Commercial gas range
Range: 9,2 – 2000 kW

elco heating solutions

TECHNICAL INFORMATION

Commercial gas range

9,2 – 2000 kW

ELCO Heating Solutions

Commercial gas range

ELCO provides one of the finest ranges of condensing gas boilers and CHP units on the market.

Commercial

Gas

Gas condensing boilers – wall mounted
Gas condensing boilers – floor standing
Combined heat and power units (CHP)

Oil

Oil condensing boilers – floor standing

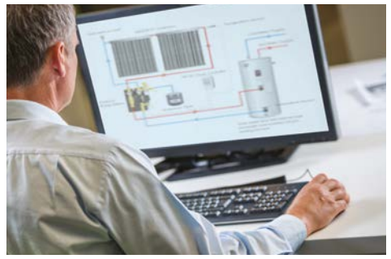
Renewables

Air source heat pumps – outdoor
Ground source heat pumps – outdoor
Solar thermal – tubes

Accessories

Cylinders, Fresh water stations, Hydraulic kits, Pump units, Flue gas systems

Applications and services



A full range of application engineering and customised solutions for both commercial and domestic installations.

Plus, ELCO offers complete peace of mind with a range of services, including:

- Maintenance contracts
- Extended warranties
- Start up/Commissioning
- Connectivity
- Repairs
- System upgrade

More information:
www.elco.net

Contents

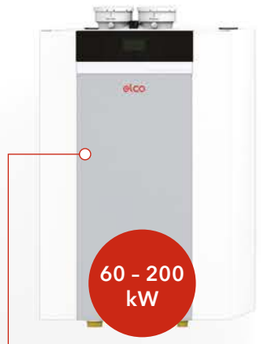
Get started

This extensive brochure explains the technology and engineering utilised in ELCO's comprehensive manufacturing processes, as well as the superb features incorporated into each product.

From a 1:1 replacement, to the most complex commercial system, specifiers can choose the right ELCO product for the application.

ELCO commercial gas boilers and CHP - overview

THISION® L PLUS



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- High efficiency
- Low emissions
- Intelligent controls
- Extremely powerful wall hung boiler
- Cascade systems up to 1,6 MW
- Seasonal efficiency of more than 110 %

TRIGON® L PLUS

Page 31

- High efficiency
- Low emissions
- Intelligent controls
- High flexibility
- Cascade systems up to 1,6 MW
- Seasonal efficiency of more than 110 %

TRIGON® XL

Page 37

- High efficiency
- Low emissions
- Modular concept
- Intelligent controls
- Compact design
- Cascade systems up to 9,2 MW
- Seasonal efficiency up to 110,4 %

TRIGON® XXL

Page 41

- High efficiency
- Low emissions
- Modular concept
- Intelligent controls
- Compact design
- Cascade systems up to 32 MW
- Seasonal efficiency up to 109,1 %

CHP: VARION C-POWER

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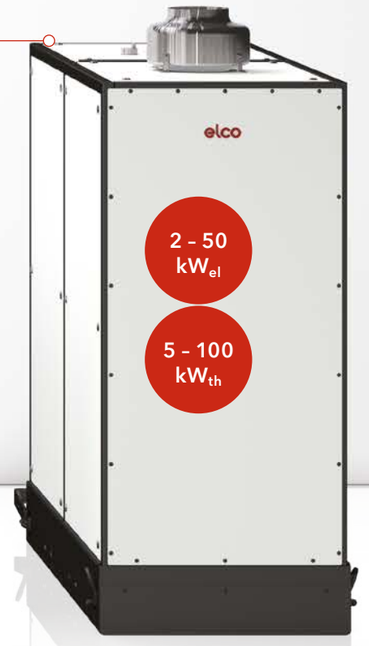
- High efficiency
- Low emissions
- Intelligent controls
- Compact design
- Super silent
- Seasonal efficiency up to 109,5 %



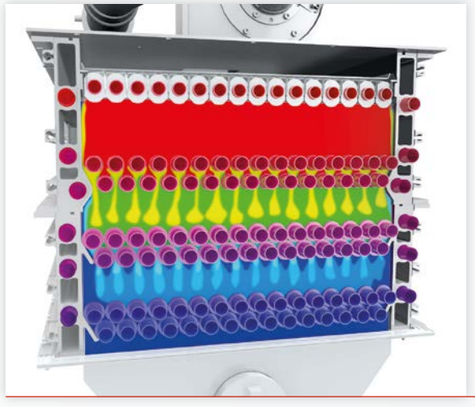
PRODUCT RANGE	OUTPUT RANGE	
	Single	Cascade
THISION® L PLUS	60 – 200 kW	120 – 1600 kW
TRIGON® L PLUS	60 – 200 kW	120 – 1600 kW
TRIGON® XL	150 – 575 kW	300 – 9200 kW
TRIGON® XXL	650 – 2000 kW	1,3 – 32 MW
CHP: VARION® C-POWER	2 – 50 kW_{el} / 5 – 100 kW_{th}	4 – 100 kW_{el} / 10 – 200 kW_{th}

TYPICAL APPLICATION							
Multi family house	Budget – 3 star hotel	4 – 5 star hotel + wellness	Hospital	Swimming pool	Sports facility	Offices	Industry
✓	✓	✓	✓		✓	✓	
✓	✓	✓	✓		✓	✓	
✓	✓	✓	✓	✓	✓	✓	✓
			✓	✓	✓	✓	✓
		✓	✓	✓	✓		✓

Robustness – stainless steel heat exchangers for tough conditions

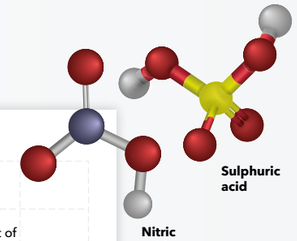
Flue gas side

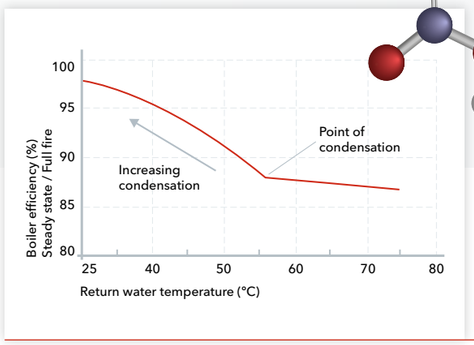
ELCO utilises high grade stainless steel on its heat exchangers to resist corrosion from flue gas condensate – enhancing a boiler's durability and longevity.



The combustion of gas and air

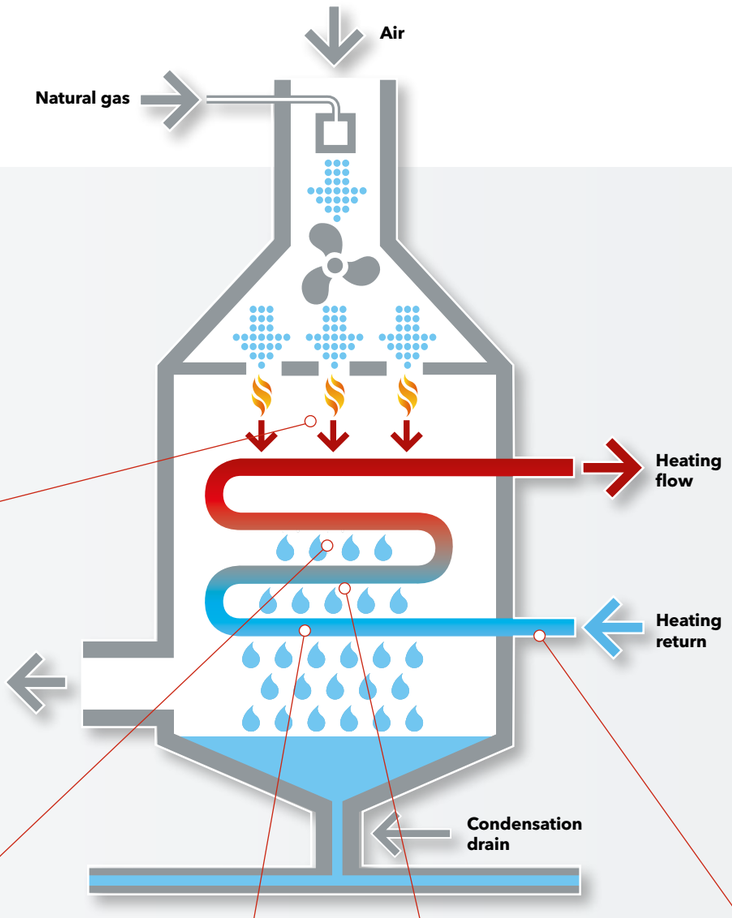
Due to impurities in gas and air, the combustion process produces acids. However, at high temperatures, there is limited impact from corrosion due to the lack of water present.

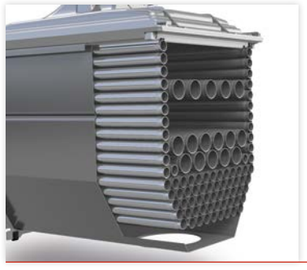




Condensing boiler efficiency

Below the point of condensation (57,2°C at 10 % excess air) where condensate is present, dissolved sulphuric and nitric acids can corrode the heat exchanger material.



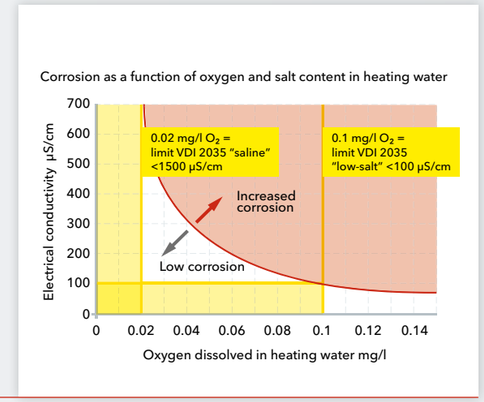


Stainless steel heat exchanger

Stainless steel is the preferred material for heat exchangers as it is far more resistant to corrosion than other metals.

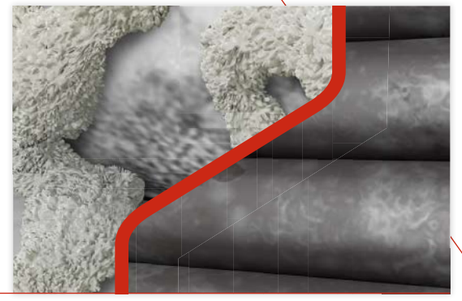
Heating water side

The water quality in a system is of equal importance when optimising efficiency and long term performance of heating equipment. Key factors to consider are electrical conductivity, oxygen dissolved in heating water and the PH value.



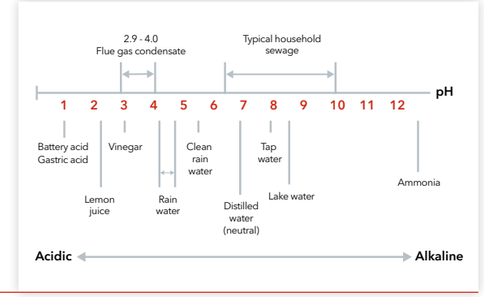
Electrical conductivity and Oxygen

In order to prevent corrosion, the electrical conductivity of heating water must be kept low and oxygen needs to be avoided as much as possible. Relevant technical regulations, such as VDI Guideline 2035 Sheet 2 [2] or other country-specific guidelines, stipulate that a heating system must be designed and operated to stop oxygen entering the heating water. In heating systems that have been designed, built and commissioned properly, the oxygen from the filling water is exhausted after a short running time, while the electrical conductivity can be kept low by suitable measures.



Why stainless steel?

Stainless steel has four times better corrosion resistance than aluminium, ensuring its heat transfer properties decrease much less over time. This allows stainless steel to out perform aluminium in efficiency already within the first year of usage.



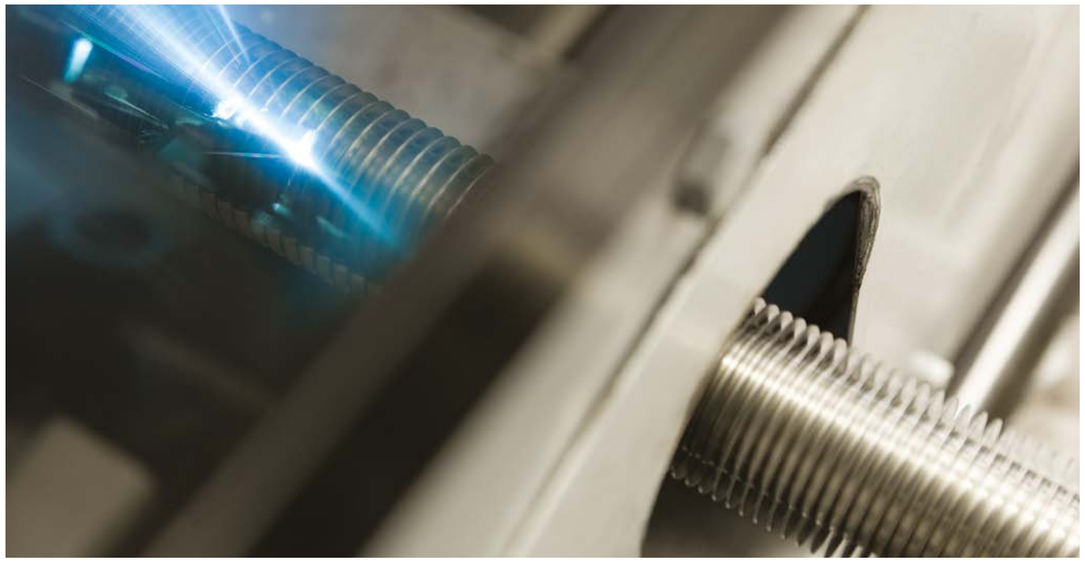
The pH of water

In hard water areas, scaling can form on the inside of the system pipework or heat exchanger.

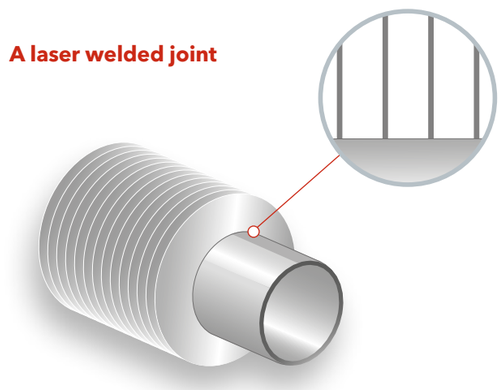
Stainless steel for high efficiency

A unique robotised laser welding process

ELCO utilises the latest laser welding technology to ensure its stainless steel heat exchangers provide best in class efficiencies, excellent reliability and unbeatable performance over their lifetime.

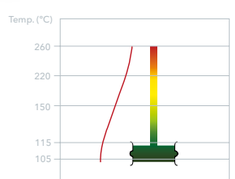


A laser welded joint

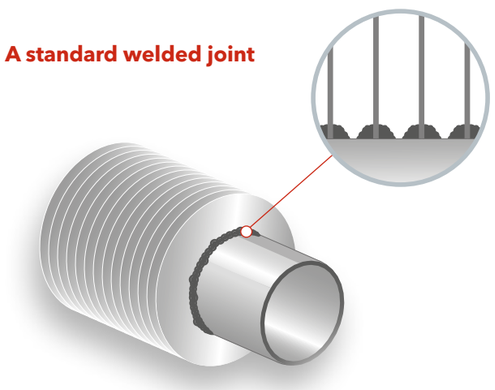


Crevice-free weld

A thin weld seam between the fin edge and tube allows extremely fast heat transfer, while providing long term material stability.

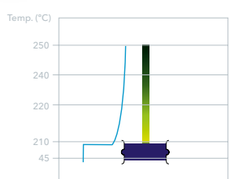


A standard welded joint



Deformed material

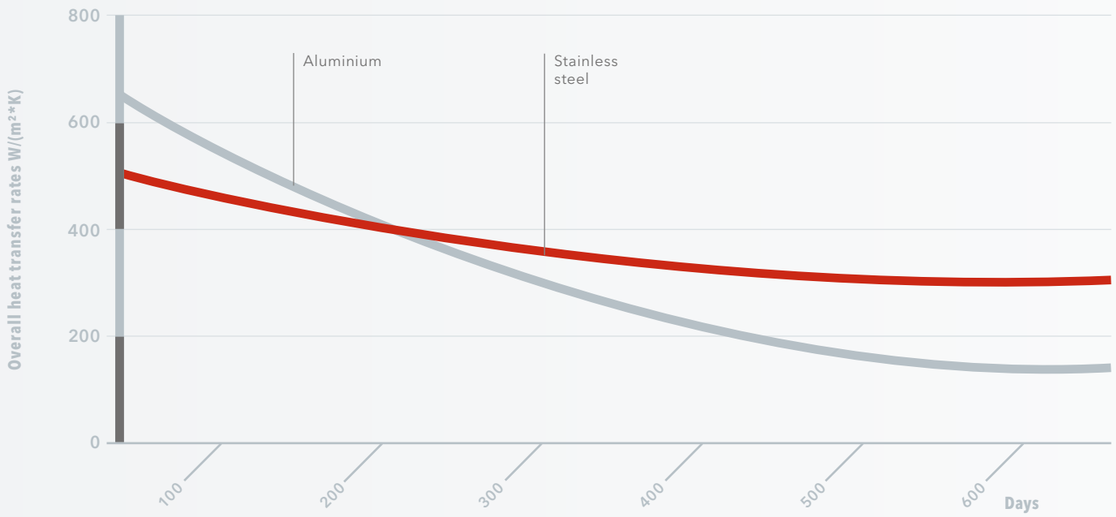
Due to the material deforming from standard welding, heat up times are far slower, reducing overall efficiency and product longevity.

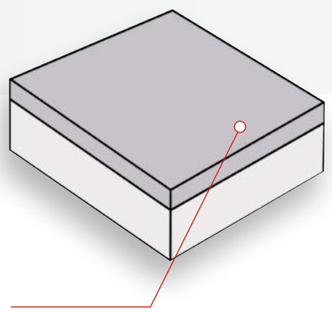


Stainless steel vs. other metals

Although a stainless steel heat exchanger starts its life cycle with a lower heat transfer rate, the material is far more efficient over its entire lifetime – performing better for longer.

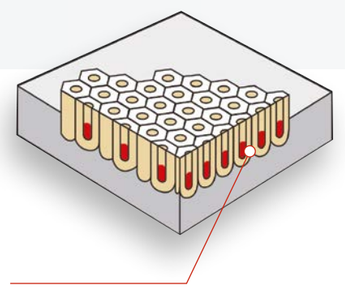
Overall heat transfer vs. exposure time





Stainless steel

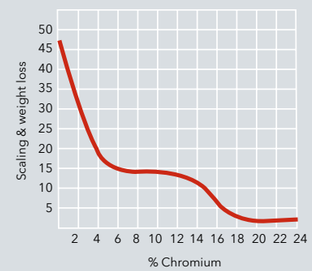
A very thin passive film of chromium oxide (10 nm) prevents corrosive attack and has the particular ability to self repair. The smoother surface reduces the accumulation of fouling and deposits.



Aluminium

Other metals, such as aluminium, also produce a protective oxide layer. However, in the presence of moisture and high temperatures a porous oxide/hydroxide layer can form – reducing scale resistance and increasing risk of corrosion. As a result, the heat transfer rate is reduced and corrosion deposits can lead to blockage of the exhaust gas paths in the heat exhanger.

Effect of chromium content on scaling resistance (at 1800°F or 963°C)

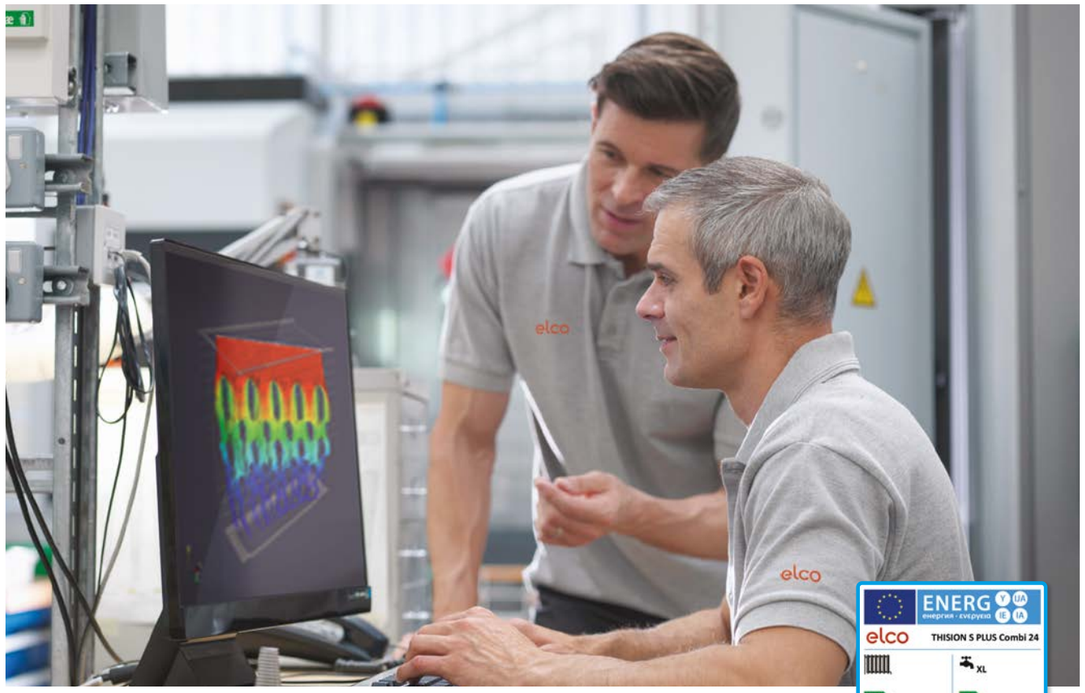


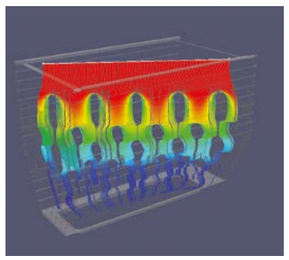
Stainless steel consists of iron and at least 11 % chromium. If enough chromium is added, a protective passive film will form to protect the metal from corrosion.

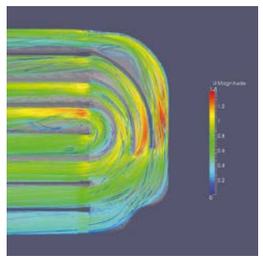
Increasing efficiency and reducing emissions - experts in combustion technology

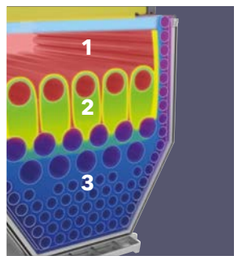
Engineering excellence

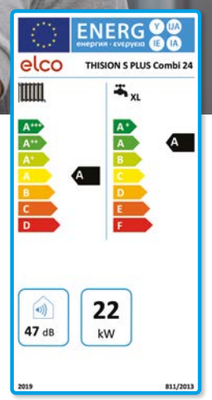
ELCO invests in extensive research and development to ensure its stainless steel heat exchangers provide best in class efficiencies, excellent reliability and unbeatable performance for their lifetime.











In depth analysis

Water temperature distribution profiles and chemical composition of the flue gases in the heat exchanger are optimised.

Efficient heat transfer

Specially designed hydraulic chambers ensure the water turbulence delivers maximum heat transfer, while maintaining the lowest possible pressure drop.

HEX³ heat exchanger unit

Three zones heat exchanger technology for optimal emissions (zone 1 & 2) and highest efficiency (zone 3).

Ultimate efficiency

ELCO's gas condensing boilers achieve A and A+ labelling in the new ErP classification, thanks to its high condensation rate even at full load.

Bringing down emissions

From the largest commercial units, to the premium range of domestic boilers, ELCO products are designed to significantly reduce NOx emissions. ELCO products fall 60% below the EU limit for NOx emissions.

60%
Below
the EU limit for NOx emissions*

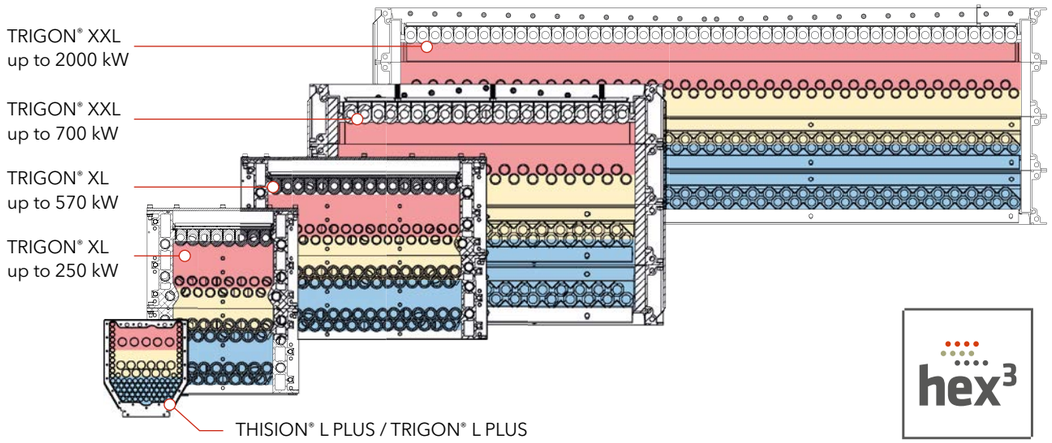
*The annual NOx emissions of the ELCO PREMIUM gas boilers are up to 60% below EU limits.

HEX³ boiler technology

ELCO uses the same boiler burner and heat exchanger technology across its entire premium boiler range starting at 2,0 kW domestic boiler up to 2 MW commercial boiler.

Flat burner design

The flat burner's unique geometry reduces emissions during the combustion process.



Inside the HEX³

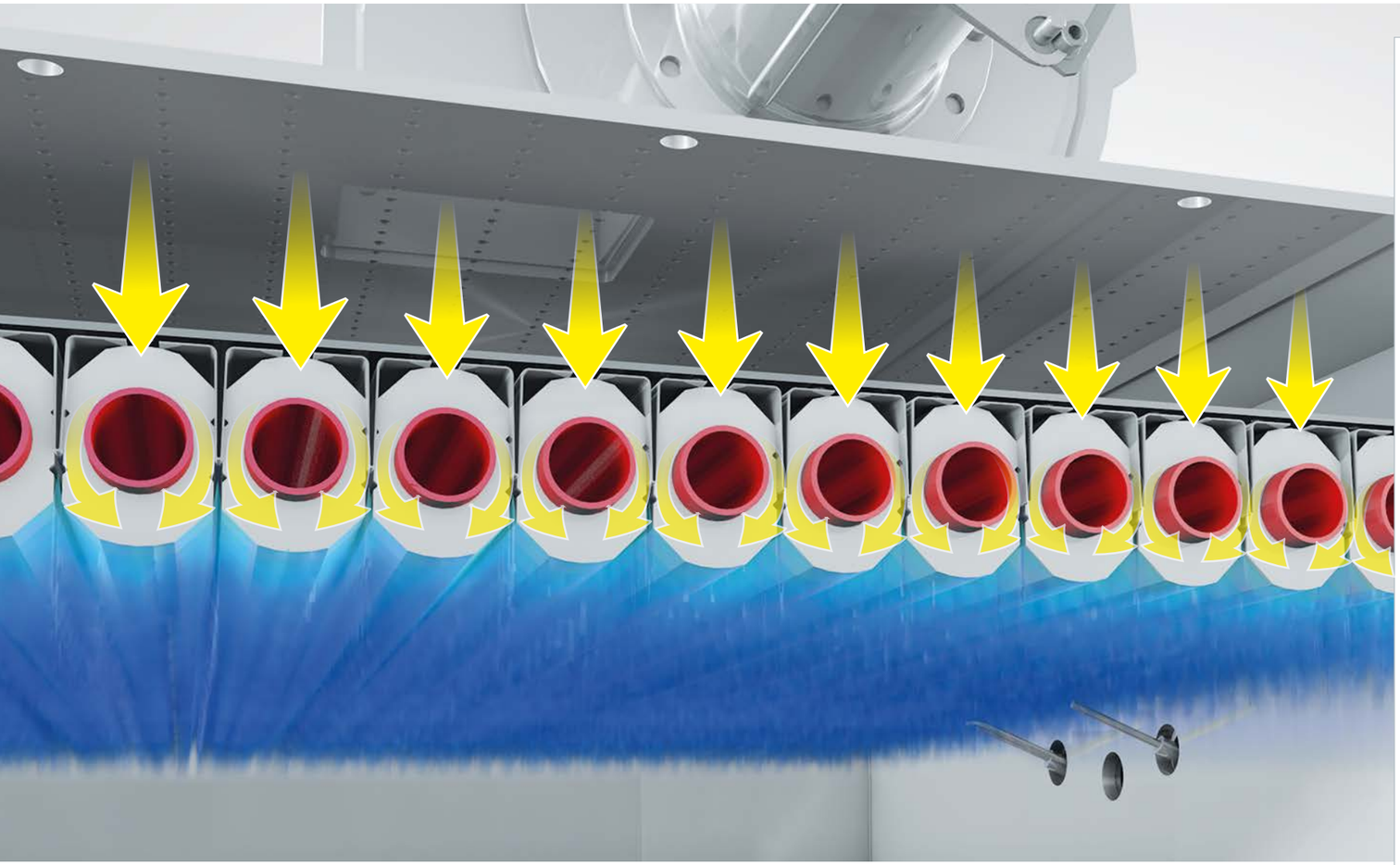
Our heat exchangers are structured in three zones:

NOx zone:
The formation of thermal NOx is reduced to a minimum by low resistance and a short dwell time, as well as rapid cooling of the combustion gases to below 1,000 °C.

CO zone:
By increasing resistance, the heat exchangers keep the combustion gas at over 600 °C for as long as possible to minimise the formation of carbon monoxide.

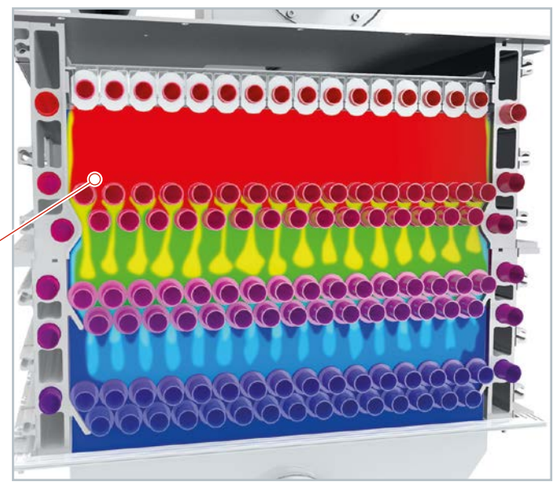
H_2O condensation zone:
With small and densely arranged heat exchanger tubes maximium heat transfer is achieved in this zone, ensuring optimum efficiency.

Efficiency and emissions – state-of-the-art manufacturing



Heat exchanger geometry

ELCO's state-of-the-art heat exchangers have a unique geometry, providing reliable and robust performance. They are all specifically designed for optimised efficiency and functionality during their entire lifetime.



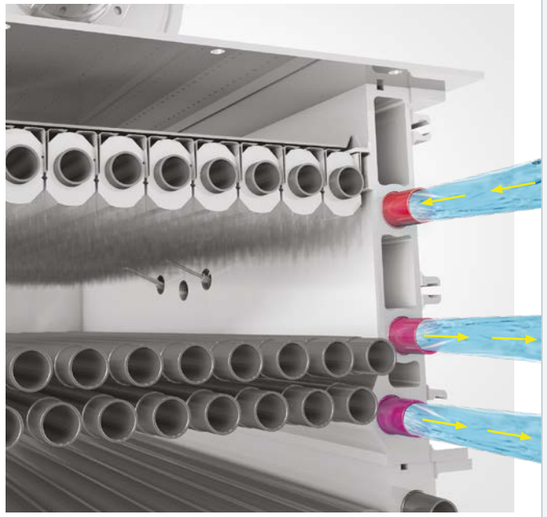
Low emissions

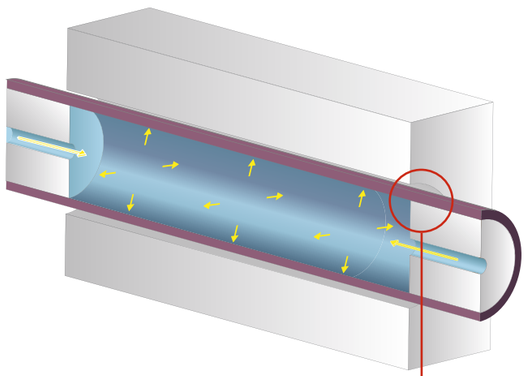
A water-cooled cold flame burner, combined with an optimised combustion zone, achieve extremely low NOx and CO emissions, which already comply with future NOx class 6 requirements.

Water cooled heat exchanger

By cleverly channelling water through the heat exchanger walls, the combustion chamber is effectively cooled without the need for insulation.

Furthermore, this process allows additional energy to be recovered and transferred to the heating water – increasing boiler efficiency and reducing radiation losses.





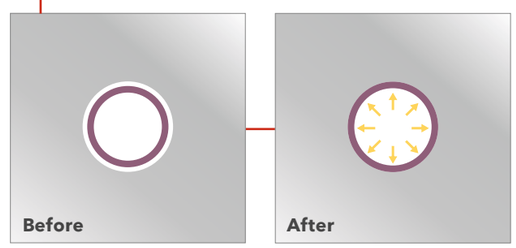
Hydroforming process

To maximise heat extraction throughout the cooling tubes, hydroforming technology is used during manufacturing.

This specialised process, which is popular in the automotive industry, consists of the cooling tubes being fixed in place under the influence of a highly pressurised fluid. This increases the diameter of the tube and forms a perfect seal.

Optimised heat transfer

The cooling tube expands into the heat exchanger wall and provides an enhanced surface contact, which maximises heat transfer.



Modular construction – the smart concept

Boiler construction

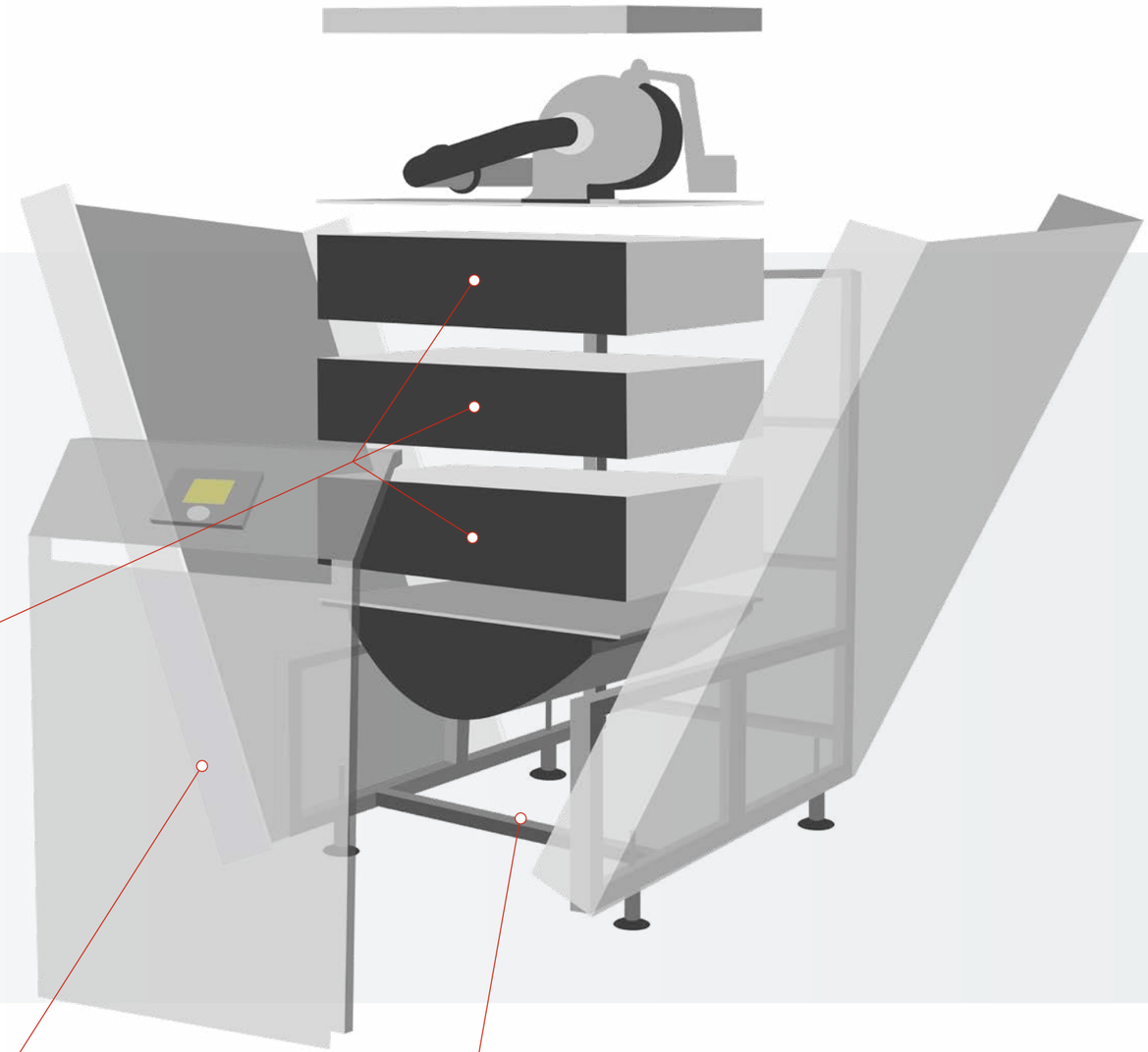
ELCO boilers are specially designed for quick and easy disassembly into component parts, allowing easy access to boiler plant rooms in every application.

Sectional heat exchanger

A sectional heat exchanger design allows a boiler to be disassembled into smaller pieces for easy manoeuvring.

Compact design

ELCO boilers are practically designed, so they can be transported through standard sized doors with ease.

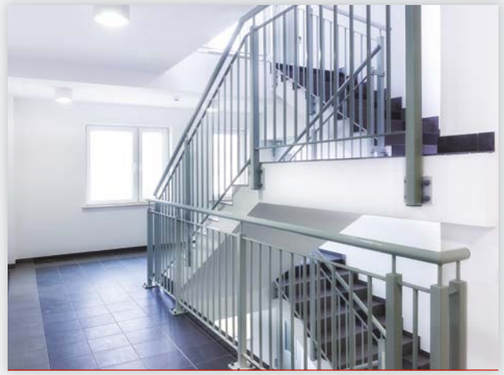


Lightweight materials

By utilising the latest lightweight materials, ELCO boilers can be transported easily, without the need for lifting equipment or multiple people.

Application benefits

With a compact, modular design, ELCO boilers can be used in a wide variety of projects and easily transported through a building's infrastructure.

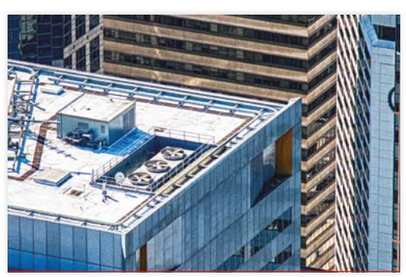


Tight access

The boilers can be disassembled into smaller, manageable parts, allowing them to be transported via existing access routes, such as stairwells.

Easy access

Thanks to their compact dimensions, many ELCO boilers can be transported using a standard elevator, rather than freight or service elevators.



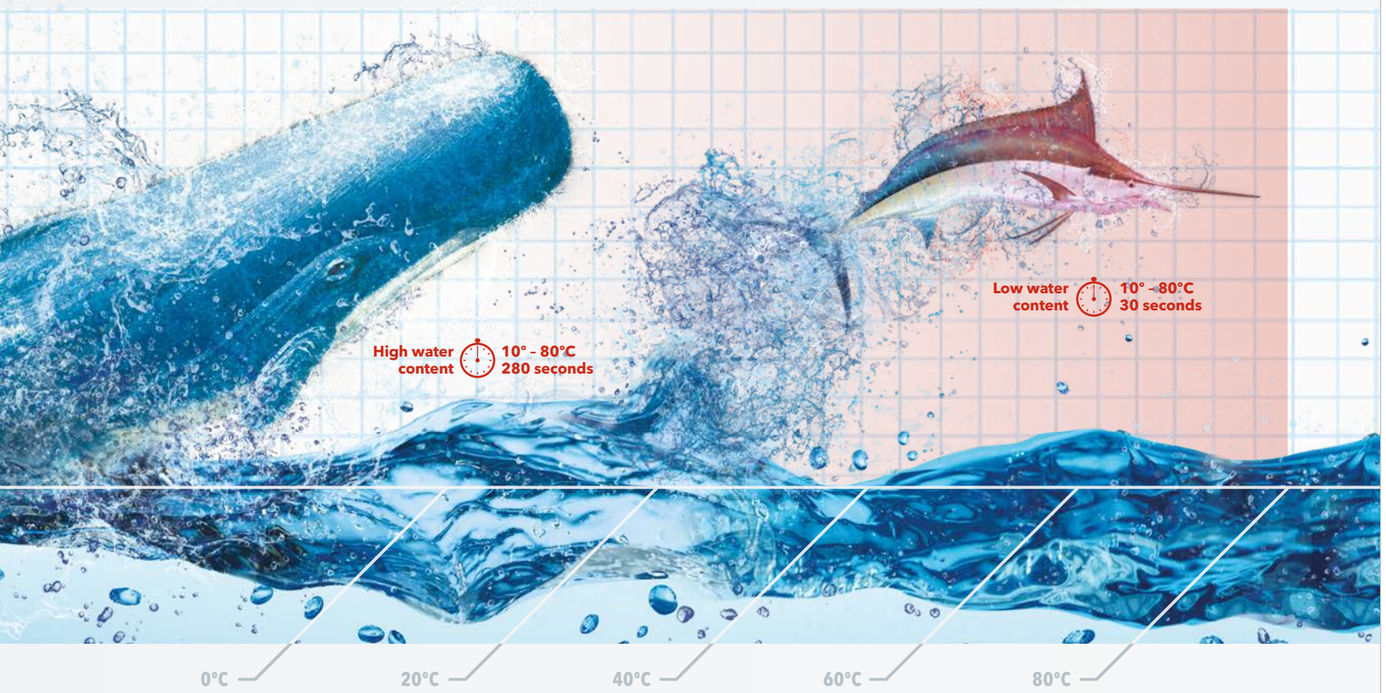
Rooftop plant room

Lightweight materials allow multiple boilers to be situated on rooftops, without concern about reinforcing the floor.

Low water content – winning the efficiency race

Fast and furious

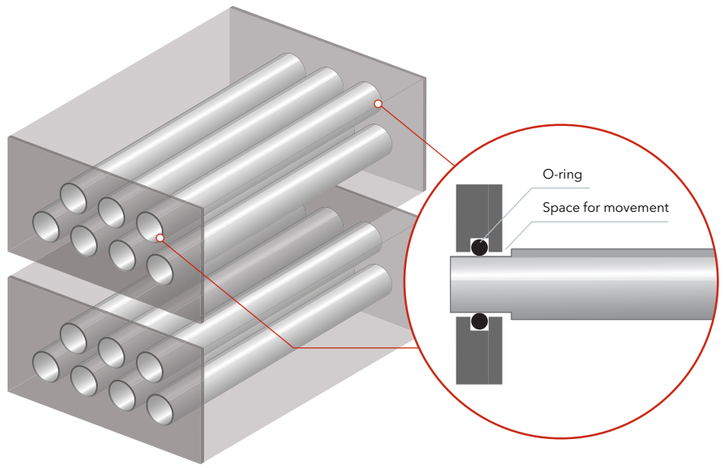
ELCO's state-of-the-art low water content boilers are capable of adapting to the changing demands of every application. Having a low water volume, the units respond rapidly to the changing temperature demand from the system and provide a perfect hydraulic balance – even in more complex installations when combined with other heat sources.



Light and robust

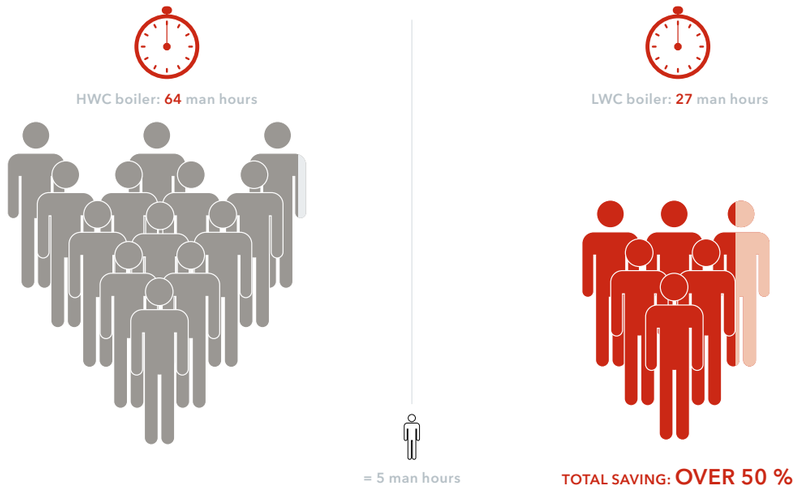
The low water content design allows ELCO heat exchangers to be mechanically decoupled, using flexible seals and gaskets.

Compared to units which have one completely cast or welded sections, ELCO boilers are specifically designed to handle thermal stress when heating up and cooling down, even at higher temperature differentials.



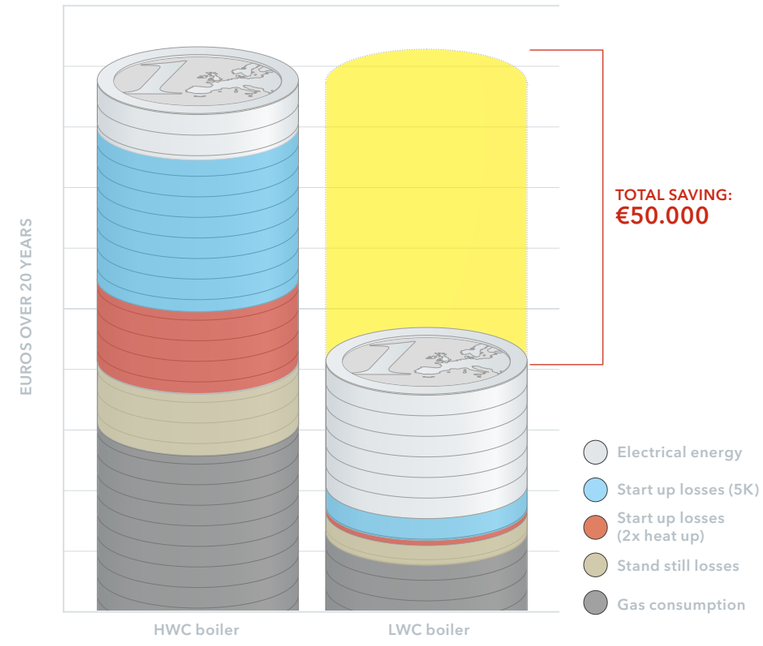
Installation costs

When all aspects of an installation – such as transport, connections, pumps and low loss headers – are considered, a low water content unit offers substantial savings on installation time.



Energy consumption

With considerable differences in gas consumption and start up/stand still losses, low water content boilers deliver huge lifetime savings.

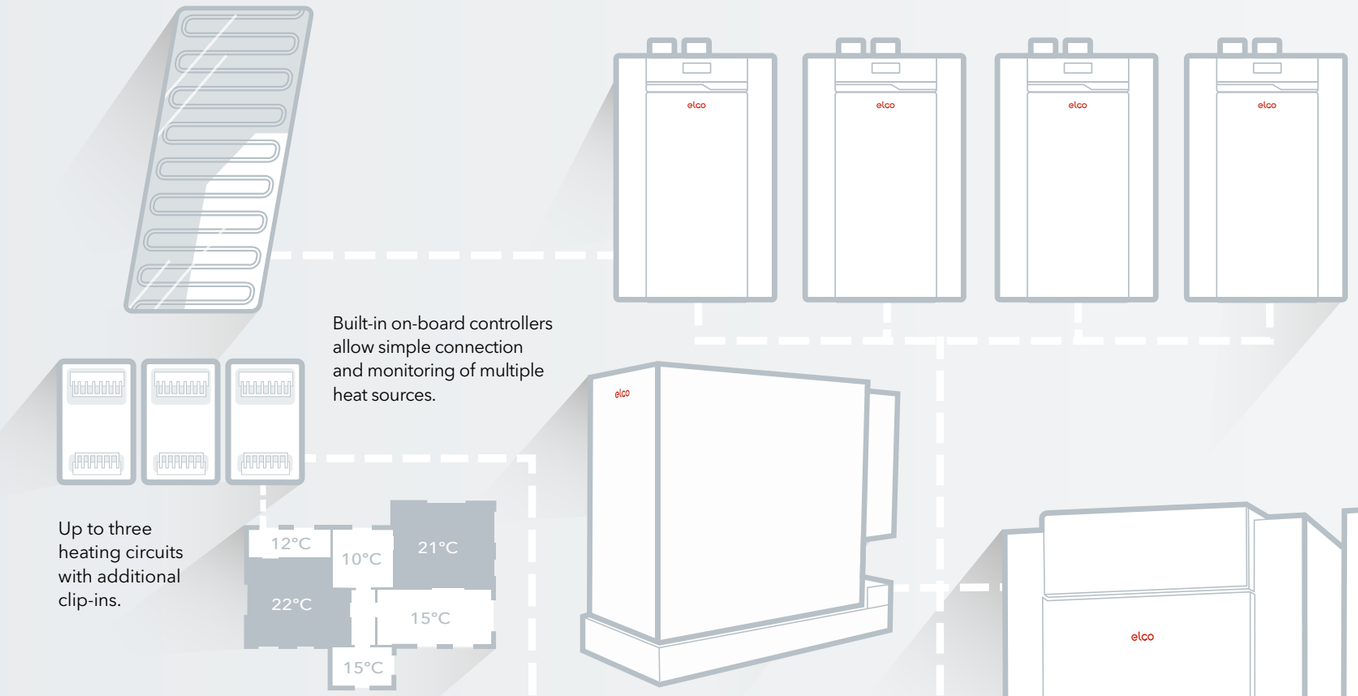


Calculation is based on a reference project with 800 kW power.

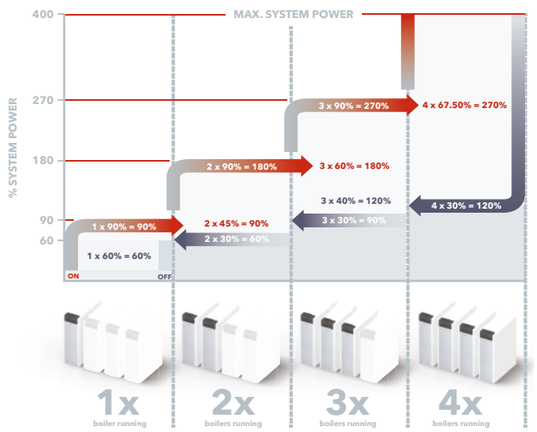
Applications – guaranteed performance and quality

Designed for integration

ELCO tests and optimises all products to ensure they integrate easily and effectively. Furthermore, ELCO engineers can support the design and commissioning of all system specifications.

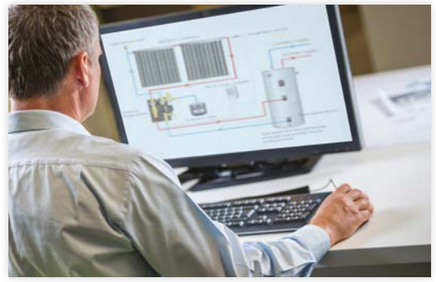


Intelligent cascade controls provide optimum system efficiency.



Backed by expertise

ELCO's system laboratory is able to operate and test complete heating and DHW systems to ensure customers have reliable and highly efficient performance.



ELCO works with dynamic load profiles for heating and DHW in order to test the system into typical operating conditions.

Comprehensive information

ELCO provides detailed information to help customers identify the correct boiler and system for any application.

The new commercial boiler range – THISION® L PLUS & TRIGON® L PLUS

Advanced system communication

The ELCO Commercial Gateway allows easy integration with well-established building management systems (BMS), further optimising the overall system efficiency.

Compatible with common standards

The ELCO Commercial Gateway is compatible with the current common protocols used in building automation.

Energy saving

By remotely monitoring and adjusting an ELCO boiler on a daily basis, heating schedules are optimised and energy costs are reduced.

hex³

The most environmentally friendly, flexible and reliable boiler range: THISION® L PLUS + TRIGON® L PLUS

A ground-breaking new design

Utilising advanced engineering capabilities, THISION® L PLUS and TRIGON® L PLUS are the next generation of ELCO boilers, offering powerful performance for flexible installation and simple maintenance.

Built-in back-up

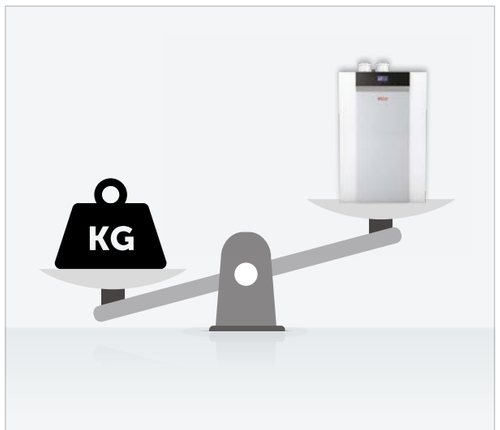
Thanks to a unique 'dual engine' design, THISION® L PLUS and TRIGON® L PLUS boilers have built-in redundancy – creating a cascade system within one boiler. The two heat exchangers are capable of working independently from each other, ensuring that a system is never left without highly efficient heating.

Plug & Play

By integrating main components within the boiler, such as the pump and non return valves, installation time, costs and space required are all significantly reduced. Thanks to the new HMI (Human Manual Interface) and a wide range of accessories, quick installations and commissioning become very simple. With our backpack solution single boilers come already equipped with low loss header or plate heat exchanger. See page 32.

Simple to service

All key components are accessible from the front of the boiler, making ongoing servicing and maintenance easy, while also reducing time on site.



Lightweight materials

By utilising the latest lightweight materials, the TRIGON® L PLUS can be easily commissioned, transported and manouvered on site. And thanks to its stainless steel heat exchanger, there are no compromises on durability and robustness. In addition, its low water content design and advanced combustion technology facilitate rapid heat transfer and extremely high efficiencies.

Designed for future standards

Within the THISION® L PLUS and TRIGON® L PLUS is ELCO's unique HEX³ technology, which structures the heat exchanger into three zones.

Built for commercial environments

Stay connected and in control

THISION® L PLUS and TRIGON® L PLUS are compatible with building management system protocols, including all common industry standards. This allows the boiler to be easily customised to a property's requirements, while still delivering optimal efficiencies.

Modbus LonWorks KNX ASHRAE BACnet™

THISION® L PLUS

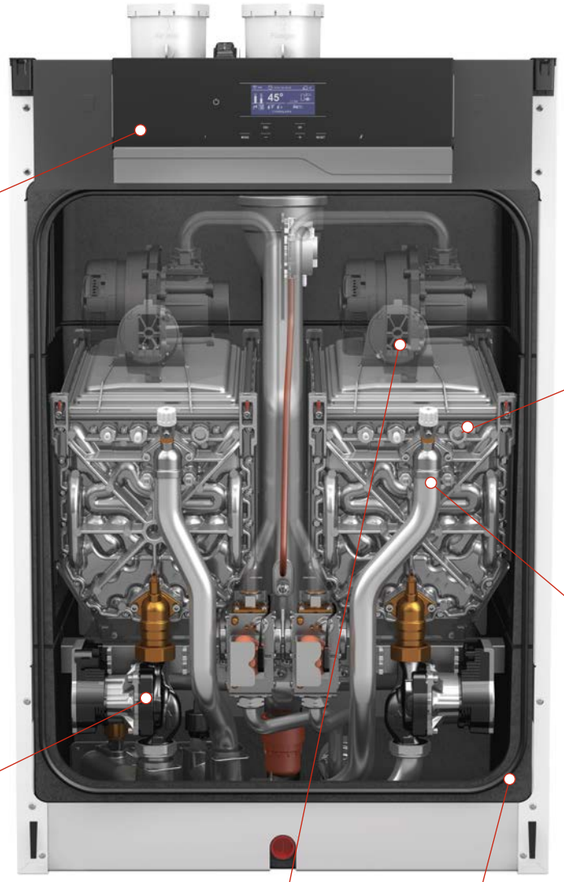
hex³

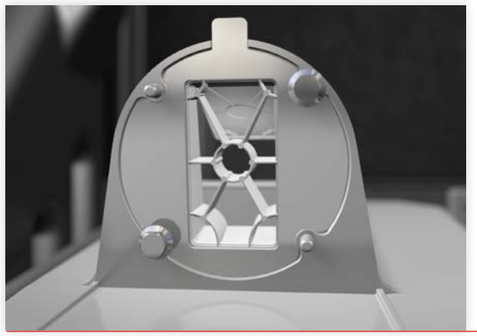
- High efficiency
- Low emissions
- Intelligent control
- Cascade systems up to 1,6 MW
- Seasonal efficiency of more than 110 %
- Extremely powerful wall hung boiler

THISION® L PLUS – The most powerful commercial boiler on the wall

Smart interface with integrated cascade manager
The new control panel is positioned at the top of the boiler to guarantee maximum durability of electronic components, while also provide easy access to all boiler parameters. With a built-in cascade controller, the THISION® L PLUS also allows quick and simple system optimisation, intuitive programming and full diagnostic capabilities. The cascade manager can support up to six mixed heating zones, thanks to two, three-zone clip-ins.

Smart and efficient built-in pump
Furthermore, the THISION® L PLUS is able to communicate with the pump and receive feedback on its operation status. This built-in modulating pump is constantly monitoring the minimum flow rate through the boiler and is able to recognise sudden blockages, preventing damage, guaranteeing optimal working conditions and improving boiler efficiency.



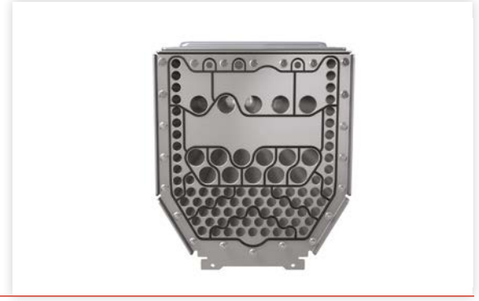


Integrated non-return valve
Built-in as standard, a non-return valve allows easy connection of the flue system, without loss of residual fan pressure – all while preventing the risk of reverse flow.

Low heat loss and noise emissions
A completely expanded polypropylene insulated body encases the boiler to keep heat loss to an absolute minimum for improved boiler efficiency. Plus, the high quality casing minimises noise emissions to industry leading standards.

Robust and durable stainless-steel heat exchanger
By combining the highest quality materials with an improved heat exchanger design, which is based on 30 years of experience with the OSS heat exchanger, the THISION® L PLUS delivers excellent efficiencies for the lifetime of the boiler, as well as incredibly low maintenance schedules. Specially designed smooth tubes ensure direct heat transfer, plus a down-firing arrangement avoids contamination of the heat exchanger.

High modulation range
A wide modulation range of up to 1:10 allows the THISION® L PLUS to adapt to system requirements and maximise boiler efficiency.



Efficient heat transfer
With specially designed hydraulic chambers, water turbulence within the boiler is optimised to ensure maximum heat transfer, while maintaining the lowest possible pressure drop.

Cascade portfolio – THISION® L PLUS

Extensive accessories with plug & play functionality

The THISION® L PLUS is incredibly flexible and is available in either in-line or back-to-back configurations for up to eight boilers, delivering heat outputs up to 1,6 MW. The systems include all the components necessary to complete the primary heating circuit, with the cascade system specifically designed for quick, simple and effective installation.

In-line cascades

Max. Boilers in cascade	Max. Output
6 In-line	1 MW

Max. Dimensions		
Width mm	Height mm	Depth mm
4230	1700	755

Max. Boilers in cascade	Max. Output
8 In-line DUO	1,6 MW

Max. Dimensions		
Width mm	Height mm	Depth mm
6520	1700	755

Back-to-back cascades

Max. Boilers in cascade	Max. Output
4+4 B2B	1 MW

Max. Dimensions		
Width mm	Height mm	Depth mm
2830	1700	1510

Max. Boilers in cascade	Max. Output
4+4 B2B DUO	1,6 MW

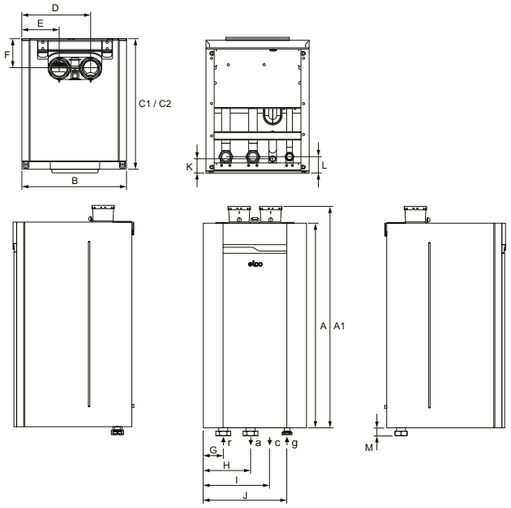
Max. Dimensions		
Width mm	Height mm	Depth mm
3880	1700	1510

Technical data – THISION® L PLUS

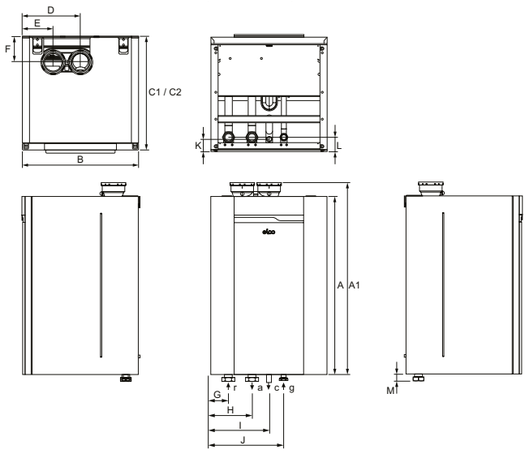
THISION® L PLUS		60	70	100	120	140	170	200
Nominal heat output at 80/60°C	kW	56,9	65,4	90,2	110,8	130,5	155,5	180,3
Minimum heat output at 80/60°C	kW	14,7	14,6	18,1	14,7	14,6	14,6	18,1
Nominal heat output at 50/30°C	kW	62,5	71,9	98,8	121,9	142,1	170,4	196,9
Minimum heat output at 50/30°C	kW	16,1	16,1	19,8	16,1	15,9	16,0	19,7
Nominal heat input Hi full load	kW	57,9	66,7	92,3	112,8	133,2	158,8	184,5
Minimum heat input Hi min. load	kW	14,88	14,88	18,45	14,88	14,88	14,88	18,45
Efficiency at 80/60°C Hi full load	%	98,2	98	97,7	98,2	98	97,9	97,7
Efficiency at 50/30°C Hi min. load	%	108,3	108,15	107,3	108,5	107,1	107,6	107
Efficiency at 40/30°C Hi min. load	%	108,5	108,35	107,6	108,7	107,3	107,9	107,3
Annual efficiency (NNG 40/30°C)	%	110,8	110,6	111,4	111	110,7	111,5	111,7
NOx class	-	6	6	6	6	6	6	6
NOx level (EN 15502) GCV	mg/kWh	21,7	22,4	22,7	22,7	23,7	22,6	23,6
Flue gas temperature at 80/60°C full load	°C	61,63	60,91	71,19	62	61	72,26	71
Max. permissible flue resistance	Pa	161	156	243	143	200	215	265
Water pressure max./min.	bar	6,0 / 1,0	6,0 / 1,0	6,0 / 1,0	6,0 / 1,0	6,0 / 1,0	6,0 / 1,0	6,0 / 1,0
Maximum temperature setpoint	°C	90	90	90	90	90	90	90
Maximum available head for system (ΔT 20K)	kPa	29,6	14,8	-	26,2	6,5	8,0	-
Maximum available head for system (ΔT 25K)	kPa	49,5	37,3	16,7	47,5	32,1	34,4	15,7
Water flow at ΔT=20K	m^3/h	2,4	2,8	3,9	4,8	5,6	6,7	7,8
Nominal water flow at ΔT=25K	m^3/h	2,0	2,3	3,1	3,8	4,5	5,4	6,2
Electrical connection	V	230	230	230	230	230	230	230
Power consumption speed controlled pump max.	W	75	75	87	150	150	174	174
Power consumption boiler max ErP (including pump)	W	126	137	120	314	418	464	450
Water content	l	9,3	9,3	13,9	16,8	16,8	21,3	25,8
Sound pressure level	dB(A)	50,5	54	49,3	56,3	59,3	56	52,4
Sound power level	dB(A)	61,5	65	60,3	67,3	70,3	67	63,4
Dimensions - Height x Width	mm	1050x530			1050x690			
Dimensions - Depth	mm	595		675	595		675	
Weight (empty)	kg	73	73	80	127	127	132	140
Energy efficiency class	-	A	A	-	-	-	-	-

Technical drawings – THISION® L PLUS

Single engine



Double engine



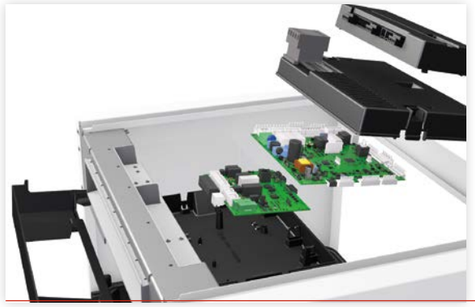
THISION® L PLUS		60	70	100	120	140	170	200
Dimensions								
Boiler height (A)	mm	1050	1050	1050	1050	1050	1050	1050
Boiler height with flue connection (A1)	mm	1135	1135	1135	1135	1135	1135	1135
Boiler width (B)	mm	530	530	530	690	690	690	690
Boiler depth (C1/C2)	mm	595	595	675	595	595	675	675
Flue gas nozzle parallel (D)	mm	185	185	185	185	185	185	185
Air intake parallel (E)	mm	345	345	345	345	345	345	345
Flue gas nozzle (F)	mm	150	150	150	150	150	150	150
Boiler return connection (G)	mm	103	103	103	103	103	103	103
Boiler flow connection (H)	mm	243	243	243	243	243	243	243
Condensate connection (I)	mm	345	345	345	345	345	345	345
Gas connection (J)	mm	430	430	430	430	430	430	430
Condensate connection (K)	mm	60	60	60	60	60	60	60
Boiler return-flow-gas (L)	mm	75	75	75	75	75	75	75
Boiler return-flow-gas (M)	mm	25	25	25	25	25	25	25
Condensate connection (c)	mm	35	35	35	35	35	35	35
Parallel connection	mm	2x100	2x100	2x100	2x100	2x100	2x130	2x130
Boiler Flow (a) / Return (r) connection	-	2"	2"	2"	2"	2"	2"	2"
Gas connection (g)	-	1 ¼"	1 ¼"	1 ¼"	1 ¼"	1 ¼"	1 ¼"	1 ¼"

TRIGON® L PLUS

hex³

- High efficiency
- Low emissions
- Intelligent control
- High flexibility
- Cascade systems up to 1,6 MW
- Seasonal efficiency of more than 110 %

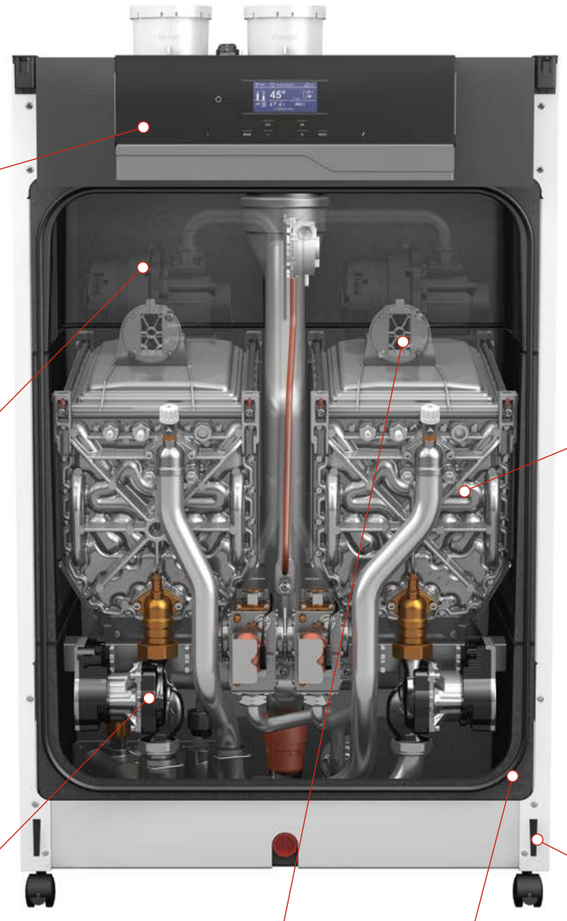
TRIGON® L PLUS – The most flexible floor standing boiler

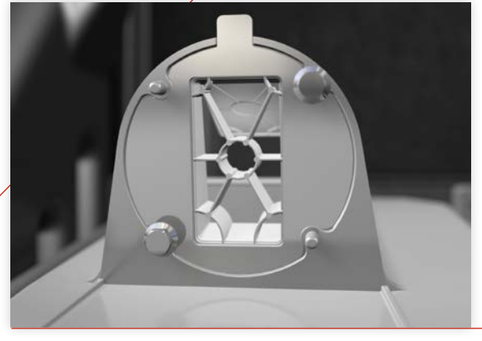


Smart interface with integrated cascade manager
The new control panel is positioned at the top of the boiler to guarantee maximum durability of electronic components, while also provide easy access to all boiler parameters. With a built-in cascade controller, the TRIGON® L PLUS also allows quick and simple system optimisation, routine rotation of the lead boiler, intuitive programming and full diagnostic capabilities. The cascade manager can support up to six mixed heating zones, thanks to two, three-zone clip-ins.

Backpack solution
Single boilers can be delivered with a backpack solution, which has a low loss header or plate heat exchanger already integrated. With this approach, installation time and costs are reduced even further, making single units ready to plug & play.

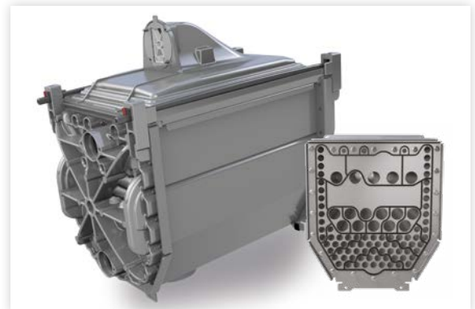
Smart and efficient built-in pump
Furthermore, the TRIGON® L PLUS is able to communicate with the pump and receive feedback on its operation status. This built-in modulating pump is constantly monitoring the minimum flow rate through the boiler and is able to recognise sudden blockages, preventing damage, guaranteeing optimal working conditions and improving boiler efficiency.





Integrated non-return valve
Built-in as standard, a non-return valve allows easy connection of the flue system, without loss of residual fan pressure – all while preventing the risk of reverse flow.

Low heat loss and noise emissions
A completely expanded poly propylene insulated body encases the boiler to keep heat loss to an absolute minimum for improved boiler efficiency. Plus, the high quality casing minimises noise emissions to industry leading standards.



Efficient heat transfer
With specially designed hydraulic chambers, water turbulence within the boiler is optimised to ensure maximum heat transfer, while maintaining the lowest possible pressure drop.

Robust and durable stainless-steel heat exchanger
By combining the highest quality materials with an improved heat exchanger design, which is based on 30 years of experience with the OSS heat exchanger, the TRIGON® L PLUS delivers excellent efficiencies for the lifetime of the boiler, as well as incredibly low maintenance schedules. Specially designed smooth tubes ensure direct heat transfer, plus a down-firing arrangement avoids contamination of the heat exchanger.

High modulation range
A wide modulation range of up to 1:10 allows the TRIGON® L PLUS to adapt to system requirements and maximise boiler efficiency.

Easy handling
After extensive research into materials, the TRIGON® L PLUS is incredibly lightweight while maintaining maximum robustness with its stainless steel heat exchanger. Our transit ramps also make transportation and on site handling easier than ever before.

Simple positioning
Integral cargo wheels, which are height adjustable and can be locked into position, allow the TRIGON® L PLUS to be easily manoeuvered into position.

Cascade portfolio – TRIGON® L PLUS

Extensive accessories with plug & play functionality

The TRIGON® L PLUS is incredibly flexible and is available in either in-line or back-to-back configurations for up to eight boilers, delivering heat outputs up to 1,6 MW. The systems include all the components necessary to complete the primary heating circuit, with the cascade system specifically designed for quick, simple and effective installation.

In-line cascades

Max. Boilers in cascade	Max. Output
6 In-line	1 MW

Max. Dimensions		
Width mm	Height mm	Depth mm
4230	1800	1140

Max. Boilers in cascade	Max. Output
8 In-line DUO	1,6 MW

Max. Dimensions		
Width mm	Height mm	Depth mm
7480	1800	1880

Back-to-back cascades

Max. Boilers in cascade	Max. Output
4+4 B2B	1 MW

Max. Dimensions		
Width mm	Height mm	Depth mm
2880	1800	1880

Max. Boilers in cascade	Max. Output
4+4 B2B DUO	1,6 MW

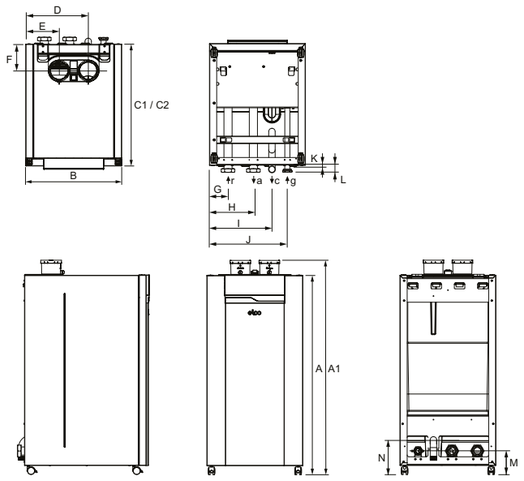
Max. Dimensions		
Width mm	Height mm	Depth mm
4690	1800	1880

Technical data – TRIGON® L PLUS

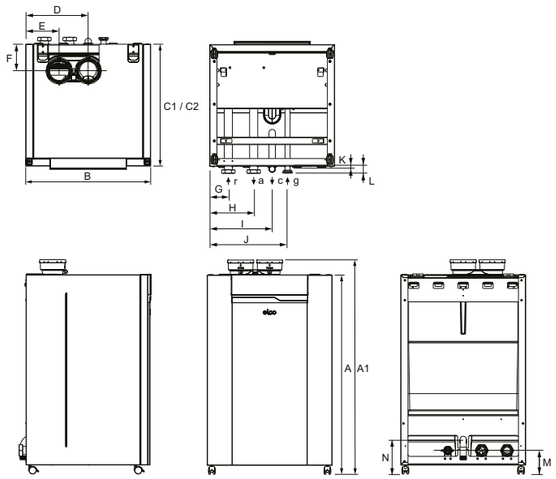
TRIGON® L PLUS		60	70	100	120	140	170	200
Nominal heat output at 80/60°C	kW	56,9	65,4	90,2	110,8	130,5	155,5	180,3
Minimum heat output at 80/60°C	kW	14,7	14,6	18,1	14,7	14,6	14,6	18,1
Nominal heat output at 50/30°C	kW	62,5	71,9	98,8	121,9	142,1	170,4	196,9
Minimum heat output at 50/30°C	kW	16,1	16,1	19,8	16,1	15,9	16,0	19,7
Nominal heat input Hi full load	kW	57,9	66,7	92,3	112,8	133,2	158,8	184,5
Minimum heat input Hi min. load	kW	14,88	14,88	18,45	14,88	14,88	14,88	18,45
Efficiency at 80/60°C Hi full load	%	98,2	98	97,7	98,2	98	97,9	97,7
Efficiency at 50/30°C Hi min. load	%	108,3	108,15	107,3	108,5	107,1	107,6	107
Efficiency at 40/30°C Hi min. load	%	108,5	108,35	107,6	108,7	107,3	107,9	107,3
Annual efficiency (NNG 40/30°C)	%	110,8	110,6	111,4	111	110,7	111,5	111,7
NOx class	-	6	6	6	6	6	6	6
NOx level (EN 15502) GCV	mg/kWh	21,7	22,4	22,7	22,7	23,7	22,6	23,6
Flue gas temperature at 80/60°C full load	°C	61,63	60,91	71,19	62	61	72,26	71
Max. permissible flue resistance	Pa	161	156	243	143	200	215	265
Water pressure max./min.	bar	6,0 / 1,0	6,0 / 1,0	6,0 / 1,0	6,0 / 1,0	6,0 / 1,0	6,0 / 1,0	6,0 / 1,0
Maximum temperature setpoint	°C	90	90	90	90	90	90	90
Maximum available head for system (ΔT 20K)	kPa	29,6	14,8	-	26,2	6,5	8,0	-
Maximum available head for system (ΔT 25K)	kPa	49,5	37,3	16,7	47,5	32,1	34,4	15,7
Water flow at ΔT=20K	m^3/h	2,4	2,8	3,9	4,8	5,6	6,7	7,8
Nominal water flow at ΔT=25K	m^3/h	2,0	2,3	3,1	3,8	4,5	5,4	6,2
Electrical connection	V	230	230	230	230	230	230	230
Power consumption speed controlled pump max.	W	75	75	87	150	150	174	174
Power consumption boiler max ErP (including pump)	W	126	137	120	314	418	464	450
Water content	l	9,3	9,3	13,9	16,8	16,8	21,3	25,8
Sound pressure level	dB(A)	50,5	54	49,3	56,3	59,3	56	52,4
Sound power level	dB(A)	61,5	65	60,3	67,3	70,3	67	63,4
Dimensions - Height x Width	mm	1100x530			1100x690			
Dimensions - Depth	mm	595		675	595		675	
Weight (empty)	kg	73	73	80	127	127	132	140
Energy efficiency class	-	A	A	-	-	-	-	-

Technical drawings – TRIGON® L PLUS

Single engine



Double engine



TRIGON® L PLUS		60	70	100	120	140	170	200
Dimensions								
Boiler height (A)	mm	1100	1100	1100	1100	1100	1100	1100
Boiler height with flue connection (A1)	mm	1185	1185	1185	1185	1185	1185	1185
Boiler width (B)	mm	530	530	530	690	690	690	690
Boiler depth (C1/C2)	mm	595	595	675	595	595	675	675
Flue gas nozzle parallel (D)	mm	185	185	185	185	185	185	185
Air intake parallel (E)	mm	345	345	345	345	345	345	345
Flue gas nozzle (F)	mm	150	150	150	150	150	150	150
Boiler return connection (G)	mm	103	103	103	103	103	103	103
Boiler flow connection (H)	mm	243	243	243	243	243	243	243
Condensate connection (I)	mm	345	345	345	345	345	345	345
Gas connection (J)	mm	430	430	430	430	430	430	430
Condensate connection (K)	mm	15	15	15	15	15	15	15
Boiler return-flow-gas (L)	mm	35	35	35	35	35	35	35
Boiler return-flow-gas (M)	mm	130	130	130	130	130	130	130
Condensate connection (N)	mm	190	190	190	190	190	190	190
Condensate connection (c)	mm	35	35	35	35	35	35	35
Parallel connection	mm	2x100	2x100	2x100	2x100	2x100	2x130	2x130
Boiler Flow (a) / Return (r) connection	-	2"	2"	2"	2"	2"	2"	2"
Gas connection (g)	-	1 ¼"	1 ¼"	1 ¼"	1 ¼"	1 ¼"	1 ¼"	1 ¼"

TRIGON® XL

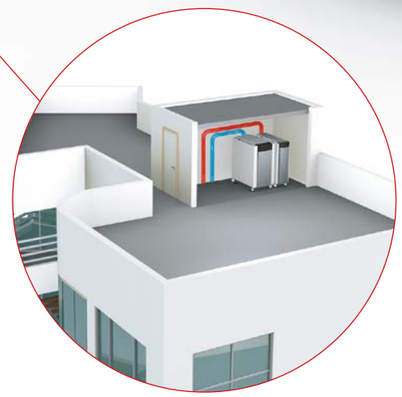
hex³

- HEX³ technology, lowest emissions and highest efficiency
- System capability
- Intelligent control
- Compact design with small footprint
- Modernisation
- New build

TRIGON® XL – Designed for challenging environments

Comprehensive control features
A clear text display with integrated master-slave cascade functionality (up to 16 boilers) makes commissioning simple. Plus, upgradable module capacity provides straightforward connections for additional heating zones, solar system or external heat sources.

Wider applications
With an 8 bar max. water pressure, the boiler is compatible with higher buildings without the need for hydraulic system separation. Plus, a 30K flow/return temperature differential allows easier integration with district heating systems while maintaining optimum efficiency.



Lightweight construction
By utilising low water content technology, the boiler can be easily installed on a rooftop – while also delivering superb response times and reduced running costs.

Compact dimensions
All models are designed to pass through standard 760 mm wide doors. The range comprises 7 models with 2 widths.

Flexible configurations
The inspection glass and ignition electrode can be fitted on either side of the boiler, allowing a more flexible boiler positioning on site.

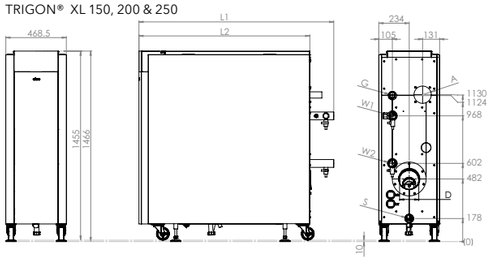
Easy transportation
The boiler is supplied with cargo wheels, allowing it to be easily manoeuvred on site. After positioning, the boiler can be levelled and lifted from its cargo wheels by adjusting the feet.

Simple commissioning
An integrated flue gas damper and rear flue connection provides an installer-friendly arrangement.

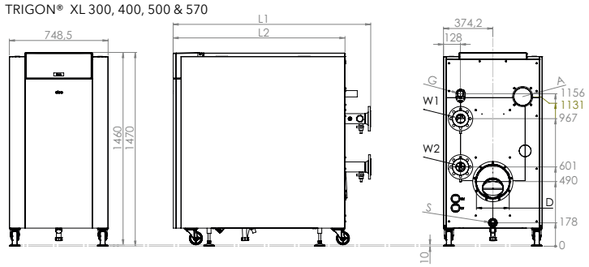
Technical data – TRIGON® XL

TRIGON® XL		150	200	250	300	400	500	570
Nominal heat output at 80/60 °C	kW	142,3	190,4	237,6	285,7	381,3	476,7	540,2
Minimum heat output at 80/60 °C	kW	31,3	42,0	47,0	56,5	75,2	94,6	120,0
Nominal heat output at 50/30 °C	kW	149,4	199,9	249,7	300,3	401,1	503,2	572,8
Minimum heat output at 50/30 °C	kW	35,1	47,0	52,9	63,6	85,0	106,1	133,4
Nominal heat input Hi full load	kW	145,0	194,0	242,0	291,0	388,0	485,0	550,0
Minimum heat input Hi min. load	kW	32,2	43,1	48,4	58,2	77,6	97,0	122,2
Efficiency at 80/60 °C full load	%	98,2	98,2	98,2	98,2	98,3	98,3	98,2
Efficiency at 50/30 °C min. load	%	109,2	109,2	109,4	109,4	109,5	109,4	109,2
Efficiency at 40/30 °C min. load	%	110,0	110,0	110,3	110,3	110,3	110,3	110,5
Annual efficiency (NNG 40/30 °C)	%	110,4	110,4	110,4	110,4	110,4	110,4	110,3
NOx level (EN15502)	mg/kWh	28	28	27	27	26	29	31
Flue gas temperature at 80/60 °C full load	°C	75	75	75	75	75	75	76
Max. permissible flue resistance	Pa	200	200	200	160	400	300	400
Water pressure max./min.	bar	8/1	8/1	8/1	8/1	8/1	8/1	8/1
Maximum temperature setpoint	°C	90	90	90	90	90	90	90
Water flow at ΔT=10K	m³/h	12,1	16,2	20,3	24,4	32,5	40,7	46,1
Hydraulic resistance at ΔT=10K	kPa	45	107	125	48	129	137	228
Water flow at ΔT=20K	m³/h	6,1	8,1	10,1	12,2	16,3	20,3	23,1
Hydraulic resistance at ΔT=20K	kPa	11	27	31	12	32	34	57
Water flow at ΔT=30K	m³/h	4,0	5,4	6,8	8,1	10,8	13,6	15,4
Hydraulic resistance at ΔT=30K	kPa	5	12	14	5	14	15	25
Electrical connection	V	230/400	230/400	230/400	230/400	230/400	230/400	230/400
Electrical power consumption (excl. pump)	W	176	267	286	230	504	620	676
Noise level	dB(A)	70,3	70,3	70,3	70,3	77,3	77,3	77,3
Water content	l	27	31	35	61	68	75	82
Weight (empty)	kg	290	332	336	434	496	540	595
Dimensions								
Water connections (W1/W2)	–	R2″	R2″	R2″	DN65 PN16	DN65 PN16	DN65 PN16	DN65 PN16
Gas connection (G)	–	R1½″	R1½″	R1½″	R1½″	R1½″	R2″	R2″
Flue gas connection (D)	mm	150	150	200	200	250	250	250
Air intake connection (A) (for room sealed use)	mm	130	130	130	130	130	150	150
Condensate connection (S)	mm	32	32	32	32	32	32	32
Boiler length with water connection (L1)	mm	1349	1499	1649	1348	1496	1646	1769
Boiler length without water connection (L2)	mm	1165	1315	1465	1152	1302	1452	1602

TRIGON® XL 150, 200 & 250



TRIGON® XL 300, 400, 500 & 570



TRIGON® XXL

hex³

- HEX³ technology, lowest emissions and highest efficiency
- System capability
- Intelligent control
- Compact design with small footprint
- Modernisation
- New build

TRIGON® XXL – Class-leading outputs with extremely low emissions

Outstanding design
The TRIGON® XXL offers unrivalled power and performance, delivering outputs up to 2 MW, thanks to a one-of-a-kind boiler design.

Comprehensive control features
Designed for simple system integration, the TRIGON® XXL can operate alongside multiple energy sources, while a master-slave cascade function makes commissioning easy.

BMS connections
The TRIGON® XXL is compatible with common building managements system protocols, utilising the ELCO Commercial Gateway for a hassle-free connection.

Extremely low emissions
By combining a unique heat exchanger geometry and a water-cooled cold flame burner, the TRIGON® XXL offers class-leading performance for low NOx and CO.

Modular construction
ELCO's renowned modular design construction allows the TRIGON® XXL to be disassembled into components parts – providing flexibility when siting the boilers in a commercial property.

Easy transportation and installation
Integral cargo wheels allow all models to be easily manoeuvred on site.

Designed for complex systems
The latest commercial heating systems often include multiple heat sources, such as solar, heat pumps and CHP units. As a result, they are becoming more complex and heavily reliant on efficient heat distribution throughout the building.

These demands require accurate hydraulic balancing, which is best achieved using a low loss header or buffer. However, these systems also demand a degree of flexibility and reaction time from integrated heat sources.

ELCO designs its boilers to meet all of these needs by utilising:

Low water content technology
TRIGON® XXL boilers are fast, furious and respond rapidly – even in complex installations when combined with other heat sources.

Example comparison:
- The heat up time for a high water content boiler from cold condition to standby temperature is 280 seconds.
- A comparable TRIGON® XXL boiler needs just 30 seconds.

Compact dimensions and low operating weight
A small footprint and a lightweight construction ensure compatibility with a wide range of applications.

Rooftop installations/rooftop plant room
By utilising low water content technology, multiple boilers can be situated on rooftops, without any concern over reinforcing the floor – while also delivering superb response times and reduced running costs.

TRIGON® XXL – Performance for all projects

TRIGON® XXL SE

Low condensing:

- 650 – 1.900 kW
- 10 models
- 103,9 % efficiency
- NOx (EN 15502) = 23 mg/kWh

Applications:

- High power/temperature
- Cost driven

3 sections:

- 1 burner
- 2 HEX-sections

Achieves MAXIMUM BREEAM 2 CREDITS

TRIGON® XXL ECO

Medium condensing:

- 650 – 1.600 kW
- 9 models
- 104,1 % efficiency
- NOx (EN 15502) = 22 mg/kWh

Applications:

- Medium efficiency
- Reduced energy consumption

3 sections:

- 1 burner
- 2 HEX-sections

Achieves MAXIMUM BREEAM 2 CREDITS

TRIGON® XXL EVO

High condensing:

- 700 – 1.700 kW
- 9 models
- 109,7 % efficiency
- NOx (EN 15502) = 22 mg/kWh

Applications:

- High power/high efficiency
- Low energy consumption

4 sections:

- 1 burner
- 3 HEX-sections

Achieves MAXIMUM BREEAM 2 CREDITS

An industry FIRST

TRIGON® XXL EVO (2 MW)

High condensing:

- 2.000 kW
- 1 model
- 109,7 % efficiency
- NOx (EN 15502) = 23 mg/kWh

Applications:

- High power/high efficiency
- Low energy consumption

5 sections:

- 1 burner
- 4 HEX-sections

Achieves MAXIMUM BREEAM 2 CREDITS

Technical data – TRIGON® XXL SE

TRIGON® XXL SE		SE 650	SE 750	SE 850	SE 1000	SE 1100	SE 1200	SE 1300	SE 1500	SE 1700	SE 1900
Nominal heat output at 80/60°C	kW	650	726	849	961	1073	1184	1296	1481	1666	1851
Minimum heat output at 80/60°C	kW	164	183	213	242	270	298	326	373	419	466
Nominal heat output at 50/30°C	kW	650	726	849	961	1074	1185	1297	1482	1667	1853
Minimum heat output at 50/30°C	kW	181	201	235	267	298	328	359	410	462	513
Nominal heat input Hi full load	kW	702	784	917	1038	1159	1279	1400	1600	1800	2000
Minimum heat input Hi min. load	kW	176	196	229	260	290	320	350	400	450	500
Efficiency at 90/70°C full load	%	92,3	92,3	92,3	92,3	92,3	92,3	92,3	92,3	92,3	92,3
Efficiency at 90/70°C min load	%	92,9	92,9	92,9	92,9	92,9	92,9	92,9	92,9	92,9	92,9
Efficiency at 80/60°C Hi full load	%	92,6	92,6	92,6	92,6	92,6	92,6	92,6	92,6	92,6	92,6
Efficiency at 50/30°C Hi min. load	%	102,6	102,6	102,6	102,6	102,6	102,6	102,6	102,6	102,6	102,6
Efficiency at 40/30°C Hi min. load	%	103,9	103,9	103,9	103,9	103,9	103,9	103,9	103,9	103,9	103,9
Annual efficiency (NNG 40/30°C)	%	103,3	103,3	103,3	103,3	103,3	103,3	103,3	103,3	103,3	103,3
Max. available head for system	kPa	36	46	50	40	24	94	59	65	127	27
NOx level (EN 15502)	mg/kWh	23	23	23	23	23	23	23	23	23	23
Flue gas temperature at 80/60°C full load	°C	182	182	182	182	182	182	182	182	182	182
Flue temperature at 90/70°C full load	°C	187	187	187	187	187	187	187	187	187	187
Flue temperature at 90/70°C min load	°C	73,2	73,2	73,2	73,2	73,2	73,2	73,2	73,2	73,2	73,2
Max. permissible flue resistance	Pa	150	150	150	150	150	150	150	150	150	150
Water pressure max./min.	bar	8/1,5	8/1,5	8/1,5	8/1,5	8/1,5	8/1,5	8/1,5	8/1,5	8/1,5	8/1,5
Maximum temperature setpoint	°C	90	90	90	90	90	90	90	90	90	90
Water flow at ΔT=10K	m^3/h	56	62	72	82	92	102	112	128	144	160
Hydraulic resistance at ΔT=10K	kPa	152	172	136	160	204	248	368	320	432	788
Water flow at ΔT=20K	m^3/h	28	31	36	41	46	51	56	64	72	80
Hydraulic resistance at ΔT=20K	kPa	38	43	34	40	51	62	92	80	108	197
Water flow at ΔT=30K	m^3/h	18,7	20,7	24,0	27,3	30,7	34,0	37,3	42,7	48,0	53,3
Hydraulic resistance at ΔT=30K	kPa	16,9	19,1	15,1	17,8	22,7	27,6	40,9	35,6	48,0	87,6
Electrical connection	V	400	400	400	400	400	400	400	400	400	400
Electrical power consumption boiler (excl, pump)	W	900	900	1270	1270	1270	1270	2330	2330	2770	2770
Noise level	dB(A)	72,7	72,7	72,7	72,7	72,7	72,7	72,7	72,7	72,7	72,7
Water content	l	50	53	70	75	80	85	97	109	116	123
Weight (empty)	kg	770	844	958	1084	1221	1369	1380	1740	1899	1991
Dimensions											
Water connections (W)	-	DN65 PN16	DN65 PN16	DN80 PN16	DN80 PN16	DN80 PN16	DN80 PN16	DN80 PN16	DN80 PN16	DN80 PN16	DN80 PN16
Gas connection (G)	-	R2"	R2"	R2"	R2"	DN65 PN16	DN65 PN16	DN65 PN16	DN65 PN16	DN80 PN16	DN80 PN16
Flue gas connection (C)	mm	300	350	350	400	400	400	450	450	500	500
Air intake connection (for room sealed use)	mm	250	355	355	355	355	355	450	450	450	450
Condensate connection	mm	40	40	40	40	40	40	40	40	40	40
Boiler length (incl, connections)	mm	2185	2185	2565	2565	2565	2565	2795	3310	3310	3310
Boiler length (excl, connections) (L1)	mm	1710	1710	2085	2085	2085	2015	2085	2600	2600	2600
Length water connections (Lw)	mm	475	475	480	480	480	480	480	480	480	480
Length chimney plate (L2)	mm	420	550	550	550	550	550	710	710	710	710
Width (B)	mm	1370	1370	1170	1170	1370	1370	1570	1370	1570	1570
Height (H)	mm	1555	1555	1555	1555	1555	1555	1555	1575	1575	1575

Technical data – TRIGON® XXL ECO

TRIGON® XXL ECO		ECO 650	ECO 750	ECO 850	ECO 950	ECO 1050	ECO 1150	ECO 1300	ECO 1450	ECO 1600
Nominal heat output at 80/60°C	kW	615	719	814	909	1003	1097	1255	1411	1568
Minimum heat output at 80/60°C	kW	175	204	231	258	285	311	356	400	445
Nominal heat output at 50/30°C	kW	620	725	821	917	1011	1106	1265	1422	1581
Minimum heat output at 50/30°C	kW	192	224	254	284	314	343	392	440	490
Nominal heat input Hi full load	kW	653	764	865	966	1066	1166	1333	1499	1666
Minimum heat input Hi min. load	kW	187	218	247	276	305	333	381	428	476
Efficiency at 80/60°C Hi full load	%	94,1	94,1	94,1	94,1	94,1	94,1	94,1	94,1	94,1
Efficiency at 50/30°C Hi min. load	%	102,9	102,9	102,9	102,9	102,9	102,9	102,9	102,9	102,9
Efficiency at 40/30°C Hi min. load	%	104,1	104,1	104,1	104,1	104,1	104,1	104,1	104,1	104,1
Annual efficiency (NNG 40/30°C)	%	103,7	103,7	103,7	103,7	103,7	103,7	103,7	103,7	103,7
Max. available head for system	kPa	38	66	57	47	34	90	101	71	35
NOx level (EN 15502)	mg/kWh	22	22	22	22	22	22	22	22	22
Flue gas temperature at 36/30°C 30%	°C	69	69	69	69	69	69	69	69	69
Flue gas temperature at 80/60°C full load	°C	153	153	153	153	153	153	153	153	153
Max. permissible flue resistance	Pa	150	150	150	150	150	150	150	150	150
Water pressure max./min.	bar	8/1,5	8/1,5	8/1,5	8/1,5	8/1,5	8/1,5	8/1,5	8/1,5	8/1,5
Maximum temperature setpoint	°C	90	90	90	90	90	90	90	90	90
Water flow at ΔT=10K	m³/h	52	62	70	78	86	94	108	122	134
Hydraulic resistance at ΔT=10K	kPa	156	96	116	140	168	272	216	308	428
Water flow at ΔT=20K	m³/h	26,0	31,0	35,0	39,0	43,0	47,0	54,0	61,0	67,0
Hydraulic resistance at ΔT=20K	kPa	39	24	29	35	42	68	54	77	107
Water flow at ΔT=30K	m³/h	17,3	20,7	23,3	26,0	28,7	31,3	36,0	40,7	44,7
Hydraulic resistance at ΔT=30K	kPa	17,3	10,7	12,9	15,6	18,7	30,2	24,0	34,2	47,6
Electrical connection	V	400	400	400	400	400	400	400	400	400
Electrical power consumption boiler (excl, pump)	W	900	900	1270	1270	1270	2330	2330	2770	2770
Noise level	dB(A)	68,7	68,7	68,7	68,7	68,7	68,7	68,7	68,7	68,7
Water content	l	53	70	75	80	85	97	109	116	123
Weight (empty)	kg	844	958	1084	1221	1369	1380	1740	1899	1991
Dimensions										
Water connections (W)	-	DN65 PN16	DN80 PN16	DN80 PN16	DN80 PN16	DN80 PN16	DN80 PN16	DN80 PN16	DN80 PN16	DN80 PN16
Gas connection (G)	-	R2"	R2"	R2"	DN65 PN16	DN65 PN16	DN65 PN16	DN65 PN16	DN80 PN16	DN80 PN16
Flue gas connection (C)	mm	350	350	400	400	400	450	450	500	500
Air intake connection (for room sealed use)	mm	355	355	355	355	355	450	450	450	450
Condensate connection	mm	40	40	40	40	40	40	40	40	40
Boiler length (incl, connections)	mm	2185	2565	2565	2565	2565	2795	3310	3310	3310
Boiler length (excl, connections) (L1)	mm	1710	2085	2085	2085	2085	2085	2600	2600	2600
Length water connections (Lw)	mm	475	480	480	480	480	480	480	480	480
Length chimney plate (L2)	mm	550	550	550	550	550	710	710	710	710
Width (B)	mm	1370	1170	1170	1370	1370	1570	1370	1570	1570
Height (H)	mm	1555	1555	1555	1555	1555	1555	1575	1575	1575

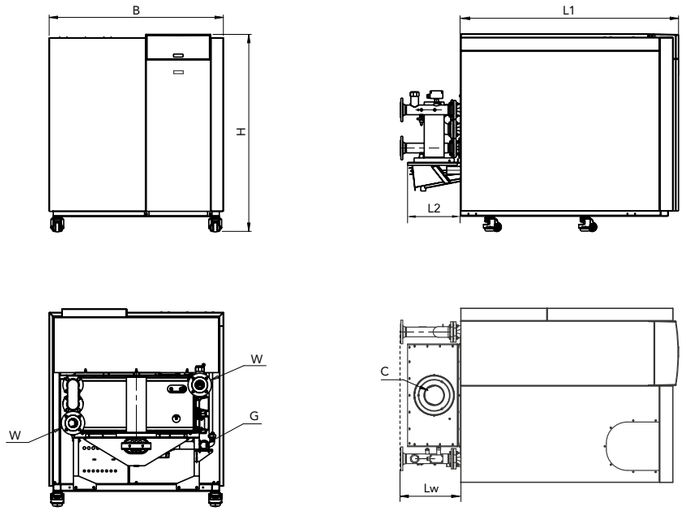
Technical data – TRIGON® XXL EVO

TRIGON® XXL EVO		EVO 700	EVO 800	EVO 900	EVO 1000	EVO 1100	EVO 1200	EVO 1400	EVO 1550	EVO 1700	EVO 2000
Nominal heat output at 80/60°C	kW	639	747	846	945	1043	1141	1304	1467	1630	1953
Minimum heat output at 80/60°C	kW	182	212	241	269	297	324	371	417	464	487
Nominal heat output at 50/30°C	kW	676	791	896	1001	1104	1208	1381	1553	1726	2069
Minimum heat output at 50/30°C	kW	202	236	267	298	330	360	412	463	515	541
Nominal heat input Hi full load	kW	653	764	865	966	1066	1166	1333	1499	1666	2000
Minimum heat input Hi min. load	kW	187	218	247	276	305	333	381	428	476	500
Efficiency at 80/60°C Hi full load	%	97,8	97,8	97,8	97,8	97,8	97,8	97,8	97,8	97,8	97,7
Efficiency at 50/30°C Hi min. load	%	108,2	108,2	108,2	108,2	108,2	108,2	108,2	108,2	108,2	108,2
Efficiency at 40/30°C Hi min. load	%	109,7	109,7	109,7	109,7	109,7	109,7	109,7	109,7	109,7	109,7
Annual efficiency (NNG 40/30°C)	%	109,1	109,1	109,1	109,1	109,1	109,1	109,1	109,1	109,1	109,1
Max. available head for system	kPa	20	49	32	15	75	65	71	116	76	84
NOx level (EN 15502)	mg/kWh	22	22	22	22	22	22	22	22	22	23
Flue gas temperature at 80/60°C full load	°C	69	69	69	69	69	69	69	69	69	73
Max. permissible flue resistance	Pa	150	150	150	150	150	150	150	150	150	150
Water pressure max./min.	bar	8/1,5	8/1,5	8/1,5	8/1,5	8/1,5	8/1,5	8/1,5	8/1,5	8/1,5	8/1,5
Maximum temperature setpoint	°C	90	90	90	90	90	90	90	90	90	90
Water flow at ΔT=10K	m³/h	54	64	72	82	90	98	112	126	140	168
Hydraulic resistance at ΔT=10K	kPa	296	160	220	268	332	368	332	512	640	864
Water flow at ΔT=20K	m³/h	27	32	36	41	45	49	56	63	70	84
Hydraulic resistance at ΔT=20K	kPa	74	40	55	67	83	92	83	128	160	216
Water flow at ΔT=30K	m³/h	18,0	21,3	24,0	27,3	30,0	32,7	37,3	42,0	46,7	56,0
Hydraulic resistance at ΔT=30K	kPa	32,9	17,8	24,4	29,8	36,9	40,9	36,9	56,9	71,1	96,0
Electrical connection	V	400	400	400	400	400	400	400	400	400	400
Electrical power consumption boiler (excl. pump)	W	900	900	1270	1270	1270	2330	2330	2770	2770	2770
Noise level	dB(A)	68,7	68,7	68,7	68,7	68,7	68,7	68,7	68,7	68,7	72,7
Water content	l	73	97	104	110	117	131	147	157	166	209
Weight (empty)	kg	1136	1328	1468	1634	1800	1900	2000	2100	2201	2500
Dimensions											
Water connections (W)	-	DN65 PN16	DN80 PN16	DN80 PN16	DN80 PN16	DN80 PN16	DN80 PN16	DN80 PN16	DN80 PN16	DN80 PN16	DN80 PN16
Gas connection (G)	-	R2"	R2"	R2"	DN65 PN16	DN65 PN16	DN65 PN16	DN65 PN16	DN80 PN16	DN80 PN16	DN80 PN16
Flue gas connection (C)	mm	300	350	350	400	400	450	450	500	500	500
Air intake connection (for room sealed use)	mm	250	355	355	355	355	450	450	450	450	450
Condensate connection	mm	40	40	40	40	40	40	40	40	40	40
Boiler length (incl. connections)	mm	2185	2565	2565	2565	2565	2795	3310	3310	3310	3310
Boiler length (excl. connections) (L1)	mm	1710	2085	2085	2085	2085	2085	2600	2600	2600	2600
Length water connections (Lw)	mm	475	480	480	480	480	480	480	480	480	480
Length chimney plate (L2)	mm	550	550	550	550	550	710	710	710	710	710
Width (B)	mm	1370	1170	1170	1370	1370	1570	1370	1570	1570	1570
Height (H)	mm	1555	1555	1555	1555	1555	1555	1575	1575	1575	1665

Dimensions – TRIGON® XXL

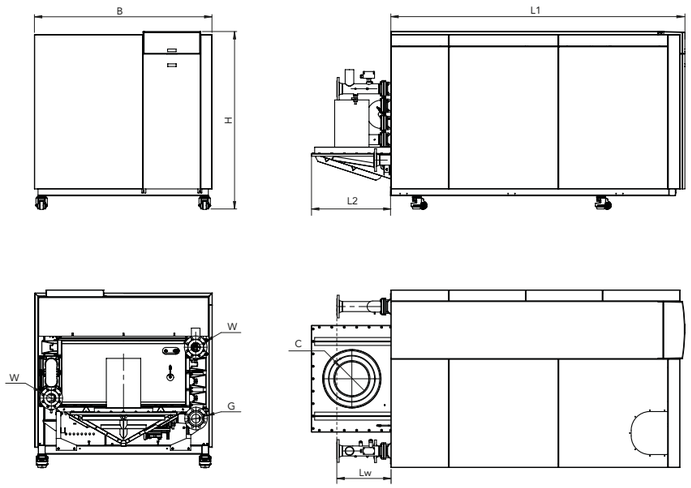
Dimensions

- SE 650 – 1.100
- ECO 650 – 1.150
- EVO 700 – 1.100



Dimensions

- SE 1.200 – 1.900
- ECO 1.300 – 1.600
- EVO 1.200 – 2.000

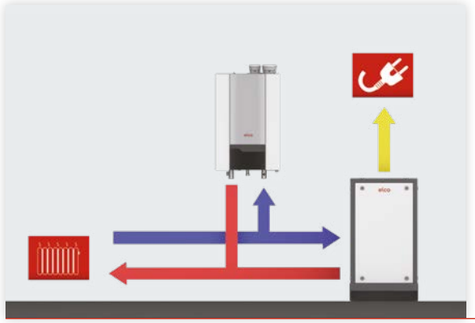


For detailed dimension indications please consult the TRIGON® XXL technical manual.

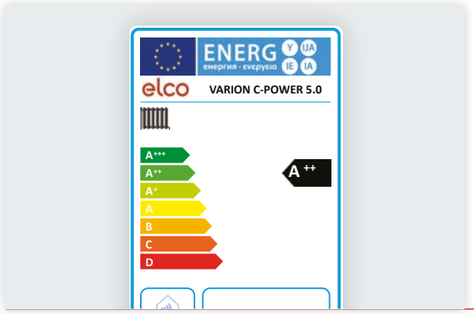
CHP: VARION® C-POWER

- High efficiency
- System capability
- Remote control
- Quiet operation
- Compact design with small footprint
- Modernisation
- New build

VARION® C-POWER – One range for all commercial applications



System integration
VARION® C-POWER is suitable for cascade CHP installations of up to three units. In addition, all models can integrate seamlessly with other ELCO products to offer an optimised system that is customised to every application.



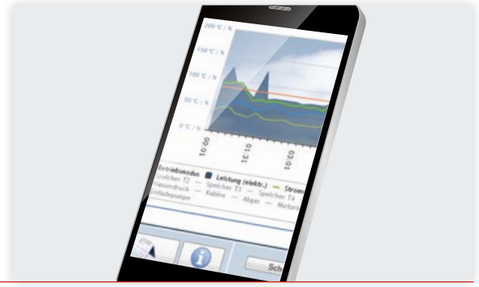
Highest environmental standards
VARION® C-POWER units are certified to the highest A++ efficiency class for outputs from 5,0 – 30,0 kW_{el} – maximising energy savings and reducing CO_2 emissions.

Less floor space
VARION® C-POWER has a compact design and can fit through standard doors for simple installation.
All models can also be disassembled and rebuilt on-site in a required location upon request.

Ultra-quiet operation
An incredibly low engine speed, combined with an acoustic reduction system, significantly lower noise emissions – allowing VARION® C-POWER units to be installed in a variety of locations without the need for additional soundproofing.

Flexible system and modulation control
VARION® C-POWER can operate in parallel with grid connection, while Model L can also operate as a standalone unit without connection to the grid. Plus, intelligent control systems facilitate modulation of actual power or heat output requirements.

Smart control
An integral touchscreen colour display provides easy adjustment of settings, while temperatures, runtimes, operation conditions, as well as the power and heat generation are displayed in detailed graphics and tables.



Remote access
All VARION® C-POWER units are equipped with a modem for remote monitoring, management and analysis of the unit via a smartphone or tablet. As standard, a 24-month mobile data allowance is supplied, which can be extended on request (with full service included). Data is stored on a secure server via live tracking for evaluation and support.

Superb efficiencies
An integrated condensing unit offers overall net efficiencies up to 109,5 % for models with a power range of 5,0 - 30,0 kW_{el}. Condensing CHP units are also available for 50 kW_{el} models on request.

Technical data – VARION® C-POWER

Product		MODEL S		MODEL M		
		VARION® C-POWER 5.0	VARION® C-POWER 7.2	VARION® C-POWER 11.0	VARION® C-POWER 16.0	VARION® C-POWER 20.0
Rated electrical power (1)	kW_{el}	5	7,2	11	16	20
Rated thermal power (2)	kW_{th}	12	18,1	25,3	37,9	45,8
Electrical power modulation	kW_{el}	2,9 - 5,0	3,9 - 7,2	7,5 - 11,0	9,5 - 16,0	10,7 - 20,0
Thermal power modulation	kW_{th}	9,2 - 12,0	12,7 - 18,1	20,6 - 25,3	26,4 - 37,9	29,1 - 45,8
Electrical efficiency η_{el}	%	31,6	31,2	32	32,1	33,2
Thermal efficiency η_{th}	%	75,7	78,3	73,5	75,9	76
Total efficiency η_{tot}	%	107,3	109,5	105,5	108	109,2
Energy input	kWh_{Hi}	15,82	23,09	34,38	49,86	60,24
Natural gas consumption (G20)	m³/h	1,45	2,12	3,15	4,57	5,53
Liquid gas consumption (G31)	kg/h	1,23	1,79	2,67	3,87	4,68
CHP coefficient		0,44	0,41	0,43	0,42	0,44
$f_{pe\ 2009}$		0,286	0,290	0,279	0,264	0,224
Primary energy saving	%	34,0	34,8	33,3	34,5	35,6
ErP energy efficiency label (4)		A++	A++	A++	A++	A++
Sound power level	L_w dB	67	68	70	70	73
Noise emission (3)	dB(A) @1m	51.5	52.6	55	55	58
Maintenance interval	h	15.000	13.000	10.000	6.000	6.000
Interval for change of engine oil	h	7.500	6.500	/	/	/
Max. flow temperature (+/-5)	°C	80	80	80	80	80
Max. return temperature (+/-5)	°C	65	65	65	65	65
Max. working pressure	bar			3		
Max. ambient temperature	°C	30	30	30	30	30
Engine		Toyota	Toyota	Toyota	Toyota	Toyota
Cylinders		3	3	4	4	4
Cubic capacity	l	1	1	2,2	2,2	2,2
Engine oil	l	25	25	55	55	55
Generator type				Asynchronous		
Speed	rpm	1.550	1.550	1.540	1.540	1.540
Flue gas temperature (5)	°C	50	50	50	50	50
Dimensions module LxWxH incl. mounted parts	mm	1.160 x 620 x1.100	1.160 x 620 x 1.100	1.410 x 686 x 1.240	1.410 x 686 x 1.240	1.410 x 686 x 1.240
Weight	kg	490	490	725	725	725
Electrical connection	V/Hz	400/50	400/50	400/50	400/50	400/50
Electrical connection cable cross section	mm²	5x4mm² Cu, max.50m	5x4mm² Cu, max.50m	5x10mm² Cu, max. 50m	5x10mm² Cu, max. 50m	5x10mm² Cu, max. 50m
Electrical connection fuse rating	A	25	25	50	50	50

1) Performance data according to ISO 3046/I-2002, tolerance 5 %
2) Heating capacity specification, tolerance 8 %
3) Test bench measurement at a distance of 1 m
4) In compliance with EU regulations 811/2013; 813/2013
5) At return temperature of 35 °C and optimum working-conditions, tolerance 5%

Product		MODEL M+		MODEL L		
		VARION® C-POWER 25.0	VARION® C-POWER 30.0	VARION® C-POWER 50.0 Standard	VARION® C-POWER 50.0 High temp	VARION® C-POWER 50.0 CV
Rated electrical power (1)	kW_{el}	25	30	50	50	50
Rated thermal power (2)	kW_{th}	54,9	63,1	85	80	100
Electrical power modulation	kW_{el}	12,5 - 25,0	15,0 - 30,0	25,0 - 50,0	25,0 - 50,0	25,0 - 50,0
Thermal power modulation	kW_{th}	34,8 - 54,9	40,9 - 63,1	52,6 - 85,0	49,5 - 80,0	60,2 - 100,0
Electrical efficiency η_{el}	%	32,5	33,5	35	35	35
Thermal efficiency η_{th}	%	71,4	70,5	59,4	55,9	69,9
Total efficiency η_{tot}	%	103,9	104	94,4	90,9	104,9
Energy input	kWh_{Hi}	76,92	89,55	143,00	143,00	143,00
Natural gas consumption (G20)	m³/h	7,06	8,22	13,12	13,12	13,12
Liquid gas consumption (G31)	kg/h	n/a	n/a	n/a	n/a	n/a
CHP coefficient		0,46	0,48	0,59	0,63	0,50
$f_{pe\ 2009}$		0,266	0,229	0,203	0,216	0,172
Primary energy saving	%	32,8	33,3	29,2	27,2	34,5
ErP energy efficiency label (4)		A++	A++	n/a	n/a	n/a
Sound power level	L_w dB	72	75	83	83	83
Noise emission (3)	dB(A) @1m	57	59	65	65	65
Maintenance interval	h	8.000	8.000	3.000	3.000	3.000
Interval for change of engine oil	h	/	/	/	/	/
Max. flow temperature (+/-5)	°C	80	80	80	93	80
Max. return temperature (+/-5)	°C	65	65	65	83	65
Max. working pressure	bar	3	3	6	6	6
Max. ambient temperature	°C	30	30	30	30	30
Engine		YANMAR	YANMAR	MAN	MAN	MAN
Cylinders		4	4	4	4	4
Cubic capacity	l	3,3	3,3	4,6	4,6	4,6
Engine oil	l	110	110	187.5	187.5	187.5
Generator type		Asynchronous		Synchronous		
Speed	rpm	1.530	1.530	1.500	1.500	1.500
Flue gas temperature (5)	°C	55	55	95	95	60
Dimensions module LxWxH incl. mounted parts	mm	1.640 x 760 x1.410	1.640 x 760 x 1.410	2.250 x 798 x 1.959	2.250 x 798 x 1.959	2.250 x 798 x 1.959
Weight	kg	1.120	1.120	2.250	2.250	2.250
Electrical connection	V/Hz	400/50	400/50	400/50	400/50	400/50
Electrical connection cable cross section	mm²	5x35mm² Cu, max. 100m	5x35mm² Cu, max. 100m	5x35mm² Cu, max. 50m	5x35mm² Cu, max. 50m	5x35mm² Cu, max. 50m
Electrical connection fuse rating	A	63	63	100	100	100

1) Performance data according to ISO 3046/I-2002, tolerance 5 %
2) Heating capacity specification, tolerance 8 %
3) Test bench measurement at a distance of 1 m
4) In compliance with EU regulations 811/2013; 813/2013
5) At return temperature of 35 °C and optimum working-conditions, tolerance 5%

Full range of accessories

Flue gas systems

Room dependent
Room independent

Room controls

Comfortable heating management

Neutralisation boxes

DN 2 & DN 3, DN4, HN1.5, HN 2.5, HN2.7

Pump units

DN 25 & DN 32

Connectivity

Remote controller management

Fresh water stations

Hydraulic kits

Plate heat exchangers and headers

Cylinder range

120 – 2000 l

Notes

ELCO – A partner you can rely on

As a specialist partner, you can rely on ELCO's extensive boiler expertise, from planning right through to servicing and maintenance. Our specially trained technicians are available around the clock to help with the installation and commissioning of commercial boilers – offering their experience and assistance when you need it the most.

Commissioning
Our specialists always work together with you in commissioning an ELCO boiler properly to provide a high quality service.

First class service
Whether it is repairs, maintenance or troubleshooting, our service technicians are there for you seven days a week.

Trained and certified service technicians
Our ELCO service technicians are specially trained, qualified and fully equipped with the tools required to ensure boilers are maintained to the highest standards.

More information

www.elco.net

elco heating solutions

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