COSMOGAS®
MADE IN ITALY

Condensing commercial water heaters

CO2 LOW EMISSIONS

up to 11 bar WORKING PRESSURE

AISI 316 Ti TITANIUM

up to 1:20 TURNDOWN RATIO

AGUAdens T™

gas fired condensing commercial water heaters from 60 to 280 kW

AGUAdens T™

Gas fired condensing commercial water heaters

AGUAdens T from 60 to 280 kW is the range of patented floor standing modulating gas condensing commercial water heaters made entirely in Cosmogas.

Eco-friendly and already set to operate with up to 20% hydrogen blend.

AGUAdens T are designed to be 'space-saving'; thanks to their vertical structure they allow to save space in both new and retrofitted thermal power plants. They supplies up to 160 l/min (Δt 25°C) in continuous. Thanks to their light weight, they are easy to transport, install and position in the thermal power plant.

Each **AGUAdens T** is composed of 1 to 4 R.V.C. heat exchangers of 70 kW, each constructed without weld joints and capable of working pressures up to 11 bar: a 'monobloc' system that streamlines the supplied output according to real domestic hot water needs, always ensuring maximum efficiency.

Wherever a lot of domestic hot water is needed **AGUAdens T** is simply perfect for any industrial or tertiary installation with high domestic hot water needs:

- Hotels
- Campings
- Flat buildings
- Restaurants and cafeterias
- Schools
- Sports centres
- Wellness centres
- Hospitals
- Car washes
- Slaughterhouses
- Distilleries
- Tanneries
- Factories
- Farms


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OSMOGES
AQUADENS

AGUAdens T the solution for every need

AGUAdens T, with its circuits, piping, and manifolds all made of stainless steel, can be directly supplied with mains water, guaranteeing great resistance to corrosion and the aggressiveness of chlorinated water.

Thanks to low inlet temperatures, **AGUAdens T** enhances the condensing effect and supplies domestic hot water even at high temperatures, maximising savings and reducing to minimum the thermal inertia.

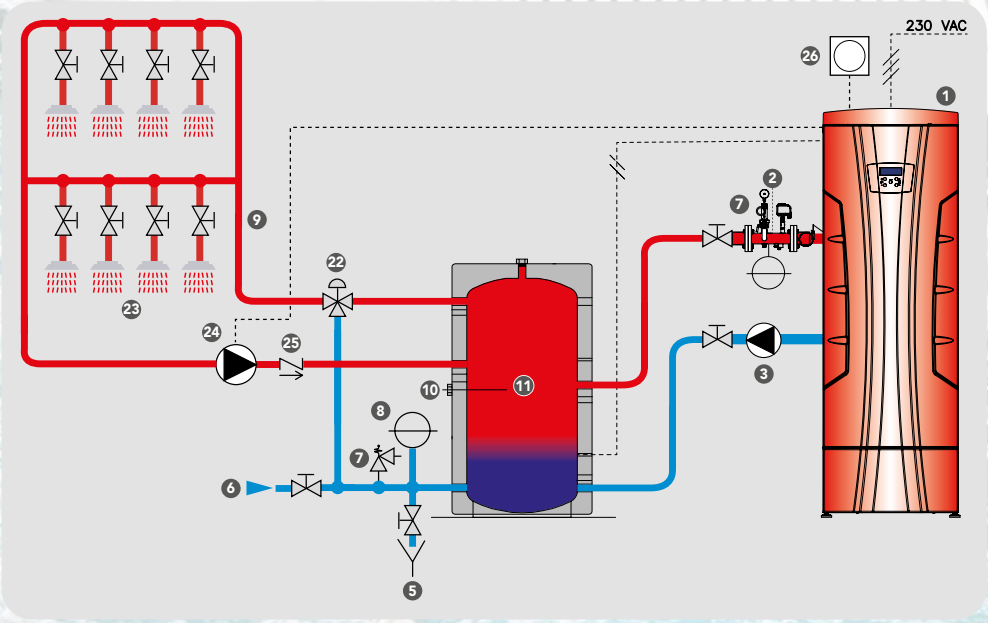
The perfect synchronization of the heat exchangers, the cascade sequence control and "heat exchangers rotation", combined with COSMOMIX air/gas mix system, allow a wide turndown ratio of 1:20 for **AGUAdens 280 T** and up to 1:160 when 8 **AGUAdens 280 T** are connected in cascade sequence for output up to 2240 kW.

2-way valves are available on demand for high seasonal efficiency in systems with frequent and high variations in flow rate and output.

AGUAdens T with storage tank plenty of domestic hot water quickly

For installations with high simultaneity of withdrawal in the first 10 minutes and in the peak period, **AGUAdens T** is combined with a small water storage tank.

The aquacalda.tech calculation software helps in designing the best combination of **AGUAdens T** and water storage tank.

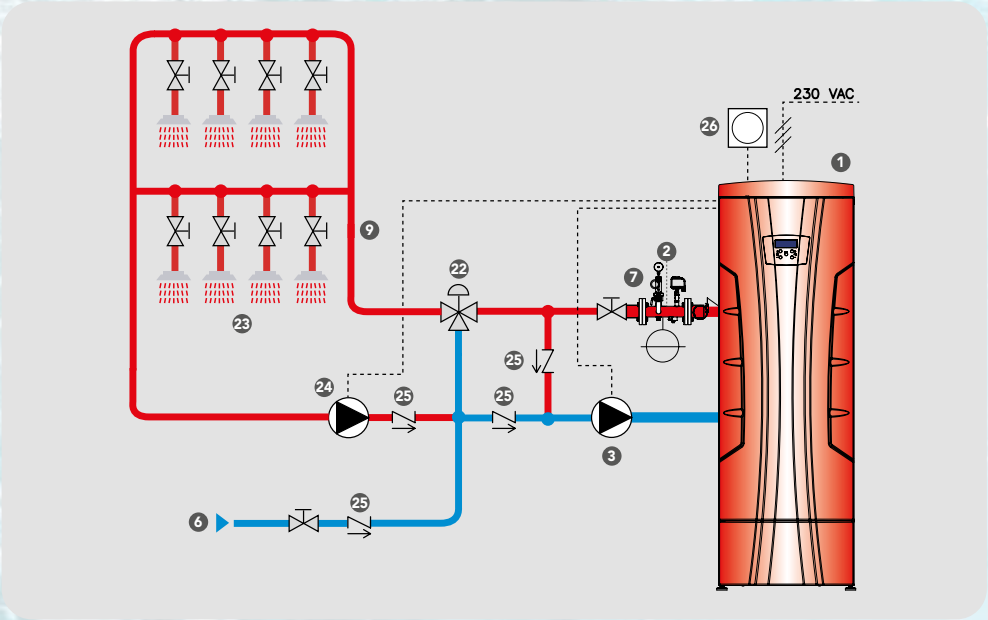


1 · AGUAdens T water heater
2 · Safety kit
3 · Primary circuit circulating pump
5 · Drain valve
6 · Cold water inlet
7 · Safety relief valve
8 · Water storage tank expansion vessel
9 · Domestid hot water supply
10 · Electronic anodic protection
11 · Water storage tank
22 · 3-way mixing valve
23 · Sanitary users
24 · Recirculating pump
25 · Backflow preventer
26 · Timer

Domestic hot water without water storage tank with AGUAdens T is possible

In the presence of a large recycling loop, which contains a large number of litres of water, the water storage tank can be omitted while still ensuring performance above the required comfort standards.

The value contained in the recycling loop plus the instantaneous output of **AGUAdens T** are sufficient to meet the demand for domestic hot water during the first 10 minutes and the peak period.



The examples reported are merely indicative

AGUAdens T + MULTItank perfect semi-rapid system efficiency always guaranteed

New energy saving legislation and modern residential and commercial building insulation techniques have significantly reduced heating needs, and it will continue to be reduced. With the introduction of high performance showers, cascade showers, Jacuzzis, wellness and fitness centres, **hot water usage is increasing** as much as fuel consumption for its production. If we consider that **hot water is used 365 days a year in unlimited applications, saving on hot water production has become a priority**, above all in the sectors with high water needs.
To optimise **AGUAdens T** performance, Cosmogas has designed **MULTItank**, a 200 - 300 - 500 - 800 - 1000 litre capacity inertial hot water storage tank with 2" connections and electronic anodic protection that always guarantees:

- Constant and stable domestic hot water temperature even in case of small withdrawals
- Higher availability of domestic hot water during peak period withdrawals
- Limited ignitions of the burner in presence of small withdrawals, protecting the environment and guaranteeing a further saving
- Constant condensing
- Direct domestic hot water heating
- Domestic hot water production exploiting all the power of AGUAdens T
- Reduced water storage tank volume (1 litre per kW)
- Reduced recovery times and no interposed heat exchangers
- Less ground space occupied

AGUAdens T combined with **MULTItank** forms a perfect semi-rapid system that can supply domestic hot water exactly when needed, both in peak and continuous periods, for all industrial and tertiary facilities.

All the advantages of direct exchange: AGUAdens T works always in condensing mode

If we compare any D.H.W. production system, from the traditional semi-rapid system to that with both internal and external heat exchangers, it can be said that thermal exchange always happens in two phases. Firstly hot water heating in the primary heat exchanger of the water heater and, secondly, further thermal exchange between the water of the primary circuit and the sanitary water (fig. 1 and 2).

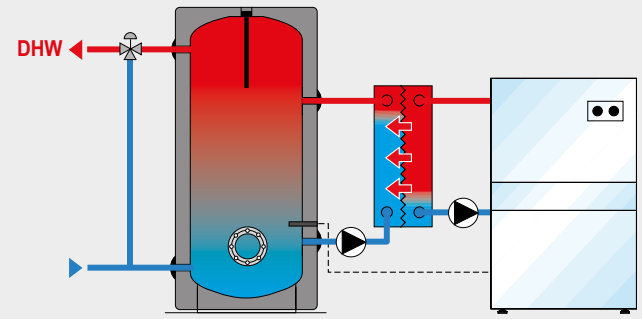


fig. 1

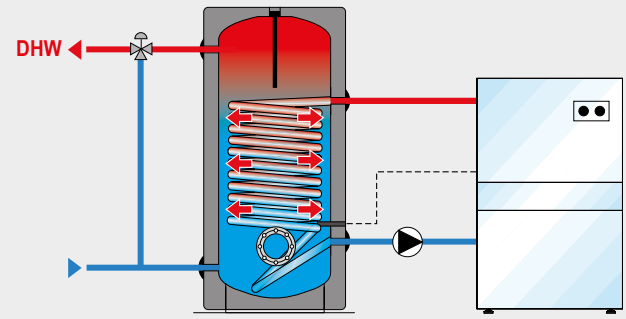


fig. 2

Traditional semi-rapid system

- No condensing
- Reduced efficiency due to double heat exchange
- Bigger storage tank needed
- Higher thermal loss
- Larger footprint occupied

Hot water storage tank with internal heat exchanger system

- No condensing
- High recovery times
- Efficiency of the system bound to the coil surface
- Bigger storage tank needed
- Larger footprint occupied

When **AGUAdens T** is connected to a **MULTItank** storage tank, domestic hot water heating directly happens inside the primary heat exchanger (fig. 3). Therefore there are no heat exchangers inserted and the exchanged output is always provided by **AGUAdens T**.

This sets very fast charging and recovery times.
For all these reasons the storage tanks, that are part of the **AGUAdens T,** are **50% smaller** on average than the size of storage tanks with coil or tank in tank, etc..

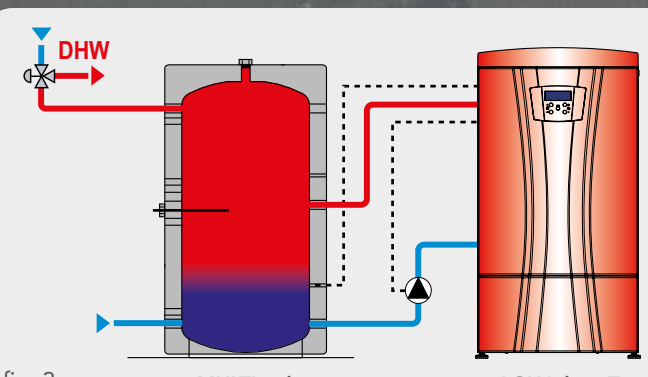


fig. 3

Cosmogas semi-rapid system

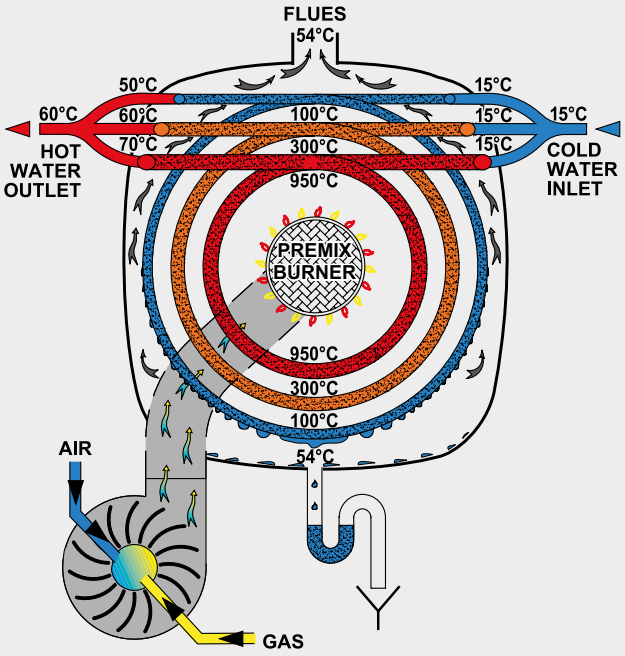
- It always works in condensing mode
- Maximum efficiency
- Smaller footprint occupied
- Reduced volume of the storage tank
- Reduced recovery times

The basics of Radial Variable Circulation R.V.C.

The 'variable' circulation of the fluid allows flue gas/water heat exchange in countercurrent, resulting in high efficiency that quickly brings flue gas to condensing.

During the operating, the inlet cold water is distributed over the three heat exchangers and the series of coils, Ø16 and Ø18 mm.

The advantage of such a system is to enhance condensing and achieve better outputs.



Three heat exchangers in one patented made of AISI 316 Ti (Titanium) stainless steel

The R.V.C. (Radial Variable Circulation) heat exchanger, heart of **AGUAdens T** system, **is the result of research and intensive testing together with Cosmogas experience** that, for over 50 years, has been designing and patenting heating and domestic hot water production systems.

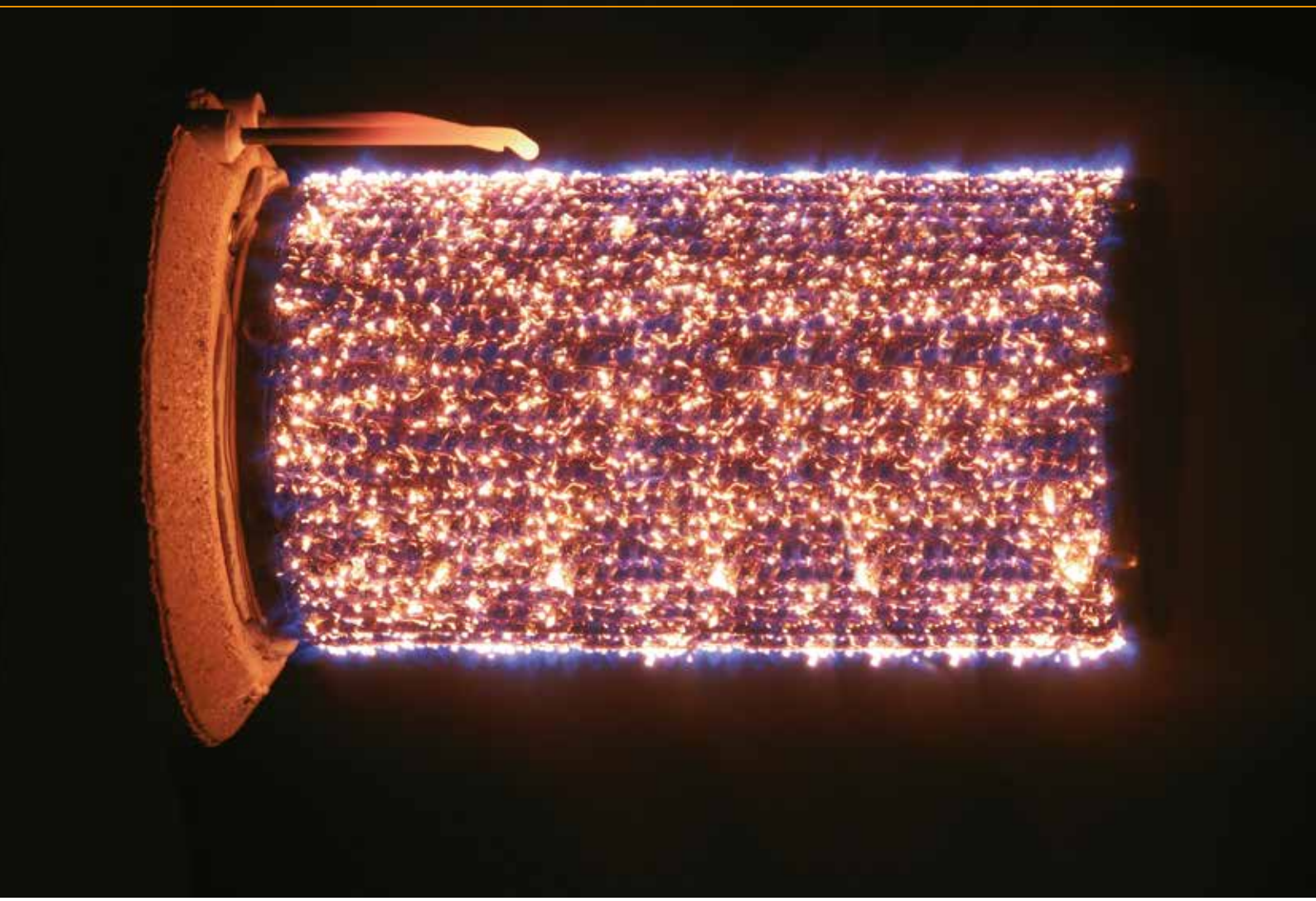
The 3 series of **AISI 316 Ti (TITANIUM)** stainless steel round tubes, which the R.V.C. heat exchanger is made of, are fasten **without weld joints** to keep Titanium stainless steel characteristics unaltered.
The R.V.C. heat exchanger is housed inside a strong, self-supporting, insulating composite monobloc casing.

Cosmogas is the only manufacturer who can offer a **Titanium primary heat exchanger that can be directly supplied by mains water** guaranteeing a great resistance to the corrosion and the aggressiveness of chlorinated waters.
Thanks to low inlet temperatures the R.V.C. exalts the condensing effect and supplies domestic hot water even at high temperatures

The great exchange surface area of the '3 heat exchangers' allows for **efficiency up to 106,6%** with gas savings up to 30%.

The only primary heat exchanger that can be directly supplied by mains water

- **Patented exclusive design**
- **Exceptional resistance against corrosion**
- **High efficiency**
- **Large water flow**
- **Great exchange surface**
- **Low pressure drops**
- **Working pressure up to 11 bar**

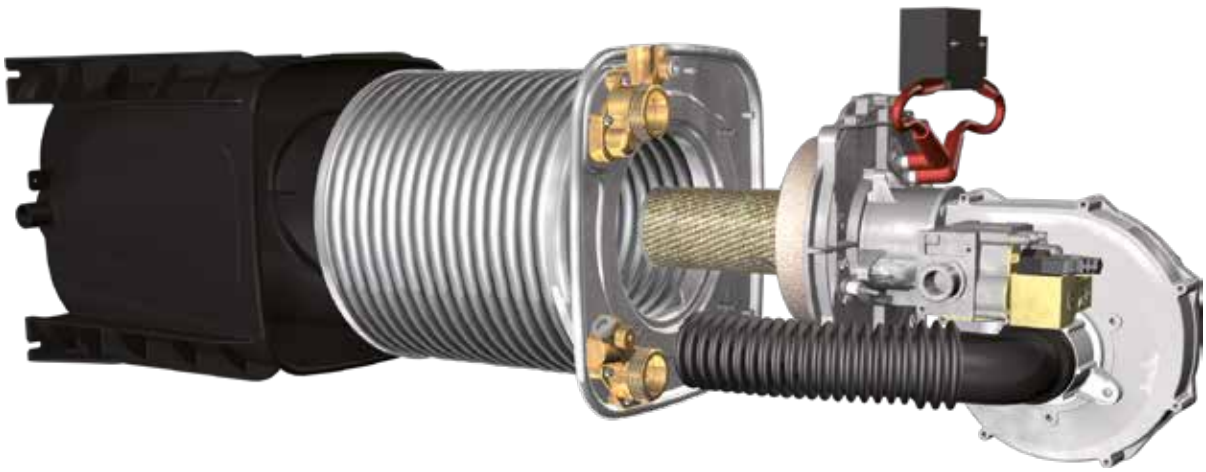


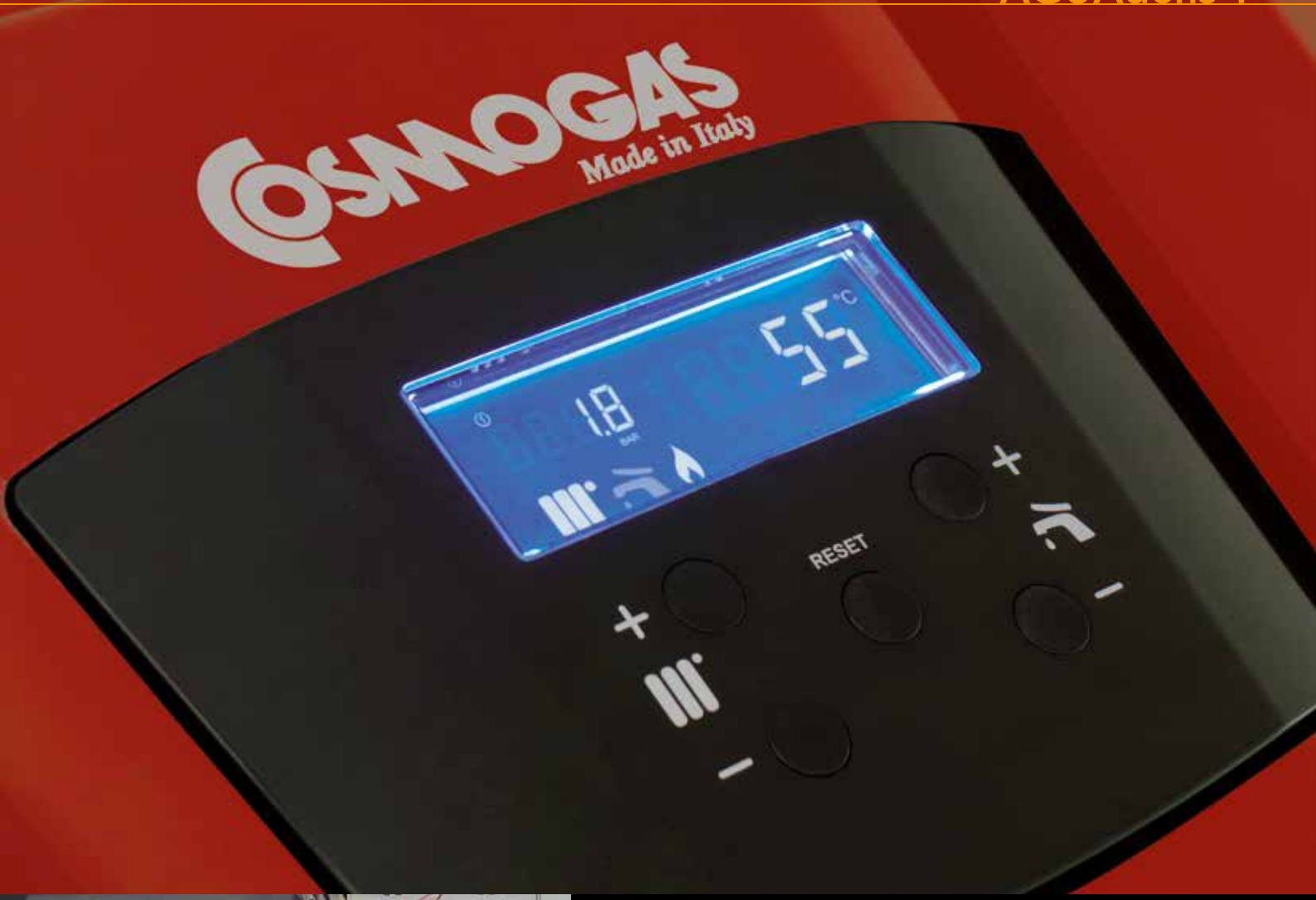
Eco-friendly premix burner made of Fecralloy metal fiber

Eco-friendly premix commercial water heaters have a constant air/gas ratio in each point of the turndown range of the burner, decreasing polluting emissions and optimising efficiency. The premix burner is made of "Fecralloy" a special metal fibre and has a round shape.
Cosmogas eco-friendly premix burner spreads short and perfectly nourished flames and offers:

- **High-efficiency combustion**
- **NOx low polluting emissions and CO_2 low greenhouse effect**
- **Natural gas, LP gas and Natural gas/20% Hydrogen blend operating**

The innovating premix system **Cosmomix** employed in **AGUAdens T** allows an exceptional turndown ratio up to 1:20 (**AGUAdens 280 T**).





Standard control device for perfect operating of the installation

The control board of the commercial water heater allows the management of:

- Sanitary circuit pump
- Output proper modulation
- Pump unlock system
- Antifreeze device
- Low water flow protection
- Low water pressure protection
- Flue blocked pressure switch
- Condensate blocked drain switch
- Auto diagnostic via control display, with automatic switch-off (Save Energy) after 5 minutes of inactivity, of all components and functions: visualization of errors and lockouts, temperature sensors, ionisation current, fan rotation speed, water flow rate, water pressure.

It gets through a 65 cm wide door

AGUAdens T represents the best balance between power, weight and size. Being extremely compact it gets through a 65 cm wide door, allowing easy access into thermal power plant. Thanks to its light weight it is possible to easily handle it even in case of difficult installations.

Plug&Play cascade sequence compact and complete

AGUAdens T comes standard with a single flue gas manifold and cold water inlet and hot water outlet manifolds.
All pre-assembled and tested in Cosmogas to minimize risk and installation time, with minimal floor space requirements (0,42 sq. m.).

Easy electric connections

AGUAdens T is equipped with a pre-wired terminal box with connectors and clear symbols, ready for an easy connection to each installation component like sensors, pumps and control boards. Next to the terminal box there is the 885IF interface set up that allows a 0-10V input.

Standard condensate acidity neutralizer

Condensing water produced during the combustion process react to combustion products turning into acid water. To put down acidity, each **AGUAdens T** is standard equipped with a condensate acidity neutralizer, sized to restore the pH to tolerable values. Content: 10 kg of limestone.

Standard condensate blocked drain switch

A special inner condensate cup, collects condensate and makes it flow freely to the drain; in the condensate cup is connected a blocked drain switch that cuts off the commercial water heater if the level of condensate exceeds the permitted limit.

Standard air filter

AGUAdens T is equipped with a standard air filter to protect the burner, the combustion chamber and the heat exchanger from dust and impurities, ensuring a better efficiency of the combustion circuit.

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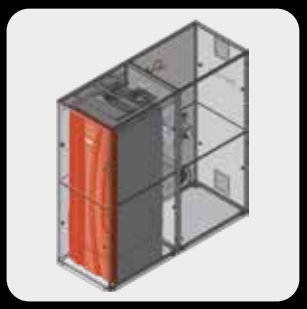
COVER-BOX T safe against bad weather on demand

The **AGUAdens T** is available for use outdoors with the additional COVER-BOX T, the CE certified, fireproof, weather resistant cover made of anodized aluminium that provides an IP X5D electric protection degree.
Its reduced size and elegant design make its placement easy.



Standard water flow meter to prevent small flows

Each heat exchanger inside **AGUAdens T** is equipped with a standard flow meter to guarantee a more accurate management of water flow rates and to make the system operate in a more efficient way.

Standard adjustable feet for proper alignment

AGUAdens T is standard equipped with a series of adjustable feet for proper alignment of the commercial water heater. The height of the feet varies from 0 to 10 mm.

Standard integrated flue back preventer

Each premix burner, inside **AGUAdens T**, has been standard equipped with a flue back preventer, on the combustion circuit, to prevent the possible flue gas recirculation among different heat exchangers.

Unique set of spare parts for the entire range for maximum ease of maintenance

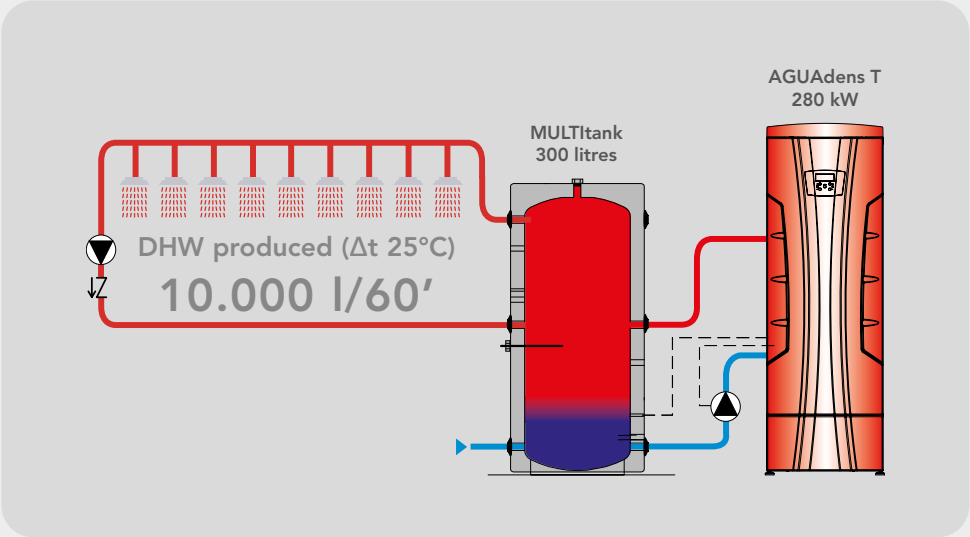
AGUAdens T is designed for easy maintenance with direct front access and features uniformity of functions and components. Spare parts are the same for the entire range and Service Centres can service with a very limited number of spare parts. A case kit containing the main ones is available.

Stainless steel connections on demand

For all those hot water heating requirements for food processing, cosmetics, perfumery, hygiene soaps, etc., **AGUAdens T** is available in a special version with stainless steel connections on demand.

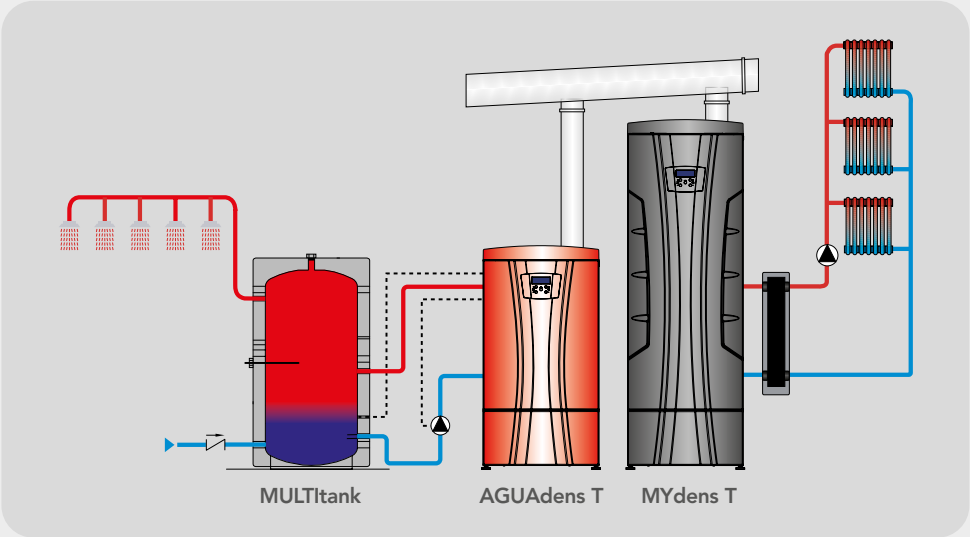
Suitable for new and retrofitted thermal power plants

In many utilities, domestic hot water production systems consist of big storage tanks that, as well as promote proliferation of bacteria, they occupy a lot of ground space and are characterized by relevant energy loss and waste. According to actual needs of users, Cosmogas semi-rapid system, always allows the choice of proper balance between output and storage. **AGUAdens T + MULTItank** semi-rapid system guarantees high performances even with extremely reduced storage (1 l x kW) and thanks to its multi-burner setting, it can heat only the water needed without any waste, reducing consumption to the minimum.



Same flue gas system for AGUAdens T and MYdens T

UNI 11528 legislation allows the connection of two appliances with similar characteristics in the same flue system even if they serve different installations.
It is therefore possible to combine a condensing commercial water heater **AGUAdens T** to a condensing commercial boiler **MYdens T** connecting them in the same flue system.
In this way both appliances can be dimensioned according to real domestic hot water needs **(AGUAdens T)** and heating needs **(MYdens T)** optimising performances and exalting the condensing effect in both utilities.



885HC cascade sequencer (on demand)

AGUAdens 280 T cascade sequence is controlled by a 885HC sequencer that manages the rotation and the sequence of the burners.
With a 885HC cascade sequencer it is possible to sequence up to 8 **AGUAdens 280 T** commercial water heaters.
For total management of the primary and secondary system, the TUTORbit thermoregulator and remote control is available (see next page).

AGUAdens T cascade sequence up to 1124 l/min DHW, output up to 2352 kW

AGUAdens 280 T commercial water heaters can be connected in cascade sequence up to 8 units to achieve a maximum power of 2352 kW. One unit operates as "Manager" and the others as "Dependents" modulating to get the requested output.

Units can be connected to each other in cascade sequence with a minimum distance of 10 cm.
They have been designed to have access to both front and rear side, to facilitate any type of maintenance.

Cascade sequence is recommended in all systems where continuity of operation is required and where high output is needed for start-up and low output for operation.

Each commercial water heater is equipped with 0-10V MODBUS IF885 interface.
AGUAdens T cascade sequence is possible through a simple daisy-chain wiring connection.

AGUAdens T in cascade sequence can be connected to telemanagement systems with communication protocol type LonWorks, BACnet or MODBUS.

TUTORbit: thermoregulator for remote control and cascade sequence management

Cascade sequence control - TUTORbit regulates the operation up to 4 **MYdens T** boilers in cascade sequence, managing a sequenced lighting and modulating from the lowest output of one single boiler to the highest output of 4 boilers working at full speed, guaranteeing the rotation for an equal aging.

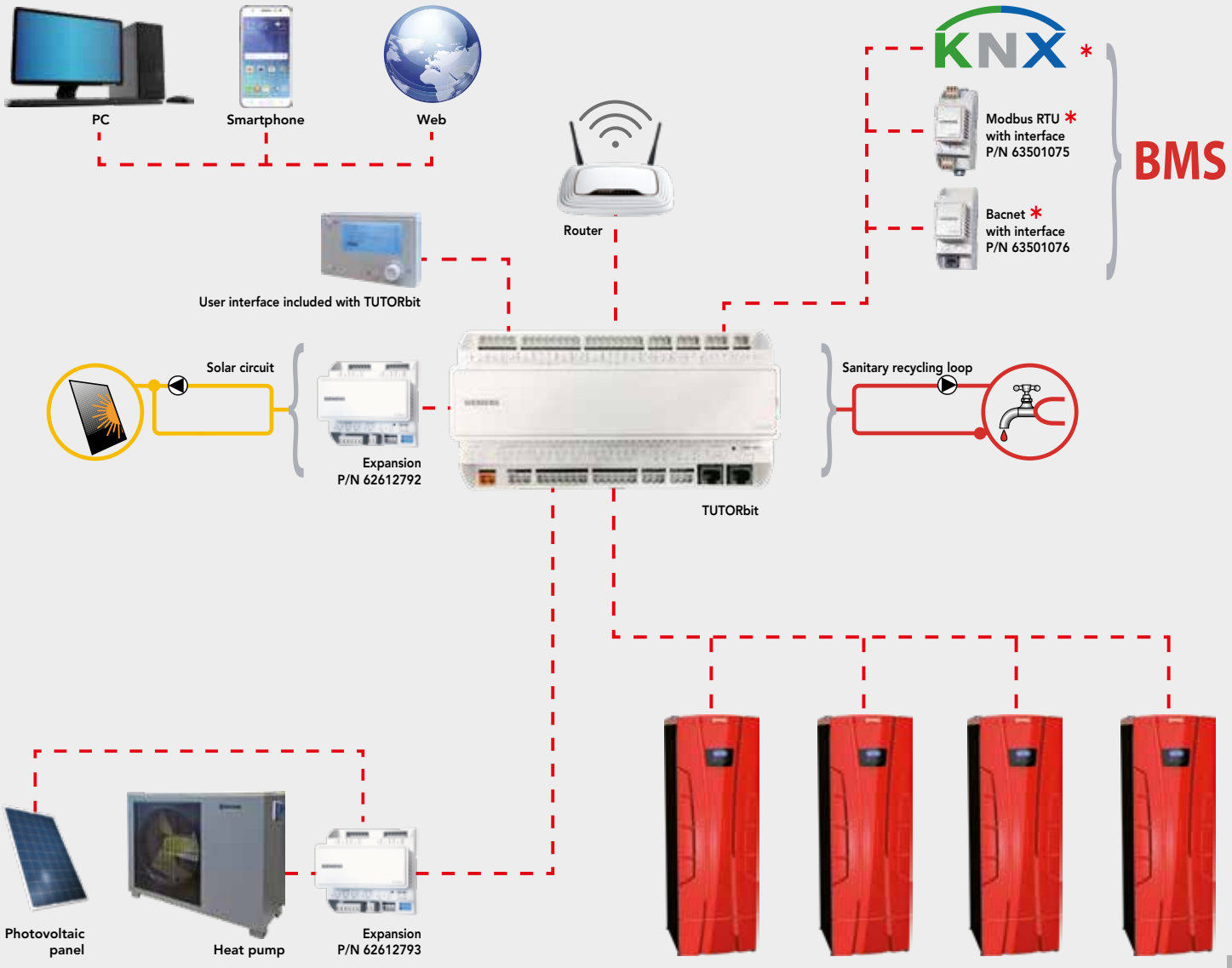
Solar adjustment - TUTORbit, by means of special expansion on demand, also simultaneously manages a solar circuit by controlling the following parameters:
- Storage minimum and maximum temperature
- Solar panel temperature
- Water storage tank load pump Δt function
- Anti stagnation function
- Anti freeze function
- Heat transferring pump/anti-legionella

Sanitary adjustment - TUTORbit gives the opportunity to:
- Set 2 operating modes (water storage tank sensor and water storage tank thermostat)
- Manage the anti-legionella function
- Water transfer pump between storage tanks
- Storage minimum and maximum temperature
- Domestic hot water circulating pump
- Control a heat pump in integration to increase the efficiency of the system

FV link standard connection to photovoltaic - It is the integration system with photovoltaic systems, which allows maximising the self-consumption of electricity produced from renewable sources. Thermal energy can be stored by automatically raising the temperature of domestic hot water or heating.

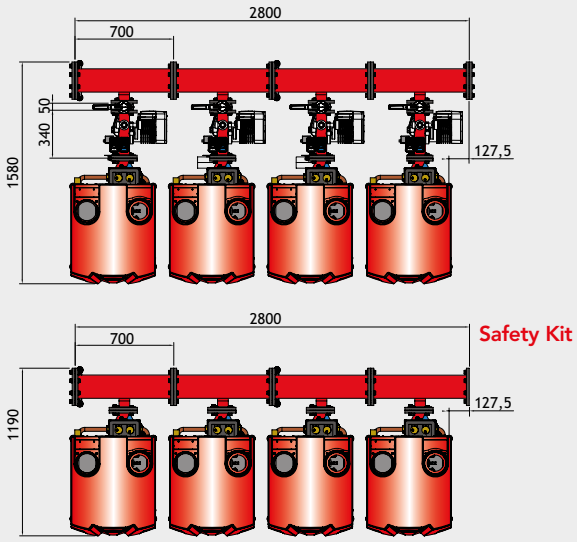
Web-based remote service system - TUTORbit is compatible with main browsers and allows cloud remote control of the system via PC, tablet and smartphone, offering the following possibilities:
- Management and saving of user-customized settings
- Forcing of inputs and outputs
- Alarms visualization
- Control input from 0-10V signal
- Monitoring through the synoptic panel of parameters and operating temperatures

* The connection to possible BMS system can be chosen from one of the three proposed solutions: 1) KNX direct, 2) Modbus RTU via interface P/N 63501075, 3) Bacnet via interface P/N 63501076.

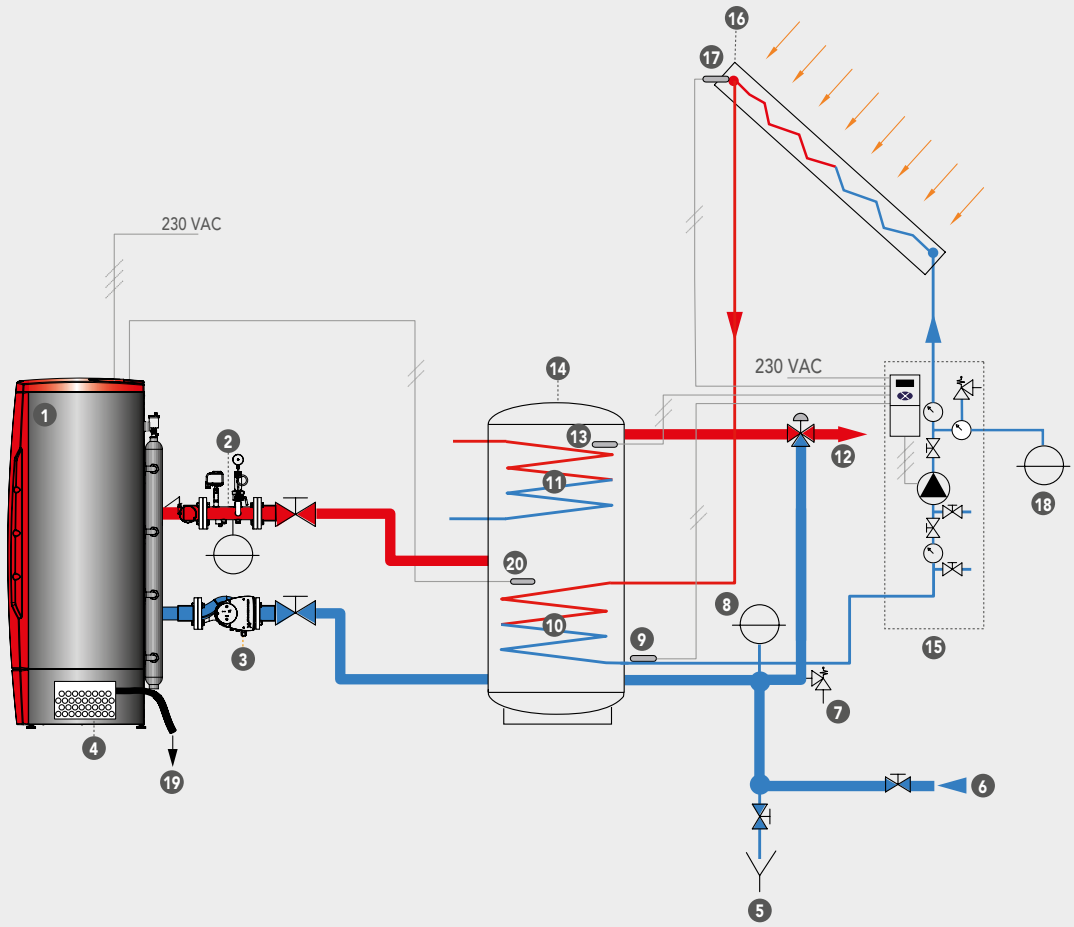

PC
Smartphone
Web
Router
KNX *
Modbus RTU *
with interface
P/N 63501075
Bacnet *
with interface
P/N 63501076
BMS
User interface included with TUTORbit
Solar circuit
Expansion
P/N 62612792
TUTORbit
Sanitary recycling loop
Photovoltaic
panel
Heat pump
Expansion
P/N 62612793

Safety
kit

Depending on local code, it is useful to install a safety kit on each unit.



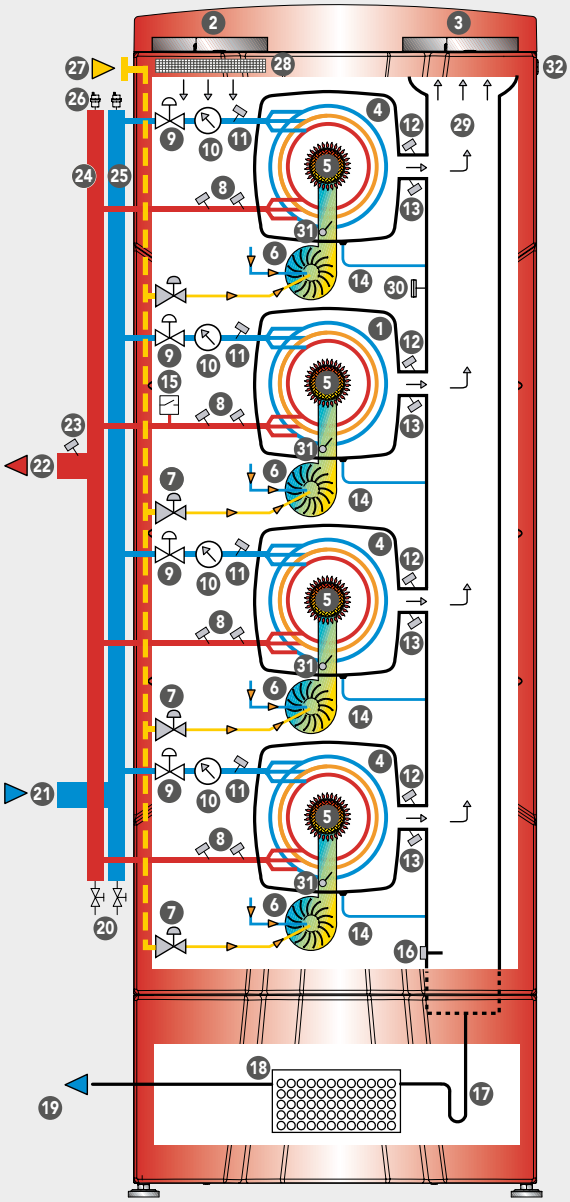
Possible
arrangement

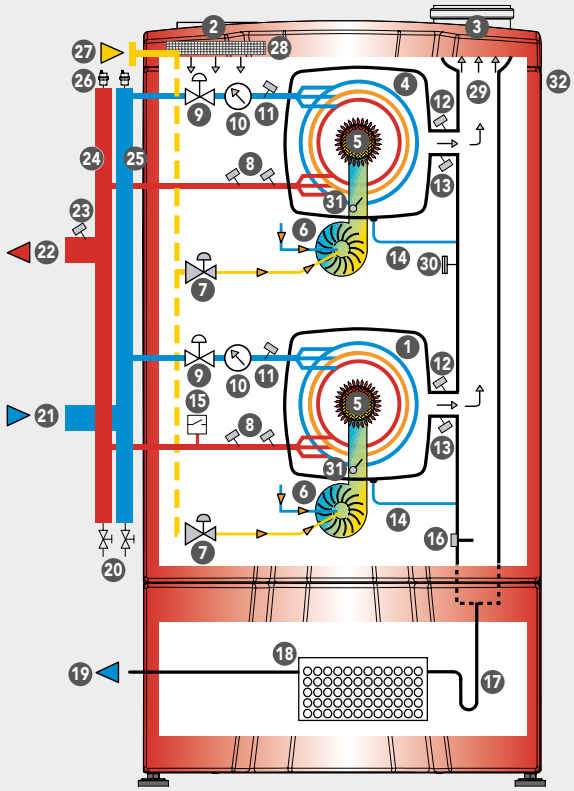


1 · AGUAdens T commercial water heater
2 · Safety kit
3 · Circulating pump
4 · Condensate acidity neutralizer
5 · Drain valve
6 · Cold water inlet
7 · Safety relief valve
8 · Hot water storage tank expansion vessel
9 · Solar circuit regulating sensor
10 · Solar panel coil heat exchanger
11 · Auxiliary coil heat exchanger
12 · Domestic hot water supply
13 · Hot water storage tank temperature sensor
14 · MULTItank series hot water storage tank
15 · Filling and safety group of the solar circuit with 3-sensors solar differential control unit
16 · Solar panel
17 · Solar panel temperature sensor
18 · Solar circuit expansion vessel
19 · Condensate drain
20 · AGUAdens T temperature sensor

The examples reported are merely indicative

Operating schemes



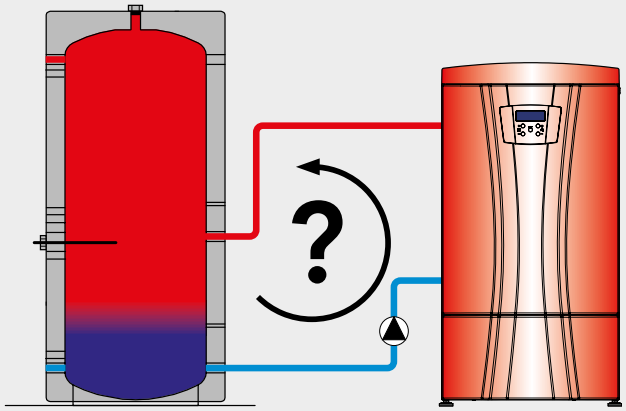


1 · Manager thermal unit
2 · Air intake
3 · Flue gas outlet
4 · Dependant thermal unit
5 · Fecralloy metal fibre premix burner
6 · Fan
7 · Gas valve
8 · Domestic hot water supply and safety temperature switch
9 · 2-way motorised valve ("TV" models only)
10 · Water flow meter
11 · Cold water temperature sensor
12 · Flue gas temperature sensor
13 · High limit flue gas temperature switch
14 · Thermal unit condensate drain
15 · Water pressure sensor
16 · Blocked drain switch
17 · Condensate drain siphon
18 · Condensate acidity neutralizer
19 · Condensate drain
20 · Drain valves
21 · Cold water inlet
22 · Hot water supply
23 · Domestic hot water temperature sensor
24 · Domestic hot water manifold
25 · Cold water manifold
26 · Automatic air vent valve
27 · Gas inlet
28 · Air filter
29 · Flue gas outlet pipe
30 · Blocked flue pressure switch
31 · Backdraft damper
32 · Main switch

Water flow rate
of the primary circuit

The water used in sanitary circuits contains many dissolved minerals (hardness) and in different quantities, depending on the geographical distribution areas.
These minerals tend to settle in heat exchangers (forming scale), reducing their efficiency and causing irreparable damage.
It is therefore essential to treat the feed water of the hot water production system by reducing its hardness to values between 3°f and 8°f, at the same time the minimum flow rates of the primary circuit of **AGUAdens T** must be observed.
The designer/installer, referring to the table below, must size the circuit and its pump to ensure the correct flow rate of water to circulate in the commercial water heater.

The electronic control unit of the **AGUAdens T** commercial water heater not only controls the primary circuit pump, but also displays the flow rate of the water circulating in each heat exchanger.

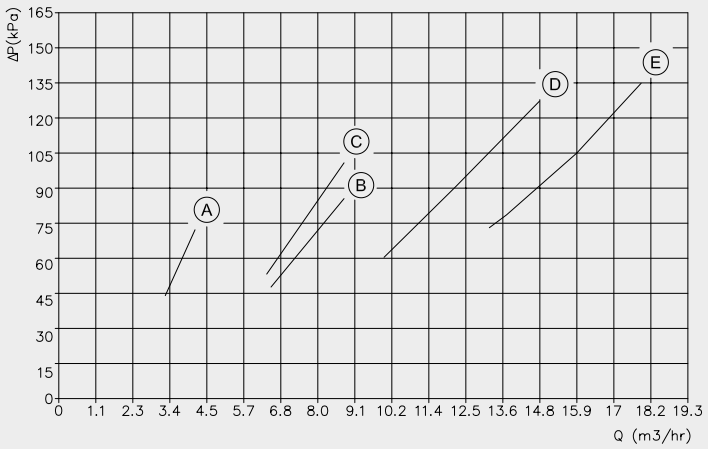


Minimm operating flow rate
of the primary circuit

Model	**60 T** **70 T**	**100 T** **115 T** **140 T**	**180 T** **210 T**	**280 T**
Minimum operating flow rate	3,3 m^3/h	6,6 m^3/h	9,9 m^3/h	13,2 m^3/h

Pressure
drops

The domestic hot water production system needs to have the circulation flow rates indicated in the table "Minimum operating flow rate of the primary circuit". In order to identify the appropriate circulator, consider the pressure drops of **AGUAdens T** added to the system pressure drops.



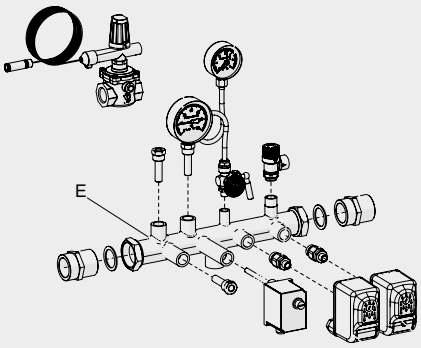
Ⓐ AGUAdens 60 T and 70 T
Ⓑ AGUAdens 100 T and 115 T
Ⓒ AGUAdens 140 T
Ⓓ AGUAdens 180 T and 210 T
Ⓔ AGUAdens 280 T

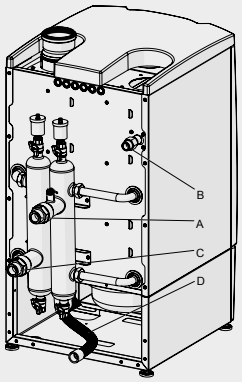
Wide range of accessories
on demand

Each **AGUAdens T** gas condensing water heater can be equipped with one or more of the following accessories on demand:
- AISI 316L stainless steel safety kit complete with shut-off gas valve (suitable for domestic hot water)
- Variable inverter pump
- Polypropylene flue gas outlets

Safety kit complete with safety devices
up to 140 kW

STAINLESS STEEL AISI 316L

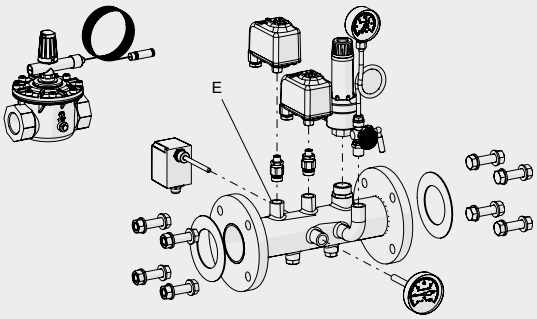


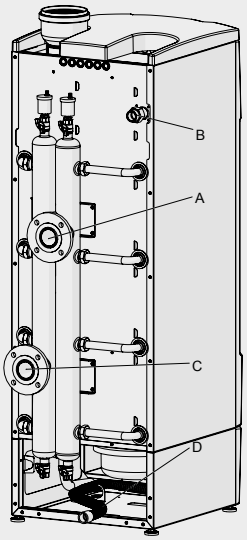


A · DHW supply 1"1/2
B · Gas inlet 1"
C · Cold water inlet 1"1/2
D · Condensate drain Ø28 mm
E · Safety kit complete with shut-off gas valve

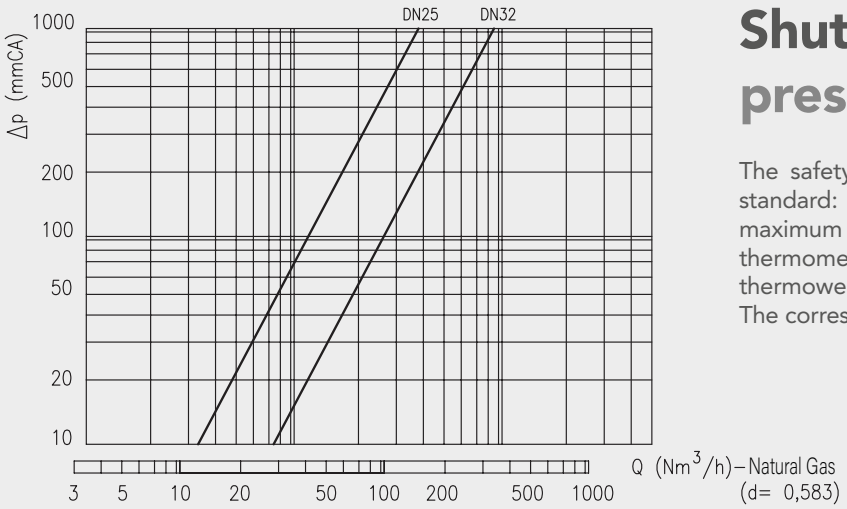
Safety kit complete with safety devices
up to 280 kW

STAINLESS STEEL AISI 316L





A · DHW supply DN 65, PN 16
B · Gas inlet 1"1/4
C · Cold water inlet DN 65, PN 16
D · Condensate drain Ø28 mm
E · Safety kit complete with shut-off gas valve



Shut-off gas valve
pressure drops

The safety kits supplied by Cosmogas include the following as standard: manifold complete with connections, minimum and maximum pressure switches, safety valve, lockout thermostat, thermometer, pressure gauge complete with curl and tap, auxiliary thermowell and shut-off gas valve, Watts brand, DN 25 and DN 32. The corresponding pressure drops are shown in the graph.

AGUAdens T + MULTItank
domestic hot water production performance

MODEL	Cold water inlet temperature	Domestic hot water supply temperature	Produced litres according to water withdrawal duration - l/min (storage at 70°C)						Continuous DHW	MULTItank recovery time
	°C	°C	10 min	20 min	30 min	40 min	50 min	60 min	l/min	min
AGUAdens 100 T + MULTItank 200	5°C	40	662	1067	1473	1878	2284	2689	40,5	9,2
		50	515	830	1146	1461	1776	2092	31,5	9,2
		60	421	679	937	1195	1453	1711	25,8	9,2
		70	356	575	793	1011	1230	1448	21,8	9,2
	10°C	40	746	1219	1692	2165	2638	3111	47,3	8,5
		50	559	914	1269	1624	1978	2333	35,5	8,5
		60	447	731	1015	1299	1583	1866	28,4	8,5
		70	373	609	846	1082	1319	1555	23,7	8,5
	15°C	40	863	1430	1998	2566	3133	3701	56,8	7,8
		50	616	1022	1427	1833	2238	2643	40,5	7,8
		60	479	795	1110	1425	1741	2056	31,5	7,8
		70	392	650	908	1166	1424	1682	25,8	7,8
AGUAdens 115 T + MULTItank 200	5°C	40	723	1197	1670	2143	2617	3090	47,3	7,8
		50	562	931	1299	1667	2035	2404	36,8	7,8
		60	460	761	1063	1364	1665	1967	30,1	7,8
		70	389	644	899	1154	1409	1664	25,5	7,8
	10°C	40	817	1369	1922	2474	3026	3579	55,2	7,2
		50	613	1027	1441	1856	2270	2684	41,4	7,2
		60	490	822	1153	1484	1816	2147	33,1	7,2
		70	409	685	961	1237	1513	1789	27,6	7,2
	15°C	40	948	1611	2274	2937	3600	4262	66,3	6,6
		50	677	1151	1624	2098	2571	3045	47,3	6,6
		60	527	895	1263	1632	2000	2368	36,8	6,6
		70	431	732	1034	1335	1636	1937	30,1	6,6
AGUAdens 140 T + MULTItank 200	5°C	40	813	1386	1960	2533	3106	3680	57,3	6,5
		50	632	1078	1524	1970	2416	2862	44,6	6,5
		60	517	882	1247	1612	1977	2342	36,5	6,5
		70	438	747	1055	1364	1673	1981	30,9	6,5
	10°C	40	922	1591	2260	2929	3598	4266	66,9	6,0
		50	692	1193	1695	2197	2698	3200	50,2	6,0
		60	553	955	1356	1757	2159	2560	40,1	6,0
		70	461	795	1130	1464	1799	2133	33,4	6,0
	15°C	40	1074	1877	2680	3482	4285	5088	80,3	5,5
		50	767	1341	1914	2487	3061	3634	57,3	5,5
		60	597	1043	1489	1935	2381	2827	44,6	5,5
		70	488	853	1218	1583	1948	2313	36,5	5,5

Operating conditions: MULTItank storage temperature 70°C and dimensioned storage 1 litre per kW.

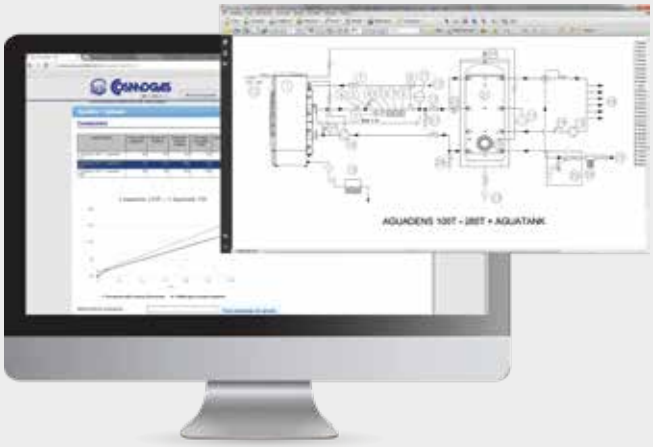
MODEL	Cold water inlet temperature	Domestic hot water supply temperature	Produced litres according to water withdrawal duration - l/min (storage at 70°C)						Continuous DHW	MULTItank recovery time
	°C	°C	10 min	20 min	30 min	40 min	50 min	60 min	l/min	min
AGUAdens 180 T + MULTItank 200	5°C	40	961	1698	2435	3172	3909	4646	73,7	5,0
		50	747	1320	1894	2467	3040	3614	57,3	5,0
		60	611	1080	1549	2019	2488	2957	46,9	5,0
		70	517	914	1311	1708	2105	2502	39,7	5,0
	10°C	40	1094	1954	2814	3674	4534	5394	86,0	4,7
		50	821	1466	2111	2756	3401	4046	64,5	4,7
		60	656	1172	1688	2204	2720	3236	51,6	4,7
		70	547	977	1407	1837	2267	2697	43,0	4,7
	15°C	40	1281	2313	3345	4377	5409	6441	103,2	4,3
		50	915	1652	2389	3126	3863	4601	73,7	4,3
		60	712	1285	1858	2432	3005	3578	57,3	4,3
		70	582	1051	1520	1989	2459	2928	46,9	4,3
AGUAdens 210 T + MULTItank 200	5°C	40	1071	1931	2791	3651	4511	5371	86,0	4,3
		50	833	1502	2171	2840	3509	4178	66,9	4,3
		60	682	1229	1776	2323	2871	3418	54,7	4,3
		70	577	1040	1503	1966	2429	2892	46,3	4,3
	10°C	40	1223	2226	3230	4233	5236	6240	100,3	4,0
		50	917	1670	2422	3175	3927	4680	75,3	4,0
		60	734	1336	1938	2540	3142	3744	60,2	4,0
		70	612	1113	1615	2117	2618	3120	50,2	4,0
	15°C	40	1436	2640	3844	5048	6252	7456	120,4	3,7
		50	1025	1885	2745	3605	4465	5325	86,0	3,7
		60	798	1466	2135	2804	3473	4142	66,9	3,7
		70	653	1200	1747	2294	2842	3389	54,7	3,7
AGUAdens 280 T + MULTItank 300	5°C	40	1478	2624	3771	4918	6064	7211	114,7	4,9
		50	1149	2041	2933	3825	4717	5609	89,2	4,9
		60	940	1670	2400	3129	3859	4589	73,0	4,9
		70	796	1413	2031	2648	3265	3883	61,7	4,9
	10°C	40	1684	3022	4360	5697	7035	8373	133,8	4,5
		50	1263	2266	3270	4273	5276	6280	100,3	4,5
		60	1010	1813	2616	3418	4221	5024	80,3	4,5
		70	842	1511	2180	2849	3518	4186	66,9	4,5
	15°C	40	1973	3578	5183	6789	8394	9999	160,5	4,1
		50	1409	2556	3702	4849	5996	7142	114,7	4,1
		60	1096	1988	2880	3772	4663	5555	89,2	4,1
		70	897	1626	2356	3086	3816	4545	73,0	4,1

Technical data

AGUADENS		MU	60 T	70 T	100 T
Type (Type of exhaust flue gas/air intake)					
Category			II2H3P	II2H3P	II2H3P
EU type approval certificate (PIN)			0476CR1272	0476CR1272	0476CR1272
Maximum heat input "Qn" LHV (HHV)		kW	57,8 (64,2)	69,9 (77,6)	99,0 (109,9)
Heating minimum heat input "Qm" LHV (HHV)		kW	12,0 (13,3)	14,7 (16,3)	12,0 (13,3)
Maximum heat output (50/30) "Pn"		kW	60,7	73,5	104,0
Efficiency at maximum heat output (50/30) LHV (HHV)		%	105,0 (94,6)	105,1 (94,7)	105,0 (94,6)
Minimum heat output (50/30) "Pm"		kW	12,8	15,6	12,8
Efficiency at minimum heat output (50/30) LHV (HHV)		%	106,6 (96,6)	106,3 (95,8)	106,6 (96,0)
Gas flow rate	G20	m^3/h	6,11	7,39	10,47
	G31	kg/h	4,49	5,43	7,68
Gas supply pressure	G20	mbar	20	20	20
	G31	mbar	37	37	37
Gas supply minimum pressure	G20	mbar	10	10	10
	G31	mbar	10	10	10
Gas supply maximum pressure	G20	mbar	45	45	45
	G31	mbar	45	45	45
Primary heat exchanger water content		l	4,6	5,7	9,2
Minimum operating water flow rate with motorised valves		l/h	-	-	3300
Minimum operating water flow rate without motorised valves		l/h	3300	3300	6600
Instantaneous DHW production (Δt 30°C)		l/min	29,2	35,3	50,0
DHW temperature adjustment range		°C	20 - 80	20 - 80	20 - 80
Maximum temperature for safety intervention		°C	95	95	95
Sanitary circuit minimum pressure		bar	1	1	1
Sanitary circuit maximum pressure		bar	11	11	11
Rated power supply voltage		V~	230	230	230
Rated power supply frequency		Hz	50	50	50
Absorbed electrical power		W	110	150	220
Electrical protection rating			IP 21	IP 21	IP 21
Burner electrical power		W	110	150	220
Flue gas exhaust pipe diameter		mm	110	110	110
Maximum length of exhaust flue gas pipe		m	10	10	10
Equivalent length of a 90° bend		m	4	4	4
Weighted CO (0% O2)	G20	ppm	30	27	30
Weighted NOx (0% O2) (EN 26:2015) HHV	G20	mg/kWh	34	34	34
CO2 (%) at minimum output	G20	%	8,5	8,5	8,5
	G31	%	9,8	9,8	9,8
CO2 (%) at maximum output	G20	%	8,7	8,7	8,7
	G31	%	10,2	10,2	10,2
O2 (%) at minimum output	G20	%	5,8	5,8	5,8
	G31	%	6,0	6,0	6,0
O2 (%) at maximum output	G20	%	5,4	5,4	5,4
	G31	%	5,4	5,4	5,4
Maximum recirculation of flue gas permitted in windy conditions		%	10	10	10
Minimum flue gas temperature at boiler outlet		°C	30	30	30
Maximum flue gas temperature at boiler outlet		°C	80	80	80
Mass flow of exhaust flue gas at minimum power		g/s	5,8	7,1	5,8
Mass flow of exhaust flue gas at maximum power		g/s	27,1	32,9	46,6
Available head at outlet		Pa	110	110	110
Maximum temperature of the combustion agent air		°C	40	40	40
Maximum CO2 content in the combustion agent air		%	0,9	0,9	0,9
Maximum exhaust flue gas temperature for overheating		°C	95	95	95
Max. negative pressure allowed in the exhaust flue gas/air intake system		Pa	110	110	110
Condensate maximum flow rate		l/h	7,3	8,8	12,4
Condensate average acidity		pH	4	4	4
Operating room temperature		°C	0,5 ; + 50	0,5 ; + 50	0,5 ; + 50
Boiler weight (empty)		kg	96	98	142

115 T	140 T	180 T	210 T	280 T
	B23 ; B23P			
II2H3P	II2H3P	II2H3P	II2H3P	II2H3P
0476CR1272	0476CR1272	0476CR1272	0476CR1272	0476CR1272
115,6 (128,3)	140,0 (155,4)	173,4 (192,5)	210,0 (233,1)	280,0 (310,8)
12,0 (13,3)	14,7 (16,3)	14,7 (16,3)	14,7 (16,3)	14,7 (16,3)
121,4	147,1	182,2	220,7	294,3
105,0 (94,6)	105,1 (94,7)	105,1 (94,7)	105,1 (94,7)	105,1 (94,7)
12,8	15,6	15,6	15,6	15,6
106,6 (96,0)	106,3 (95,8)	106,3 (95,8)	106,3 (95,8)	106,3 (95,8)
12,22	14,80	18,30	22,20	29,61
8,97	10,87	13,50	16,30	21,73
20	20	20	20	20
37	37	37	37	37
10	10	10	10	10
10	10	10	10	10
45	45	45	45	45
45	45	45	45	45
9,2	11,4	17,1	17,1	22,8
3300	3300	3300	3300	3300
6600	6600	9900	9900	13200
58,4	70,7	87,5	106,0	141,4
20 - 80	20 - 80	20 - 80	20 - 80	20 - 80
95	95	95	95	95
1	1	1	1	1
11	11	11	11	11
230	230	230	230	230
50	50	50	50	50
220	300	430	430	590
IP 21	IP 21	IP 21	IP 21	IP 21
220	300	430	430	590
110	110	160	160	160
10	10	10	10	10
4	4	4	4	4
30	27	27	27	27
34	34	34	34	34
8,5	8,5	8,5	8,5	8,5
9,8	9,8	9,8	9,8	9,8
8,7	8,7	8,7	8,7	8,7
10,2	10,2	10,2	10,2	10,2
5,8	5,8	5,8	5,8	5,8
6,0	6,0	6,0	6,0	6,0
5,4	5,4	5,4	5,4	5,4
5,4	5,4	5,4	5,4	5,4
10	10	10	10	10
30	30	30	30	30
80	80	80	80	80
5,8	7,1	7,1	7,1	7,1
54,4	65,8	81,6	98,7	131,7
110	110	110	110	110
40	40	40	40	40
0,9	0,9	0,9	0,9	0,9
95	95	95	95	95
110	110	110	110	110
14,5	17,6	21,8	26,3	35,1
4	4	4	4	4
0,5 ; + 50	0,5 ; + 50	0,5 ; + 50	0,5 ; + 50	0,5 ; + 50
142	147	211	211	249

Acquacalda.tech
the calculating system for real DHW needs



Cosmogas has set **acquacalda.tech** a useful work tool for technicians and a valuable support to designers, to define domestic hot water specific needs to each user such as hotels, camp grounds, apartment buildings, gymnasiums, football fields. The application **acquacalda.tech** is a real work tool that determines the real hot water needs in most demanding users, selects the most suitable Cosmogas solution and provides:

- **Technical report**
- **Tendering specifications**
- **Installation schemes in dwg format**
- **Installation schemes in pdf format**

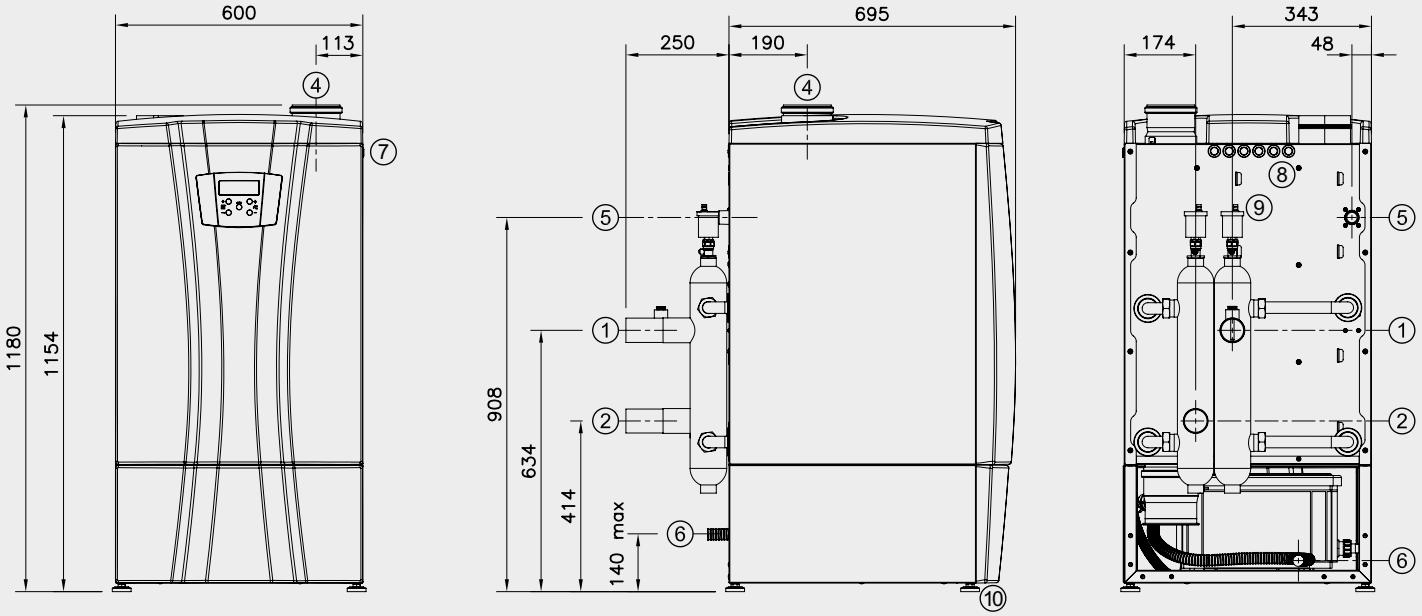
ERP
product fiche

(a) Name or brand of the supplier			COSMOGAS							
(b) Reference of the model given by the supplier			AGUADENS							
			60 T	70 T	100 T	115 T	140 T	180 T	210 T	280 T
(c) Declared load profile			XXL (1)	XXL (1)	3XL (2)	3XL (2)	3XL (2)	3XL (2)	4XL (3)	4XL (3)
(d) Energy efficiency class			A	A	-	-	-	-	-	-
(e) Water heating energy efficiency	ηwh	%	85,3	85,6	84,1	83,6	83,1	83,8	83,5	83,2
(f) Daily electricity consumption	Qelec	kWh	0,18	0,19	0,35	0,37	0,36	0,39	0,51	0,54
(f) Annual electricity consumption	AEC	kWh	39	42	77	81	79	85	112	118
(f) Daily fuel consumption	Qfuel	kWh	28,316	28,172	54,734	55,012	55,356	54,812	110,778	111,111
(f) Annual fuel consumption	AFC	GJ	22	22	43	43	44	43	88	88
(g) Other load profile			-	-	-	-	-	-	-	-
(g) Water heating energy efficiency*		%	-	-	-	-	-	-	-	-
(g) Daily electricity consumption*		kWh	-	-	-	-	-	-	-	-
(g) Annual electricity consumption*		kWh	-	-	-	-	-	-	-	-
(g) Daily fuel consumption*		kWh	-	-	-	-	-	-	-	-
(g) Annual fuel consumption*		GJ	-	-	-	-	-	-	-	-
(h) Water heater thermostat temperature adjustment		°C	60	60	60	60	60	60	60	60
(i) Sound power level indoors	LWA	dB	70	70	70	70	70	70	70	70
(j) The water heater is able to work only during off-peak hours			NO	NO	NO	NO	NO	NO	NO	NO
(k) Any specific precautions that shall be taken when the water heater is assembled, installed or maintained.			Read the installation, use and maintenance manual of the water heater.							
(l) Smart control			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Emissions of nitrogen oxides	NOx	mg/kWh	34	34	34	34	34	34	34	34

According to commission delegated regulation (EU) No 812/2013 and No 814/2013;
(1) with MULTITANK 200 hot water storage tank;
(2) with MULTITANK 300 hot water storage tank;
(3) with MULTITANK 800 hot water storage tank;
* Referred to the Other load profile (g);
N/A = Not applicable;

Size
and connections

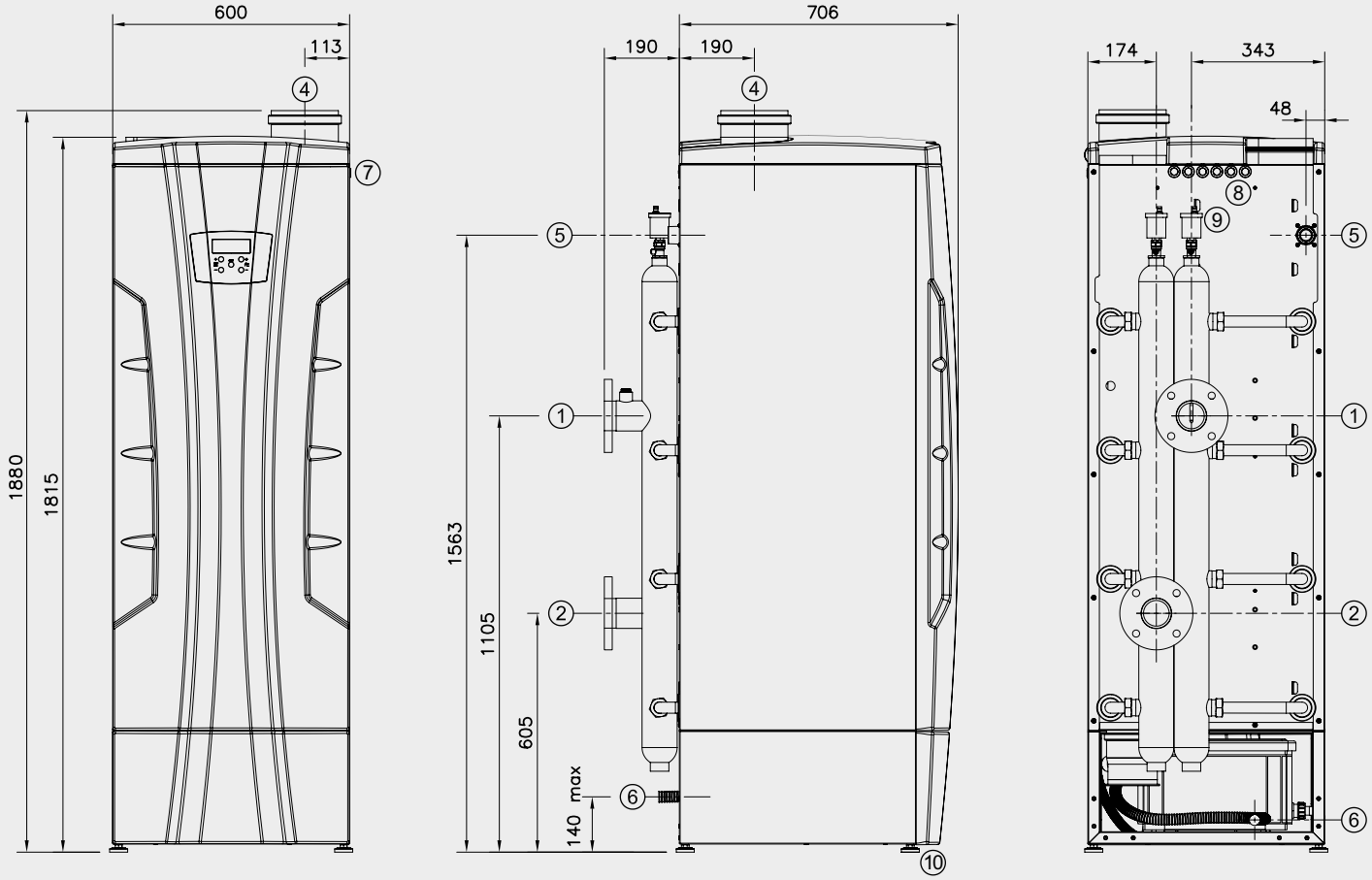
AGUAdens 60 T - 70 T - 100 T - 115 T - 140 T



1 · DHW supply 1" 1/2 ∗
2 · Cold water inlet 1" 1/2 ∗
4 · Flue gas outlet Ø110 mm
5 · Gas inlet 1"
6 · Condensate drain Ø28 mm
7 · Main switch
8 · Power supply and auxiliary input
9 · Intercepted air purge valves
10 · Adjustable feet

∗ · Connections and flanges are not factory mounted

AGUAdens 180 T - 210 T - 280 T



1 · DHW supply DN 65, PN 16 ∗
2 · Cold water inlet DN 65, PN 16 ∗
4 · Flue gas outlet Ø160 mm
5 · Gas inlet 1" 1/4
6 · Condensate drain Ø28 mm
7 · Main switch
8 · Power supply and auxiliary input
9 · Intercepted air purge valves
10 · Adjustable feet

∗ · Connections and flanges are not factory mounted

Massimiliano Pieraccini

All Cosmogas products are designed, patented and built by us

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COSMOGAS International Certifications

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