies, we offer a comprehensive cleaning service including the process of emptying the exchanger of the refrigerant, e.g. ammonia, freon, thanks to recovery stations for these agents.

Our service is equipped with automatic and mobile cleaning units. We rely on cleaning products from ALFA&LAVAL (AlfaPhos) and KAMIX.

AMMONIA COOLING AGGREGATES

Ammonia chillers produced by J.S.Cooling are built from components manufactured by **J&E HALL, Danfoss, Nidec, Hansen** and many others. We are the only company in Poland to manufacture ammonia chillers, which we develop and adapt to dedicated customer needs. The operation of our units is based on automation, so they can fully exploit their power potential by adjusting each parameter one by one, additionally reducing the amount of time spent on servicing the refrigeration installation. The new J.S.Cooling units feature high COP screw compressors and extremely efficient permanent magnet synchronous motors.

As chillers are appliances that run continuously, installing a chiller with a lower power consumption and higher efficiency brings significant savings in electricity costs.

We use modern IE5 Ultra-Premium class motors in our units, which are characterised by:

- **Energy saving** (use of variable speed and optimisation of mechanical systems).
- Exceptional levels of efficiency throughout the speed control range, especially during lower speed operation when **efficiency is higher** than with induction motors.
- **High energy savings** and lower maintenance costs.
- **Quick return on investment** compared to traditional AC solutions. It is significantly higher than traditional technologies.
- **Motor speed** adapted to the speed of the machine being driven.
- Potential elimination of **power transmission systems.**
- **Improved performance** of the driven machine by increasing its speed.
- **Low rotor losses**, reduction of mechanical losses.



NH₃ refrigeration engine rooms

Ammonia refrigeration plants are currently one of the most impressive, low-maintenance and environmentally friendly solutions. Ammonia as a refrigerant has many advantages, including:

- **High energy efficiency** – ammonia is one of the most energy efficient refrigerants.
- **No negative impact on the environment** – decomposes very quickly in the atmosphere.
- **Low price of ammonia** – it is much cheaper than synthetic refrigerants.
- **Smaller pipe diameter** – smaller pipe diameters are required for ammonia installations than for chemical agents.
- **Efficient heat exchange** – compared to chemical agents, ammonia has a much higher heat transfer, which allows smaller heat exchangers to be used.
- **Easy leak detection** – even small concentrations of ammonia in the air are easily detectable due to the characteristic odour.

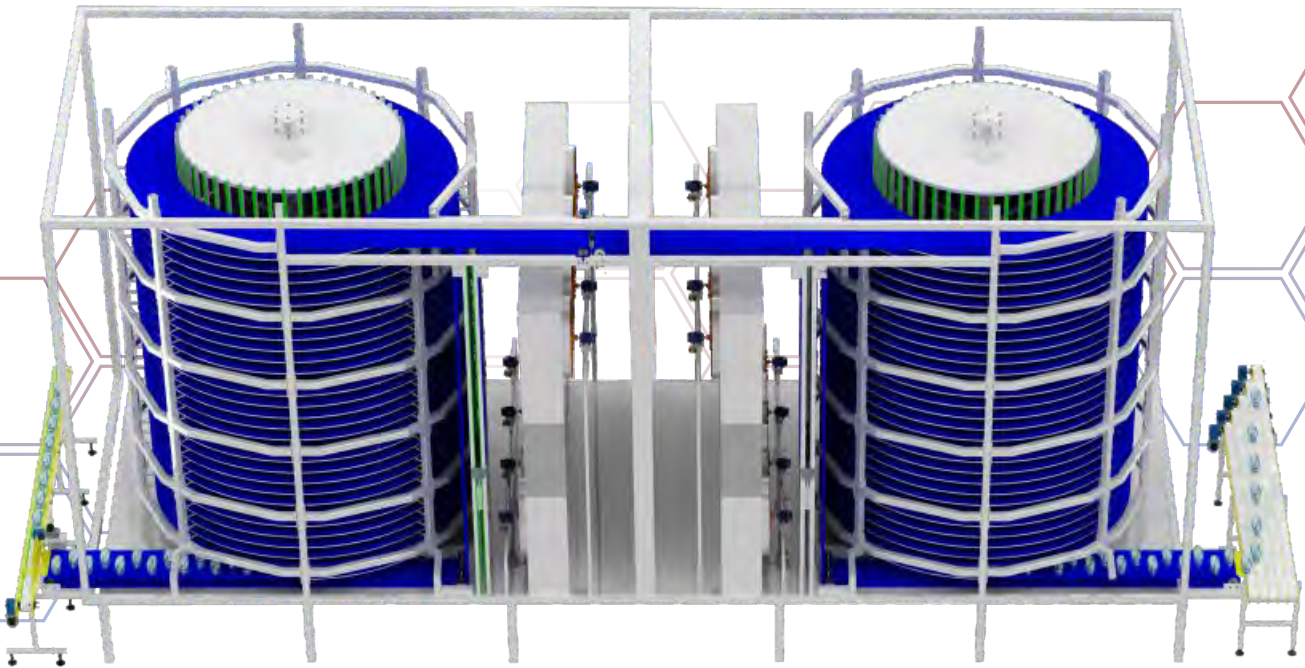
Scope of our services:

- Automated ammonia refrigeration plants with automatic central control and management system.
- Automated warehouses for the storage and chilling of product on pallets (with pallet stackers).
- Automated tunnels for transporting and cooling the product on pallets (with pallet conveyors).
- Cold rooms and freezing tunnels with full equipment and control automation.
- Air conditioning and industrial ventilation
- Non-standard and special equipment, among others, in explosion-proof EX systems, e.g. installations for cooling down petrol vapours and other chemical substances
- Waste heat recovery systems from the existing cooling installations.



In our offer you will also find a comprehensive service including:

- Technical consultancy in the refrigeration sector.
- Individual design for each customer.
- Equipment selection and delivery.
- Installation and commissioning of the supplied installations (cooling engine rooms, cooling tunnels).
- Fast and professional warranty and post-warranty service.
- Staff training covering the correct operation of our installations.



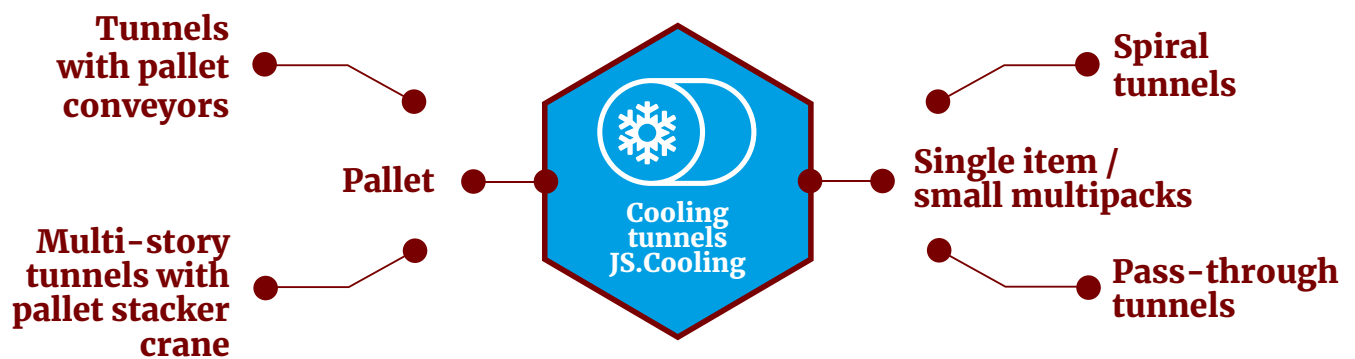
Cooling tunnels



See how we build cooling tunnels

Cooling tunnels are mainly used to increase cooling efficiency (reduce the amount of cooling needed) and to save time on cooling. Depending on the stage of production, our company offers various technological solutions.

We offer cooling tunnels of various types and purposes:



We offer the possibility of chilling a single product immediately after wrapping – in this case we use spiral tunnels and pass-through tunnels with modular belts. Once the product is packed on a pallet, consider using pallet tunnels with pallet conveyors or multi-storey tunnels with pallet stackers.

Spiral tunnel for single product

Spiral tunnels are best suited for applications where there is not much space available, the goods to be cooled are in individual batches/packages, the products to be cooled have a repeatable size/shape and there is a need to quickly cool the goods.

- **Limited space**
- **Cooling of a single commodity**
- **Repeatable product**
- **Rapid cooling**

Pass-through tunnel for small bulk packages

Pass-through-tunnels are best suited where there is ample space to locate them, the goods are cooled in bulk packaging, e.g. in bags/crates, or there is a need to cool the goods by gradually regulating the temperature for individual sections.

- **Simple construction**
- **Cooling of small bulk packaging**
- **Temperature control for individual sections**
- **Rapid cool down**

Pallet tunnel with pallet conveyors

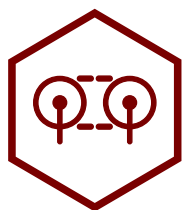
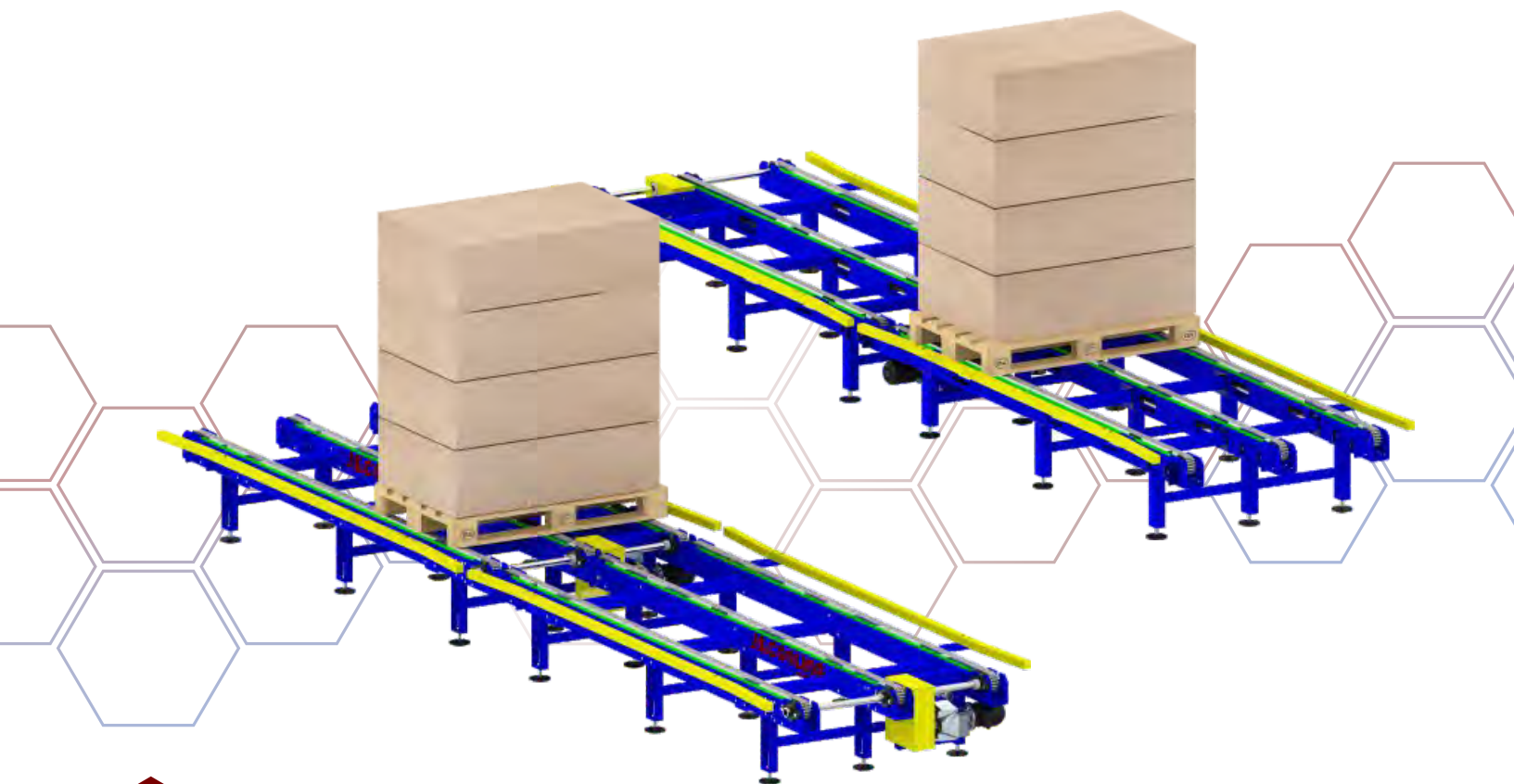
Pallet cooling tunnels with pallet conveyors are best suited for goods with a cooling time of less than 1.5 hours. It is also possible to install this type of tunnel in low areas without limiting the cooling of high pallets.

- **Fast cooling goods**
- **Pallet chilling**
- **Low-rise building**

Pallet tunnel with stacker crane

Cooling tunnels with pallet stacker crane are designed for slow-cooling goods, as they have a larger capacity than tunnels with conveyors. Despite this, they occupy a similar amount of space thanks to the use of several floors. Pallets are fed and removed automatically by means of pallet conveyors. Each pallet space on the rack has its own dedicated fan, which accelerates the cooling level. The movement of pallets in the tunnel is managed by the MFS system. When a pallet enters the tunnel, it identifies it by assigning a number to it so that it can then be placed on the free pallet space. In order to cool the goods evenly, the pallets are swapped in the middle of the cooling process by changing the blowing side.

- **Goods that are slowly cooling down**
- **Pallet cooling**
- **Large tunnel capacity**



Internal transport

Internal transport, which consists of moving the product within one production plant, can greatly improve the flow of goods between different areas such as production, warehouse, packaging, etc. Depending on the conveyors used, our lines can transport goods of various dimensions, **from small packages to pallets weighing up to 1,500 kg**. We offer lines for internal transport based, among others on chain conveyors, roller conveyors, belt conveyors as well as angular transmissions and turntables.

During transport, the product may be additionally cooled, wrapped with foil, etc. The lines are equipped with, among others, a central control system, goods flow sensors, and all safety devices allowing for fully automatic operation of the entire line. This results in a significant reduction in labour costs, streamlining of individual departments such as goods issue / packaging etc., and achieving higher productivity and reliability.

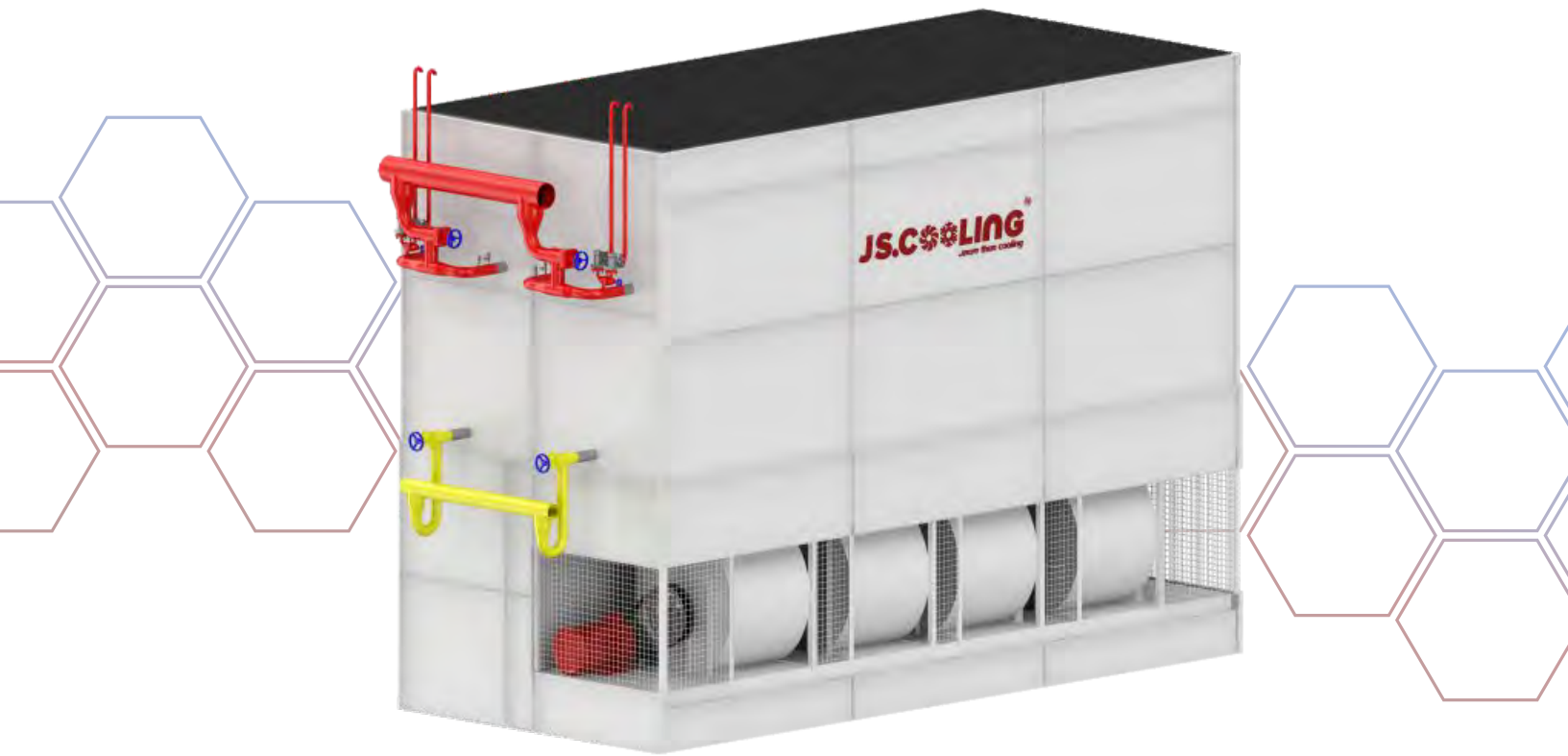
Depending on their needs, transport lines can be equipped with a barcode reader that can identify the type of pallet and its destination. In a large number of cases, an extensive modern transport system reduces the number of forklift trucks operating on site.



Ventilation Air conditioning

We take care of the air quality even in the largest industrial premises with the most stringent cleanliness requirements:

- We design and build our air handling units individually for each customer. It is then also possible to add additional functions such as humidification or dehumidification, and to adjust the capacity according to needs.
- By being able to individually adjust the dimensions of the ventilation units, we are able to cope with the limited space we build the units in.
- For air distribution in industrial rooms where the highest level of purity must be maintained, we use ducts made of acid-resistant steel and displacement diffusers made of fabric. Fabric ventilation ducts have many advantages. Users opt for them because of their hygienic design, easy maintenance and, most importantly, even or localised air distribution.
- The use of air exchangers makes our air handling units meet all requirements for heat recovery in industrial premises generating savings on heating
- CNWH units work in automatic mode regulating the operation of coolers, heaters, dehumidifiers and fans – after setting the appropriate parameters, the temperature, number of air exchanges and humidity is maintained at a constant desired level.
- A three-stage filtration system (using certified filters) ensures perfect purity of the air by capturing even the smallest impurities.
- Designing the route, layout and capacity of the ducts after measurements prior to the commencement of work allows you to adjust the capacity accordingly, plan the air distribution, the number of ventilation grilles and avoid obstacles in the routes of steel and textile ducts.
- Possibility of heating with heat recovered from the refrigeration system using propylene glycol as the temperature carrier



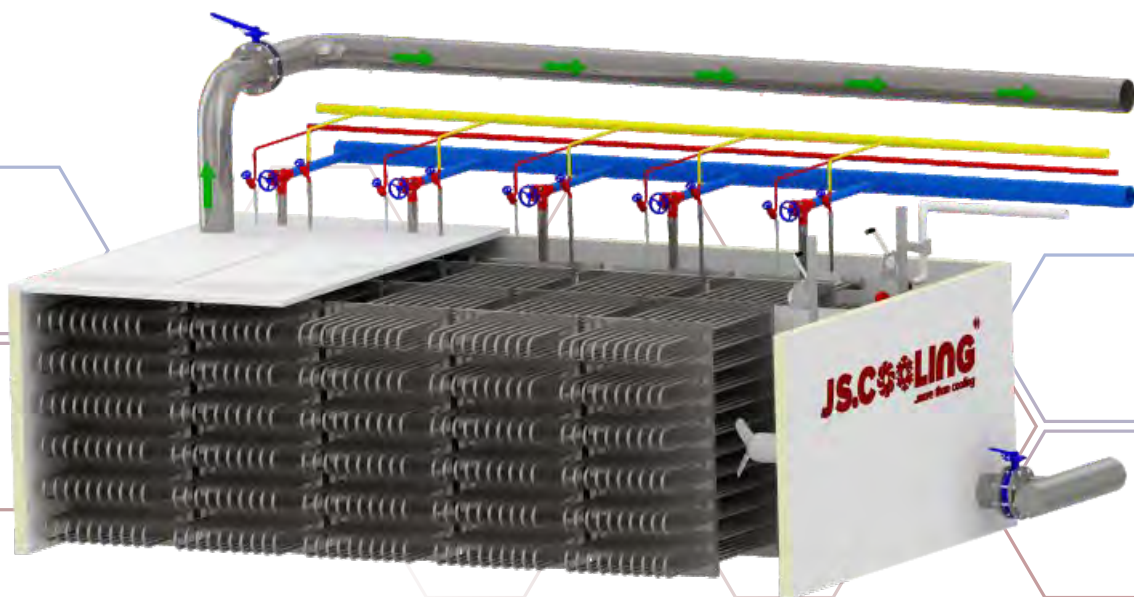
Spray - evaporative condensers

J.S.Cooling spray - evaporative condensers are designed to cope with external weather conditions and constant contact with water. For this purpose, the elements most exposed to corrosion, such as the coil, the condenser tub or the supporting structure, are made of stainless steel. For the most demanding customers, we also manufacture condensers made entirely of acid-resistant steel.

We use radial fans for blowing, which are characterised by a lower noise level and higher pressure of the discharged air. The water is distributed through a network of nozzles on top of the condenser. In combination with high blowing pressure and a large volume of water sprayed, our condensers cope well even with large coils consisting of kilometres of pipe.

In order to reduce the amount of water consumed by the condenser, we use condensers to trap small droplets.

Condensers are also fitted with temperature, pressure and water level sensors. This allows the water to be admitted automatically, the condensation pressure parameters to be transmitted to the chillers, and the operation of the fans and spraying to be adapted to current needs.



AOW NH₃ tanks

The basic element of AOW tanks are the evaporators, which our company manufactures entirely from stainless steel. This ensures a much longer service life for the evaporators, which are submerged in water at all times. To efficiently transfer the cold from the evaporators, we use highly efficient agitators that create a constant flow of chilled water around the evaporator coils. We manufacture evaporators for various factors, such as NH₃ ammonia, propylene/ethylene glycol, potassium formate (freezium).

The purpose of AOW reservoirs is to accumulate the cold generated at times of overproduction (usually at night) in order to be able to use it at peak production times when it is needed most. The cold is stored in the form of ice, which is deposited on the evaporator coils when they are operating, then cools the ice water.

Benefits of using a storage chilled water tank:

- Saving on production costs: ice is accumulated at night when electricity is cheaper.
- Less wear and tear on chillers: even load operation without sudden capacity peaks/stops.
- Reducing aggregate electricity consumption through night-time production at lower outdoor temperatures.
- Reduced cooling power requirement for the entire plant.
- Having a secure buffer that is able to meet the needs of the production facility for a short shutdown for maintenance or servicing of equipment.
- Reliability and longevity of AOW due to low complexity, and reliability due to the use of only proven technologies.

The advantage of using AOW tanks:

- Accumulation of cold
- Having a secure buffer
- Less power requirement for the entire installation
- Reduction of overall electricity consumption



Pressure tanks

In the interests of safe operation of pressure vessels, we adhere to all regulations and rules regarding the process of their creation.

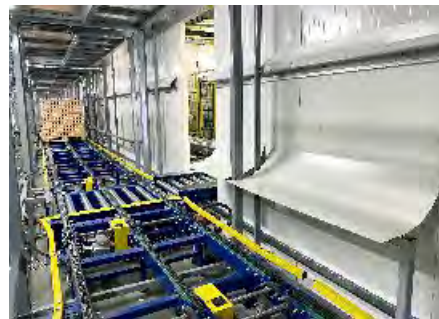
All the tanks manufactured by our company are built according to a professional design using certified materials. During the design phase, the wall thicknesses of the shells, spigots and additional caps are selected. Using specialised software, strength calculations are then carried out, proving that the tank can withstand high pressure and extreme temperatures.

Moving on to the execution phase, tank welding is carried out according to established WPS procedures by qualified personnel, after which the welds are subjected to tests confirming their correctness (visual, magnetic particle and radiographic examination).

In the certification and quality control phase, the last step of the tank building process is a pressure test in the presence of a representative of the notified body, consisting in raising the pressure in the tank to 18 or 24 bar, depending on the type and destination of the tank. On the basis of a successful leak test and the submission of complete documentation, a certificate is issued officially confirming the completion of the production process. The tank is then CE-marked. Only then is the tank ready for further operation in the refrigeration system.

SELECTED PROJECTS –

- Execution of an ammonia cooling installation with a capacity of 1650 kW for ZPM Sokółka SM Mlekpól
- Construction of a multi-storey tunnel for cooling butter on pallets for SM Mlekpól ZPM Grajewo
- Execution of an ammonia cooling system with a total cooling capacity of almost 7000 kW for SM Mlekpól ZPM Mrągowo
- Construction of a pallet transport and cooling system for SM Mlekpól ZPM Sokółka
- Construction of a spiral tunnel for SM Mlekpól ZPM Radom
- Construction of a pass-through tunnel for SM Mlekpól ZPM Zambrów





www.jscooling.pl

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