Unical

NEW

TRISTAR 2S

PERFORMANCE, POWER AND 3-STAR EFFICIENCY CLASS

Pressurised boiler with power from 80÷6100 kW suitable for dual-stage/modulating gas burners

- **Band power approval**
- Series composed of **27 models**
- **Elliptical-shaped shell in carbon steel** (up to 870 kW), which has advantages like:
  - contained width
  - positioning of the tube bundle above the furnace with a significant reduction of possible condensation
- **Furnace** linked between tube plates up to 560 kW; floating furnace, to reduce thermomechanical stress from 680 to 3100 kW and from 3500 to 6100 kW, equipped with special circular junction partitions inserted between the bottom of the furnace, on the water side, and the rear tube plate, with the possibility to absorb expansions
- **Furnace bottom with dissipation plates** for increased efficiency and greater mechanical resistance
- **1 1/2"** high efficiency special multi-finned bimetallic patented pipes
- **Optimization of thermal exchange** thanks to:
  - special spiral turbulators in the front area of the smoke pipes
  - driven and braked water way, inside the body, through internal baffles
- **Front door** with self-centering closing, adjustable in a vertical/axial/transverse direction, with a linkage mechanism, separate from the hinge, to avoid mechanical stress.
- **Door internal insulation** in extremely light recyclable cement
- **External case lining** with a high-thickness, tear resistant, mineral wool mattress (50/60/80/100 mm, depending on the power)
- **Smoke chamber with condensate draining connection**
- **Panel board of thermostatic electromechanical or electronic type** (optional)
- **Facilitated transport** thanks to upper hooks and sturdy longeron base
- Efficiency class **3 stars**



Unical PATENT

PATENTED BIMETALLIC MULTI-LAMELLAR PIPE



Details of Tristar 2S

Cylindrical floating furnace

On large-sized boilers, longitudinal expansions of the furnace become consistent.

For this reason, with TRISTAR 2S models from 680 to 3100 kW using extremely sophisticated technology that has already been tested, Unical only welds the furnace on the front tube plate.

Thanks to this arrangement, the rear part remains free to expand, thus ensuring long duration and operation elasticity.

The more powerful versions have special circular junction partitions that are inserted between the bottom of the furnace, on the water side, and the rear tube plate, with the function of absorbing expansions.

Durability

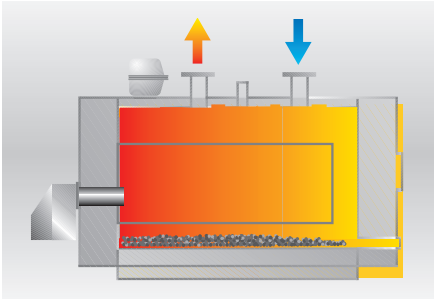
The secret to extend the life of the burner is to thermally balance it.

Thanks to targeted water distribution, homogeneous temperature is obtained inside the shell.

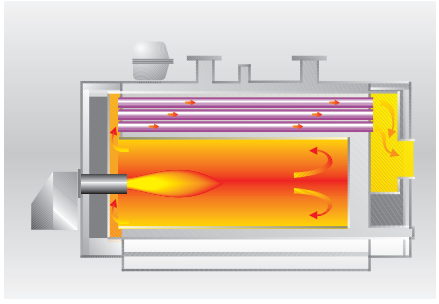
This kind of technology enables us to reach another two goals:

- maximum exploitation of thermal exchange
- reduce the development of limescale deposits.

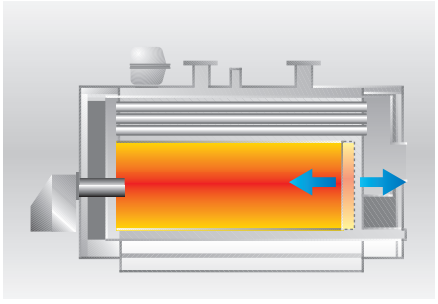
The oval shape of the shell protects the "vital parts" of the boiler from accumulation of any sludge in the system, thus guaranteeing an elevated distance between the furnace and the said shell.



UNIFORM TEMPERATURE DISTRIBUTION



SMOKE STRUCTURE AND PATH



FLOATING FURNACE

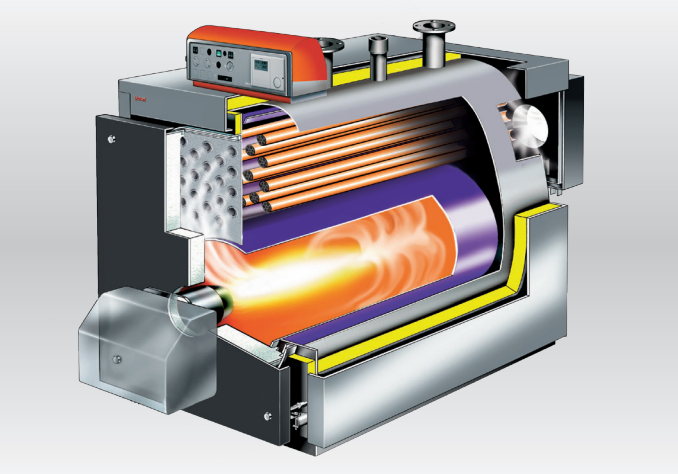
Extremely high efficiency



The *second pass smoke pipes* of TRISTAR 2S are decisive in order to obtain **maximum efficiency**.

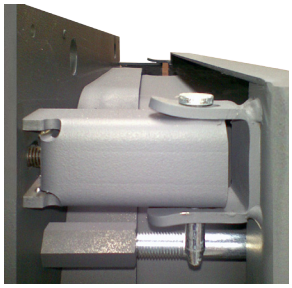
The new Unical patented technology has enabled special multi-finned aluminium profiles to be inserted inside the thick steel pipes:

- **better efficiency (+50%)** than with a smooth pipe, with equal length
- **extraordinarily lighter** than a steel pipe, having exceptionally elastic thermal expansion and reduced mechanical stress on the front and rear tube plates of the boiler's body
- **nearly double the "heat capacity"** than carbon steel, thanks to the use of aluminium, to prevent the phenomena of condensation during transitory ignition phases and use of the boiler at low temperatures
- **vorticose and dynamic flow of smoke**, thanks to the finned shape, thus eliminating "dead" areas and increasing thermal exchange.
- **easier pick-up of burners on ignition phase thanks to** the first portion of invitation with a turbulator composed of a steel spiral wrapped around a metal bar.

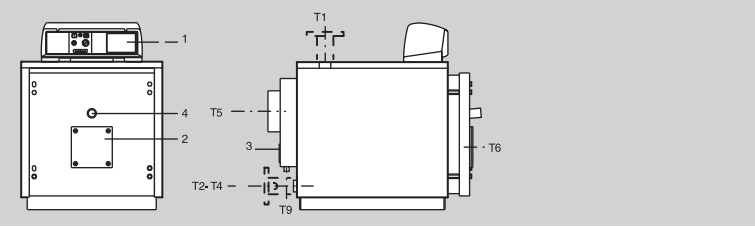


Attention to the details

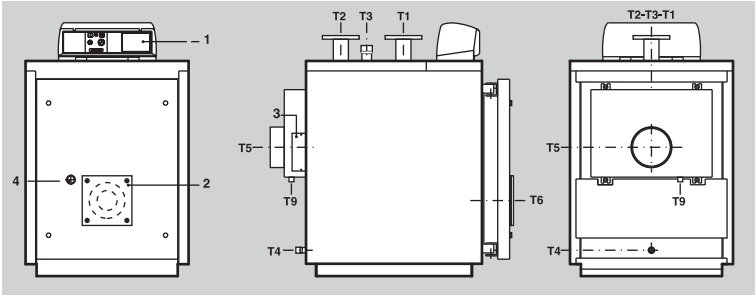
The door is adjustable in different directions: vertical/ transverse/axial (to the right or left). The linkage closing mechanism, which is separate from the hinge, prevents mechanical stress, enabling the traction force to distribute itself equally without being affected by the weight of the door.



TRISTAR 2S 80÷250



TRISTAR 2S 300÷870



1 Panel board

2 Burner supporting plate

3 Smoke chamber cleaning door

4 Flame sight glass

T1 C.H. flow

T2 C.H. return

T3 Expansion vessel connection

T4 Boiler drain

T5 Chimney connection

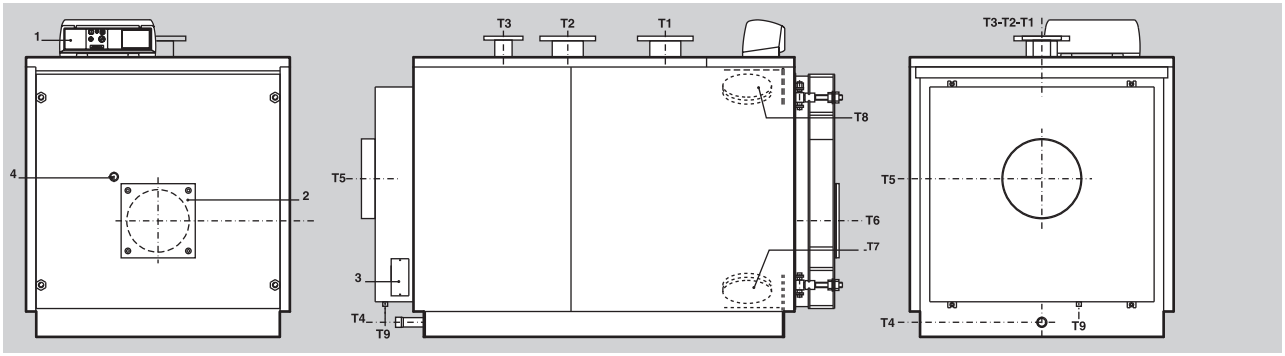
T6 Burner connection

T7 Sludge drain

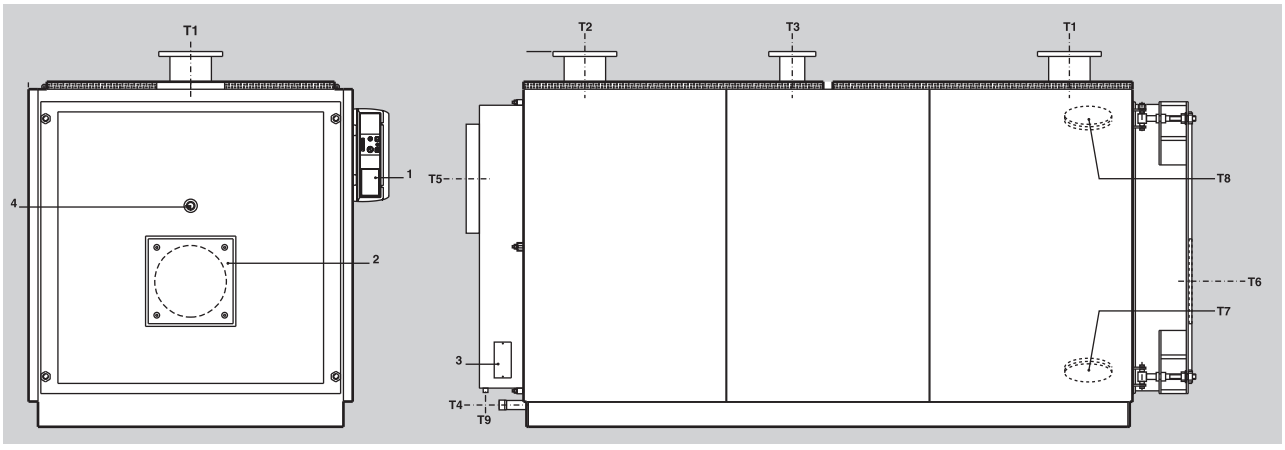
T8 Inspection door

T9 Condensate drain

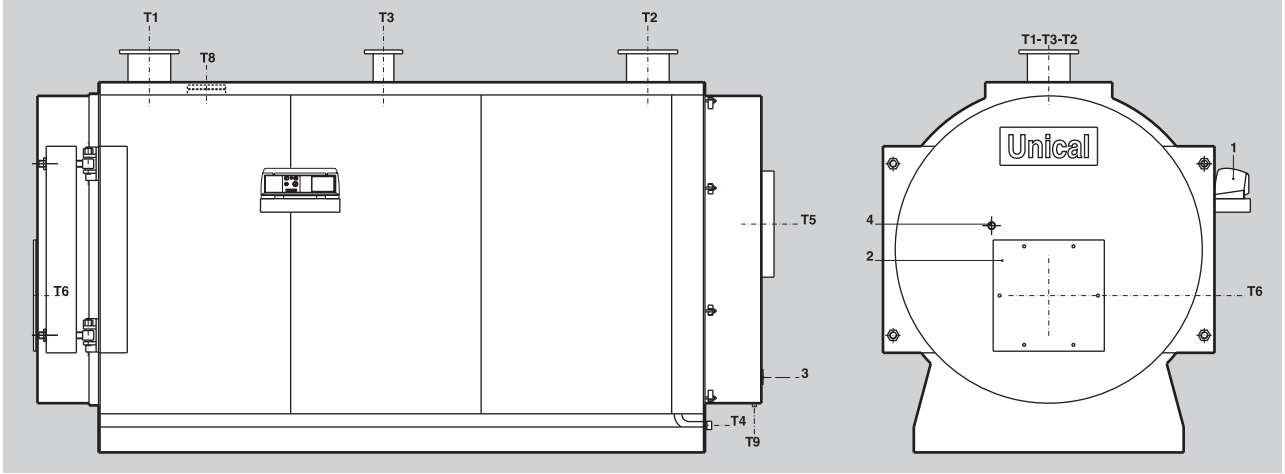
TRISTAR 2S 1000÷2350



TRISTAR 2S 2700÷3500



TRISTAR 2S 3900÷6100



PANEL BOARD (optional)

STANDARD cod. 21057



The standard control panel is equipped with:

- series of switches
- thermometer
- safety thermostat
- dual-stage burner thermostat
- minimum temperature thermostat (pump system)

MASTERMODUL cod. 38779
MASTERBISTADIO cod. 37895



The MASTERMODUL and MASTERBISTADIO HIGH-TEMPERATURE panels are equipped with:

- E8 controller
- LAGO burner controller
- external sensor
- boiler sensor
- D.H.W. storage tank sensor
- C.H. flow sensor
- primary circuit sensor
- series of switches
- safety thermostat

CASCATAMODUL cod. 37900
CASCATABISTADIO cod. 37901



CASCATAMODUL and CASCATABISTADIO panels are equipped with:

- LAGO burner controller
- boiler sensor
- series of switches
- safety thermostat

For TRISTAR 2S boilers coupled with **MODULATING BURNERS**						**Code**
SINGLE boiler	+	1 MASTERMODUL panel				38779
2 TRISTAR 2S in cascade	+	1 MASTERMODUL Panel	+	1 CASCATAMODUL Panel		38779 - 37900
(n) TRISTAR 2S in cascade (max 8 boilers)	+	1 MASTERMODUL Panel	+	(n-1) CASCATAMODUL Panels		38779 - 37900

For TRISTAR 2S boilers coupled with **DUAL-STAGE BURNERS**						**Code**
SINGLE boiler	+	1 MASTERBISTADIO Panel				37895
2 TRISTAR 2S in cascade	+	1 MASTERBISTADIO Panel	+	1 CASCATABISTADIO Panel		37895 - 37901
(n) TRISTAR 2S in cascade (max 8 boilers)	+	1 MASTERBISTADIO Panel	+	(n-1) CASCATABISTADIO Panels		37895 - 37901

MODEL	Heat output min/max	Heat input min/max	Boiler capacity	Water side pressure drops	Flue gas pressure drops	Max. boiler operating pressure	Dimensions h x l x p	WEIGHT
	kW	*kW*	*l*	*m w.c.*	*mm w.c.*	*bar*	*mm*	*kg*
TRISTAR 2S 80	60÷80	63.3÷85.2	86	0.08÷0.15	3.8÷6.8	6	912x690x995	221
TRISTAR 2S 120	90÷120	94.6÷127.4	126	0.06÷0.11	6.1÷10.8	6	1002x760x1210	325
TRISTAR 2S 160	120÷160	125.8÷169.4	151	0.11÷0.20	8.9÷15.8	6	1002x760x1390	366
TRISTAR 2S 200	150÷200	157÷211.3	203	0.10÷0.17	11.1÷19.7	6	1127x860x1442	505
TRISTAR 2S 250	187.5÷250	195.8÷263.6	247	0.12÷0.22	13.3÷23.6	6	1127x860x1692	583
TRISTAR 2S 300	225÷300	234.6÷315.8	298	0.12÷0.22	15.9÷ 28.4	6	1372x860x1541	665
TRISTAR 2S 370	277.5÷370	288.8÷388.7	398	0.08÷0.14	18.1÷ 32.2	6	1542x890x1606	845
TRISTAR 2S 450	337.5÷450	351÷472.4	462	0.11÷0.20	20.2÷35.8	6	1542x890x1801	986
TRISTAR 2S 560	420÷560	436.8÷587.9	565	0.17÷0.30	23.7÷42.1	6	1542x890x2113	1119
TRISTAR 2S 680	510÷680	530.4÷713.9	671	0.12÷0.21	27.8÷49.4	6	1622x1122x1989	1435
TRISTAR 2S 780	585÷780	608.4÷818.9	753	0.15÷0.27	30.7÷54.4	6	1622x1122x2184	1557
TRISTAR 2S 870	652.5÷870	678.6÷913.4	836	0.19÷0.33	33÷58.6	6	1622x1122x2379	1656
TRISTAR 2S 1000	750÷1000	780÷1049.8	1040	0.11÷0.19	35.9÷63.9	6	1622x1352x2346	1970
TRISTAR 2S 1180	885÷1180	920.4÷1238.8	1242	0.15÷0.26	38.6÷68.6	6	1622x1352x2686	2175
TRISTAR 2S 1400	1050÷1400	1092÷1469.8	1418	0.15÷0.26	42.1÷74.9	6	1732x1462x2781	2975
TRISTAR 2S 1650	1237.5÷1650	1287÷1732.3	1617	0.20÷0.36	45.5÷80.9	6	1732x1462x3151	3465
TRISTAR 2S 2000	1500÷2000	1560÷2099.7	2086	0.16÷0.38	40.5÷72	6	1892x1622x3225	4390
TRISTAR 2S 2350	1762.5÷2350	1833÷2467.1	2324	0.21÷0.38	43.2÷76.9	6	1892x1622x3545	4700
TRISTAR 2S 2700	2025÷2700	2106÷2834.6	2667	0.28÷0.50	45.6÷81	6	1990x1720x3835	5370
TRISTAR 2S 3100	2325÷3100	2418.1÷3254.5	4142	0.37÷0.66	43.3÷76.9	6	2271x1970x3879	6990
TRISTAR 2S 3500	2625÷3500	2730.1÷3674.5	4455	0.37÷0.65	50.4÷89.5	6	2271x1970x4279	7790
TRISTAR 2S 3900	2925÷3900	3042.1÷4094.4	6012	0.28÷0.50	44.4÷78.6	6	2533x2088x4738	8630
TRISTAR 2S 4400	3300÷4400	3432.1÷4619.3	6012	0.35÷0.63	56.6÷100.5	6	2533x2088x4738	8630
TRISTAR 2S 4800	3600÷4800	3744.1÷5039.3	7058	0.42÷0.75	50.5÷92.2	6	2653x2214x4928	9675
TRISTAR 2S 5200	3900÷5200	4056.1÷5459.2	7058	0.50÷0.88	59.3÷105.4	6	2653x2114x4928	9675
TRISTAR 2S 5700	4275÷5700	4446.1÷5984.1	7909	0.59÷1.05	49.5÷90.5	6	2860x2380x5484	13060
TRISTAR 2S 6100	4575÷6100	4758.1÷6404.1	7909	0.68÷1.21	56.7÷100.7	6	2860x2380x5484	13060

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