ROMIND T&G








COOLING TOWERS

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ROMIND T&G

Who are we?

Romind T&G is a Romanian company, with private capital, founded in Bucharest, in 1993.

What we do?

With over more than 20 years of experience, the company is nationally known as the leading manufacturer and supplier of functional components for cooling towers - in cross flow and counter flow - and components for water treatment installations - for industrial and drinkable water.
At the same time, the electrical safety equipment and fall protection systems manufactured by Romind are valued for their technical performance and quality.

Main domains:

- Functional components for cooling towers
- Engineering services for cooling circuits
- Components for water treatment installations
- Electrical safety equipment
- Fall protection systems
- Electrical testing services
- Meter seals with stainless steel wire
- Lightning protection systems
- Fault indicators for power networks

How we do it?

Most of our products are designed in our R&D department. After testing, they are made within our own production departments, where we perform machining operations, plastic injection molding, welding, manual and automated mechanical assembling, laser marking or stamping.

Our main customers:

- Companies from oil and gas industry, chemical industry, metallurgical industry, concrete industry, goods and passengers transport companies
- Power producers, suppliers and distributors

COOLING TOWERS

ROMIND T & G offers technical and economical optimized solutions for cooling towers or cooling circuits.
The solutions offered by our company ensure significant smaller investment and operation costs along with an increased efficiency of the cooling installations. The fuel or energy savings achieved as a result of practical application of the proposed solutions will enable rapid return on investment for revamping / refurbishing the cooling tower.

ROMIND T&G:
- Produces and delivers modern **functional components** for new cooling towers or for refurbishing/upgrading existing cooling towers of any type and capacity.
- Provides technical assistance (performance tests) for cooling towers and cooling circuits.

The main advantages of using ROMIND T&G cooling towers products and are:
- Guaranteed best technical, professional, optimized solutions for each project;
- Guaranteed purchase of high quality, certified and accredited components;
- Prompt delivery of products and services (technical documents, functional equipment, solution studies, operational expertise);
- Significant reductions in energy consumption for pumping water and air ventilation;
- Decrease of environmental pollution by reducing water loss with the aid of drift eliminators, chemical and thermal pollution reduction, materials recycling.

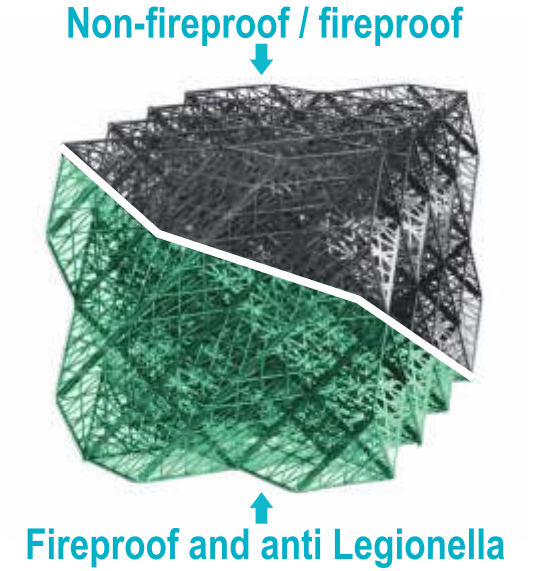
Cooling tower functional equipment

The cooling tower functional components manufactured by our company for new cooling towers or for revamping / refurbishing existing ones, of any type and capacity are:
- fill,
- water distribution systems,
- water spraying nozzles
- drift eliminators,
- support systems,
- frost protection systems.

COOLING TOWER FILL - TYPE R80

The R80 splash fill is a hybrid (mix) type, adapted to the technological requirements of any wet cooling tower. The fill is very efficient, practically invulnerable at impurity clogging, resistant to the influence of physical and chemical factors and it's fireproof.

The R80 splash fill consists of individual elements with network appearance, from injected polypropylene (non-fireproof, fireproof or **fireproof + anti Legionella**), with optimized apertures and plies which generate both drops and films in its volume.
Packages with complex spatial structure that contain crossed inclined channels are formed by joining and assembling the constitutive elements with cable ties.



The cooling tower fill can be delivered as follows:
a) unassembled individual elements, method that allows a small transport volume, the assembly of the elements being done on site by the beneficiary, with cable ties,
b) Assembled in packages (modules), directly mounted in the cooling tower on an adequate support system.

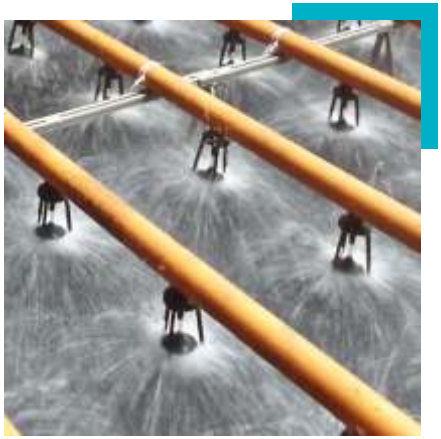
Technical characteristics	
Cooling agent	Atmospheric air with or without industrial emissions
Water inlet temperature in the fill (^{0}C)	5 ... 80
Air outlet temperature from the fill (^{0}C)	-30 ... 80
Number of individual elements in assembled estate (piece/m^3)	61
Channels inclination	parallel or crossed
Average distance between individual elements, h (mm)	80 ± 1
Package height, H (mm)	450
Package length, L (mm)	800 or multiples of 80 mm
Package width, l (mm)	450
Fill weight on 1 m^3 in assembled estate (kg/m^3)	10,5
Mechanical resistance at compacting without deformation of the package, with the individual elements in vertical position (kN/m^2)	4,6
Spraying density, economically applied (m^3/m^{2}h)	3 ÷ 15
Heat and substance transfer surface (m^2/m^3)	pellicle: 21 / drops: 13...17

WATER DISTRIBUTION SYSTEMS

The water distribution system represents the water transport route inside the cooling tower, on the irrigated surface of the tower.
The water distribution system in the cooling tower is designed to achieve the following functions:
- to ensure the nominal flow capacity of the water to be cooled, without discharge at tanks and at the inner transport channels;
- to ensure the water transport, as needed, to all irrigated areas inside the tower;
- to ensure the required pressure at the spraying nozzles, in order to achieve a good water dispersion;
- to ensure good water distribution at partial flows;
- to easily decommission different areas from the irrigated surface, or commissioning other areas (ex. frost protection);
- to be optimally positioned, relative to other functional or structural systems and components (tower fill, beams, columns, mantle tower), in order to decrease the pumping energy, to achieve a good irrigation of the fill, to limit the splashing of the constructive elements, to require simpler support systems of the distribution pipes.

Usually, the water distribution systems in cooling towers contain the following components:
- **Water distribution pipes**, supplied in the desired length and drilled for fixing the dispersion devices. Usually the pipes are made of plastic (PVC), but pipes from other plastic materials or metallic pipes can be used by request;
- Couplings, bends, branches and reducers that allow hydraulic connections between pipes or between pipes and existing water distribution drains;
- Overflow, ventilation, drainage equipment;
- Plugs or lids which are positioned at the free end of the pipes.

WATER SPRAYING NOZZLES



The water spraying nozzles for cooling towers are designed to fragment the fluid to be cooled (water) in drops with adequate grading and spraying area to the technological needs of these installations and to evenly distribute them on the irrigated area of the tower.
There are various types of dispersion devices, each having a specific role and destination within the cooling tower technological project.
The nozzles are manufactured from fireproof injected polypropylene.

Water spraying nozzle - type DIATR

The water spraying nozzles DIATR type are designed for **counter flow cooling towers**, with natural or forced draft, provided with water distribution pipes.

The water spraying nozzle that equip the **distribution system** of the tower are placed on the water distribution pipes, above the tower fill, at a certain distance (optimized), toward the upper level of the fill.
The water spraying nozzles that equip the **frost protection system** are placed under the fill, all over the tower.
The water spraying nozzle DIATR type can be used also for the **cross flow cooling towers**, if they are equipped with water distribution pipes (instead of distribution tanks).

The water spraying nozzle DIATR type is composed of:
- disperser (various forms, depending on each application),
- nozzle,
- pipe fixing elements,
- support with arms,
- extension tube (in order to increase the hydrostatic pressure of the water).

Technical characteristics		
Type	DIATR1 -"D"-"d"; DIATR1C -"D"-"d"	DIATR2 -"D"-"d"; DIATR2C -"D"-"d"
Working fluid	cooling circuit water	
Nozzle presure	0,5 ÷ 3	
Air temperature(^{0}C)	-30 ÷ +50	
Water temperature (^{0}C)	+5 ÷ +80	
Atmosphere	with or without industrial emissions	
Nozzle outer diameter "d" (mm)	Φ21 ÷ Φ37	Φ18 ÷ Φ24
Hole diameter from the distribution pipe (mm)	Φ63 ÷ Φ65	Φ40 ÷ Φ42
Outer diameter of the distribution pipe "D" (mm)	Φ140, 160, 180, 240	Φ125, 140, 160, 200
Distribution pipe thickness (mm)	3 ÷ 18	max. 10

Water spraying nozzle - type DTCT

The water spraying nozzles DTCT type are designed for **cross flow cooling towers**, with natural or forced draft, provided with water distribution tanks.
By mounting an elevator piece, can be ensured either the uniformity of irrigation in partial water flows or anti-frost protection of cross flow cooling towers.
The mounting of the DTCT spraying nozzles is made by simply introducing them in the holes on the floor of the distribution tanks.

The water spraying nozzle DTCT type is composed of:
- funnel
- nozzle,
- support with arms,
- disperser (various forms, depending on each application).

Technical characteristics		
Type	DTCT-P-"d"-170 DTCT-P-"d"-90	DTCT-C-"d"-170 DTCT-C-"d"-90
Working fluid	cooling circuit water	
Nozzle presure	0,2 ÷ 2	
Air temperature(^{0}C)	- 30 ÷ +50	
Water temperature (^{0}C)	+ 5 ÷ +80	
Atmosphere	with or without industrial emissions	
Nozzle outer diameter "d" (mm)	21÷ 42	
Funel input diameter (mm)	170 or 90	

DRIFT ELIMINATORS - SS38 TYPE

The drift eliminators retain the air actuated drops in counter flow and cross flow cooling towers, with natural or forced draft. The drift eliminators usually retain drops larger than 50 microns.
The profile of the lamellar elements (profiled plates) of the SS38 drift eliminators is characterized by high retaining efficiency (residual water losses are below 0.01% of the water flow entering the tower) and a favorable ratio between aerodynamic resistance and the retaining efficiency.
The material of the components (lamellas, spacers) has UV stability and resistance at chemical aggressiveness of water and air.

For **counter flow cooling towers**, the drift eliminator modules SS38 are mounted on beams above the water distribution system or, in some cases, directly on the water distribution pipes.

For **cross flow cooling towers**, the drift eliminator modules SS38 can be positioned either horizontally or vertically.

The SS38 drift eliminators are composed of:
- Lamellar elements extruded from semi-rigid PVC (fireproof);
- Spacers (connecting elements) from normal or fireproof polypropylene.

The drift eliminators are delivered unassembled, the assembly being made on site.

Technical characteristics	
Working fluid	with or without industrial emission
Maximum operating temperature (^{0}C)	55
Lamellar elements thickness (mm)	1,2
Medium lamellar element distance, h (mm)	38
Module height, H (mm)	155
Module length, L (m)	max. 6
Module width, l (mm)	380
Weight (kg/m^2)	8,7
Working temperature (^{0}C)	55

SUPPORT SYSTEMS

The support systems provided by Romind T&G are tailored accordingly for different situations (beam pattern) for cooling towers.
These systems contain metallic elements (galvanized or stainless steel) and/or GRP elements.

Support system for cooling tower fill

The support system for the fill is designed to support the fill modules - along the module (for R80).
In case the grills are placed on the constructive elements of the tower, they must be fixed.
The grills are made of mechanically assembled GRP pipes or stainless steel rods.

Support systems for drift eliminators

Usually, in order to sustain the drift eliminators in cooling towers, the existing concrete beams or even the pipes of the water distribution system (where the water dispersion devices are directed downward) can be used as support elements.
The support systems for drift eliminators can be of the following types:
- Network of bars (metallic or GRP), spaced at max. 2500 mm between them;
- Metallic or GRP grills (recommended solution for being light weighted and for the way that type behaves during winter).

Support systems for distribution pipes

If the distribution pipes are positioned below the cooling tower constructive elements (beams), then the support system consists of collar + galvanized (or stainless steel) platband or stainless steel wire hanged from the beam.
If the distribution pipes are positioned above the cooling tower's constructive elements (beams), then the support system is "buck" type, consisting of the GRP pipes, mechanically assembled.
The water distribution system is protected and sustained by the support system through clips or collars.

FROST PROTECTION SYSTEMS

The cooling towers are vulnerable to freezing in cold weather. Ice formations can cause functional and structural damage to the equipment inside the tower. Therefore, these facilities are usually provided with frost protection systems.

Frost protection system for counter flow cooling towers

The frost protection system for counter flow cooling towers (patented system) consists of installing an additional water distribution and dispersion system located all over the tower just below the fill, through which the entire water flow of the tower can be transited completely bypassing the distribution system itself and the tower fill.

This solution determines an increase of the water temperature in the most freeze vulnerable areas of the tower, while the overall cooling of the water stays within the technological limits. As a result, the occurrence of ice formations in the tower is stopped and the cooling capacity of the tower is adjusted assuring a more stable and fine control of the water temperature.

Frost protection system for cross flow cooling towers

The frost protection system for cross flow cooling towers is composed of water dispersion devices with an elevation piece and adequate dispersers, located on the perimeter of the tower, outside the area provided with fill.

The nozzles of the frost protection system operate only in winter, increasing the water level in the water dispenser tank, ensuring additional warm water showers in the perimeter, outside the fill which is the most frost vulnerable tower area.