ApenGroup

PCH/new Series

High performance, total flexibility

Air is our element
KLINGENBURG
energy recovery our *passion*

ApenGroup®
aermaxline

Company Profile

Overview

APEN GROUP S.p.A. is a leading manufacturer of heating systems, and offers a wide range of products: condensing boilers, condensing heat exchangers, suspended warm air heaters, and floor standing condensing warm air heaters.
Apen Group has always been an innovation leader thanks to constant product and process development, and continuous research of advanced solutions in technology.

Our Mission

Designing, manufacturing and marketing of HVAC products that stand out for their quality and for their compliance with environmental standards.
Our R&D staff is deeply committed to the setup of products that assure low polluting emissions, high efficiency and minimum consumption, thereby assuring optimum heating and conditioning, from small residential spaces to large industrial buildings.

Environment

Environment protection is essential for present and next generations' quality of life.
Apen Group's challenge is investing in research and development activities which grant the design and the production of environment friendly products.
Such a concern is well resumed in the current slogan "Apen Group caring for environment" and it involves all the company organization: from research of suppliers and partners who share this same goal, to staff personnel, natural source optimization and definition of any prevention control and correction so to respect the fixed quality goals and environment deference.

Global Presence

Apen Group operates nationally and internationally: it is present in Italy thanks to an efficient and well distributed organization: professional agents, consultants, engineers and designers are ready to match the demands of customers always and everywhere. Abroad, distributors, dealers, joint ventures with foreign partners, share with the company the principles of distribution of highly qualified equipment in relation to the needs of different countries.

Customer Service

To be truly customer-oriented, a service must satisfy custom's requests from the clients.
APEN GROUP can meet any project need by developing custom products. Its flexibility in the manufacturing process and the availability of state-of-the-art machinery for metal sheet processing guarantee cost effective products.
Cost effectiveness is another basic characteristic of APEN GROUP products, besides a high potential for technology, commercial and industrial development.

A Leading Company In The Industry

Our modern facility is built on an area of 30,000 sqm, 11,000 of which encompass headquarters, manufacturing and research facilities.
Easy and timely intercompany communication is provided through an IBM AS400 server with a fully integrated Server Windows NT PC network.
The website www.apengroup.com and e-mail apen@apengroup.com, allow to communicate easily with all entities outside the company (eg. Customers, suppliers, associations).

Manufacturing Excellence

Each product is tested, checked, and commissioned to guarantee that combustion parameters, efficiency levels, and component reliability fully comply with quality standards required for user comfort and satisfaction.
The manufacturing of our products takes advantage of ultimate, state-of-the-art planning and organization methods, which include: Digital control equipment, Welding robots,
Forming robots, Computer assisted test lines.
Advanced automation assures top-quality products as well as manufacturing flexibility and timely deliveries. Innovation, reliability, and originality are built-in features of each of our products.

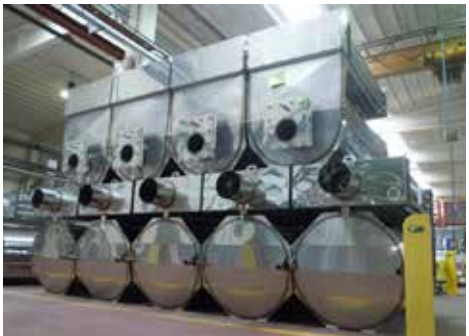
Certified Quality

APEN GROUP S.p.A. ranges among the first Italian companies to be certified by an industry-wide acknowledging system at European level. We have been audited and certified to be in compliance with the quality standards defined in UNI EN ISO 9001:2015 protocol.
Certification has been obtained for The design, manufacturing, marketing and service of hybrid systems, of warm air heaters, condensation heaters and exchangers, condensing boilers, water fan units, air destratifiers, air handling central units, and burners.
The commitment to quality took by the company dates back to the beginning of our history, and it is confirmed by the following milestones:
In 1988 APEN GROUP was certified by DVGW Deutscher Verein Des Gas Und Wasserfaches E.V. and it was approved as a trading partner for suspended heaters in Germany. Then approvals for the sale of these heaters in other markets followed, such as France, Switzerland, the Netherlands, and Belgium.
In 1995 all the gas-fired appliances we manufacture were certified according to EC Directives.
In 1991 we were the first Italian company in the HVAC industry to be registered in accordance with UNI EN ISO 9003 requirements.
In 1993 the auditing was extended to include compliance with UNI EN ISO 9002 standards.
In 2003, we were acknowledged to be compliant with UNI EN ISO 9001:2000, and the registration was confirmed in 2006.
In 2013 the Board of Directors has adopted the organizational model 231.
In 2017 we obtained the certification in compliance with the UNI EN ISO 9001:2015.

International Certificates

Apen Group's products have been tested and certified by Gastec-Kiwa CERMET, the famous Dutch Notified Body, with test labs accredited by the EC.






APEN GROUP Company History

1967

The Origins: Thermovur

The great adventure of the company THERMOVÜR begins. It is created with the aim of manufacturing and selling gas-oil and fuel-oil burners. Founder members are two brothers-in-law with the same name, "Rigamonti Angelo" and "Rigamonti Angelo", with the assistance and professionalism of their father Emilio Rigamonti.

The 1980's

Research and Extension of the Range

The heating market undergoes quick changes: the booming house building industry and the increasing need of comfort urge the development of new and diversified products: floor standing boilers, wall boilers, gas burners, suspended gas-fired warm air heaters, gas radiators.

1973

Aermax

Thermovür is flanked by the company AERMAX for the marketing of floor-standing warm air heaters and burners in foreign markets.

1991

Creation of ApenGroup

Thermovür and AERMAX merge into a single production and business unit, taking advantage of the skills, experience and know-how of both brands: thus creating the company APEN GROUP SPA.

The 2000's

New Projects, New Products

In 1998, the company launched the wall-mounted gas-fired modulating heaters series PLUS. They are EC-approved and feature high efficiency stainless steel exchangers, pre-mix gas burner and forced draught with low NOx emissions. The research and development effort connected with this product have enabled the subsequent designing of the KONDENSA heaters.
In 2001 the company presents AQUASPLIT, an outdoor boiler with matching indoor blower.
In 2008 APEN GROUP confirms its technical knowledge in the air handling industry launching KONDENSA heaters, (wall-mounted condensation warm air heaters), air handling central units, and Roof Top standalone units with built-in condensing exchanger.

2020

Research, Innovation and Ecology

We are in continuos evolution.
The market experiences and difficulties have made us stronger and more committed to face new challenges, new technologies, new countries.
We aim to defend the values we believe in to improve the environmental comfort, the care for people, the good use of energy.
We aim our company to contribute to a better future!

2020
CARING for the environment

2017

50 years of Caring for Environmental!

We are proud of having celebrated our first 50 years of activities!

1967 2017
50 CARING for the environment

Installation References

COMPANY	CATEGORY	COUNTRY
MERZIG	Showroom	Germany
DILLINGEN HUTTE GTS	Production hall	Germany
DEITERMANN MAXIT GROUP	Production hall	Germany
LEAR CORPORATION	Production hall	Germany
KNIERIM INDIVIDUAL YACHTS	Production hall	Germany
WS WOLPERT SYSTEM TECHNIC	Logistic center	Germany
DAILMER CHRYSLER (WORTH)	Production hall and logistics	Germany
BRIDGESTONE	Production hall	Germany
STENDORF KUNSTSTOFFE	Production hall	Germany
RHENOTHERM COATINGS	Production hall	Germany
C.ED. SCHULTE GMBH SYLINDERSCHLOBFABRIK	Production hall	Germany
MN MACHINERY NAGEL	Production hall	Germany
FORM + TEST	Production hall	Germany
ITALFIM SPA	Metal grid manufacturer	Italy
LOCAT SPA	Engineering industry	Italy
MEC-TRACK SRL	Machinery manufacturer	Italy
SALMOIRAGHI SPA	Production hall	Italy
RACCORDERIA PIACENTINA	Fitting manufacturer	Italy
SPEEDLINE SPA	Car wheel rim manufacturer	Italy
GRUPPO BEA	Showroom	Italy
NUOVA MAGRINI GALILEO	Mechanical processing	Italy
FILA	Sportswear manufacturer	Italy
MAGNETI MARELLI	Electro-mechanical industry	Italy
LIDL	Supermarket chain	Italy
NATO BASE IN VICENZA	Military base	Italy
DANIELI	Iron manufacturer	Italy
MOTO GUZZI	Motorbike production hall	Italy
LUXOTTICA	Glasses producer	Italy
MIDAS	Car servicing	Italy
OFFICINE ROSSI	Aluminium windows manufacturer	Italy
TNT	Logistics and transport	Italy
OMAG	Equipment for marble manufacturing	Italy
SPORTPIÙ	Sports center	Italy
CONSORZIO VARESE	Farmer's co-operative	Italy
ALTINI COMUNICAZIONE	Advertising graphics agency	Italy
MALPENSA AIRPORT	Transports	Italy
AIRBUS	Helicopter factory	France
LIDL	General store chain	France
INTERMARCHE'	General store chain	France
PEUGEOT	Car manufacturer	France
RENAULT	Car manufacturer	France
CITROEN	Car manufacturer	France
ROVER AUTOMOVILES	Production hall	Spain
BMW	Production hall	Spain
CARPINTERIA NAVA ABENOJAR	Production hall	Spain
AYUNTAMIENTO DE TOLEDO	Office	Spain
IVECO	Production hall	Spain
RENAULT	Production hall	Spain
NISSAN	Production hall	Spain
JAGUAR	Car manufacturer	England
ROVER	Car manufacturer	England
FORD	Car manufacturer	England
IKEA	Furniture store chain	England
WESHAM	Soccer stadium	England
VODAPHONE WAREHOUSE	Warehouse	England
BUDAPEST CITY EXHIBITION FAIR	Exhibition center	Hungary
ETM	Electrical store chain	St Petersburg, Russia
LEON	Production and warehouse	Omsk, Russia
GUR'EVSNAB	Warehouse	Atirau, Kazakhstan
MERIDIAN	Package factory	Perm, Russia
JSC	Perm oil machine engineering company	Perm, Russia
SIBLIFT	Elevator company	Omsk, Russia
PTK TETRA	Building company, productions rooms	Siktivkar, Russia
VORONEZH AIRCRAFT JOINT-STOCK COMPANY	Joint-stock company	Voronezh, Russia
VORONEZ RAILROAD	Car repair plant	Voronezh, Russia
GRAINER REAL ESTATE	Real estate	Vladimir, Russia
OZNA	Integrated solutions for oil and gas industry	Russia
JSC SOLIKAMSKSTROY	Building company	Solikamsk, Russia
LIDIGA	Furniture factory	Smolensk, Russia
OOO MERCURY	Shopping center	Ciaikovsky, Russia

Installation References

COMPANY	CATEGORY	COUNTRY
NPO Iskra	Oil and gas equipment factory (for gazprom companies)	Perm, Russia
ETM	Electrical store chain	Rostov-na-Donu, Russia
Orenburg Factory RTO	Factory	Orenburg, Russia
Llitmash-M	Foundry	Russia
URSA Uralita	Insulation materials factory	Serpuhov, Russia
VKM-steel	Foundry	Saransk, Russia
ZBK-1	Concrete goods factory	Saratov, Russia
DOBRINYA company	General store chain	Belgorod, Russia
YAKUTSKIY Airport	Airport	Yakutsk, Russia
UMPO	Air engine factory	Ufa, Russia
DRILLMEC	Oil and gas drilling installation	Siberia, Russia
Shopping Park IKEA	Shopping center	Poland
Shopping Park MATARNIA	Shopping center	Poland
NGK Ceramics	Production hall	Poland
ALFA	Warehouses	Dobczyce, Poland
MDM	Production and storage hall	Bielsko-Biała, Poland
PROFILPAS	Production hall	Kutno, Poland
ELEKTRA	Production hall	Warszawa, Poland
KRISPOL	Production hall	Wrzesnia, Poland
SCANIA	Truck service station / service center	Gliwice, Gruszka and Kielce Poland
HYDRO Aluminium	Production hall	Chrzanów, Poland
ZBYSZKO Company	Production halls, warehouses	Białobrzegi, Poland
TERMOSPRZET	Production hall	Zabrze, Poland
ARIX	Warehouses, production hall	Złobnica, Poland
SYSTEM JWT	Warehouses	Szczecin, Poland
POLOMARKET	Commercial buildings	Swarzedz and Zielona Góra, Poland
ROLLER	Production hall	Łowicz, Poland
IMPRESJA	Car repair shop	Przeworsk, Poland
MAGNA PLAST	Production hall	Białe Błota, Poland
YUSK	Shopping center	Piotrków Trybunalski, Poland
KOL-INS-BUD	Warehouse	Tarnów, Poland
DOOR	Warehouse	Proszówki, Poland
SORTOWNIA POCZTY POLSKIEJ	Warehouse	Rzeszów, Poland
ARM	Warehouses	Stary Sacz, Poland
ECO-PACKERS	Storage hall	Włocławek, Poland
REM-BRUK	Storage hall	Rzezawa, Poland
ONNINEN	Storage hall	Lublin, Poland
SANNPROFI	Storage hall	Bukowiec and Łodz, Poland
DAF	Salon / service	Konin, Poland
LENIGO	Footwear production plant	Grudziadz, Poland
BESKID PLUS	Storage hall	Bielsko-Biała, Poland
AROT	Pvc pipe manufacturing plant	Leszno, Poland
HUTA ŁABEDY	Production hall	Łabedy, Poland
HG-Serwis	Storage hall	Chodziez, Poland
BAMBUS	Wholesale flowers	Czestochowa, Poland
NOWAK&NOWAK	Production hall	Szczecinek, Poland
VOIT	Production hall	Nowa Sól, Poland
PH ADEN	Shopping center	Gniezno, Poland
DEPARTMENT OF MUNICIPAL SERVICES	Warehouse	Brzesko, Poland
VICTAULIC	Production and storage hall	Drezdenko, Poland
HORTICULTURE FARM Tarnów	Foil tunnels	Tarnów, Poland
Tennis hall Łancut	Indoor tennis hall	Łancut, Poland
Printing Co. Janowice	Printing house	Janowice, Poland
Inn "ZŁOTY RÓG"	Restaurant	Rewal, Poland
JAROSŁAW CHURCH	Religious building	Jarosław, Poland
EHB	Wholesale construction materials	Grabów, Poland
Wedding hall "POD LIPAMI"	Wedding hall	Lewin Brzeski, Poland
CCC Store	Shopping center	Piotrków Trybunalski, Poland
JOHN DEERE	Machinery farmer manufacturer	Netherlands
WARMUSEUM OVERLOON	Museum	Netherlands
TELEGRAAF NEWSPAPER	Advertising graphics agency	Netherlands
WETRON TRANSPORT	Logistic and transport	Netherlands
NIJPELS FURNITURE	Furniture manufacturer	Netherlands
STORK	Machinery manufacturer	Netherlands
ANWB	General organisation	Netherlands
SCHEUTEN GLASSGROUP	Glasses producer	Netherlands
INNOSEEDS	Farmer seeds production	Netherlands
VDL GROUP	Engineering industry	Netherlands
MANDEMAKERS GROUP	Sanitair manufacturer	Netherlands

Textile and clothes drying

Drying of food processes

Coating and painting

Ceramics drying processes

Systems for Industrial Processes Roof Top and AHU

Manufacturing processes often require different forms of heating, as for heat treatment or the drying or drying processes, using the air as a heat convector.

Apen Group has nearly fifty years of experience in the study and production of hot air generators for industrial processes.

Our Investments in R&D projects for the development and construction of energy efficient systems, allow the industrial customer to benefit from: reliable products, energy-saving advantages and low maintenance requirements which help to reduce the operating costs.

Process safety and equipment's lifespan is guaranteed by high quality resistant materials and design. ApenGroup is able to supply an extended range of heat exchangers and to fulfill customized requirements.
Our design department is able to support the customer in finding the optimal solution in any planning phase.

Application fields:

- Coating and Painting
- Drying of food processes.
- Drying processes for components
- Ceramics drying processes
- Textile and clothes drying
- Heating in concrete making for construction industry
- Agricultural products drying as for Cereals and Tobacco.

AHU or ROOF TOP Aplications

Apen Group has developed the series of high efficiency condensing modules with premixed burner and stainless steel exchangers to combine with gas burners and fuel oil burners, to satisfy all the needs of heating and heat integration within air handling units and roof top.

Textile and clothes drying

Industry

Roof Top

Air handling unit

PCH / Condensing Gas Heating Moduls for Air Handling Units and Rooftop

ErP 2021 Compliant EU/2016/2281

Condensing Product

Very High Efficiency

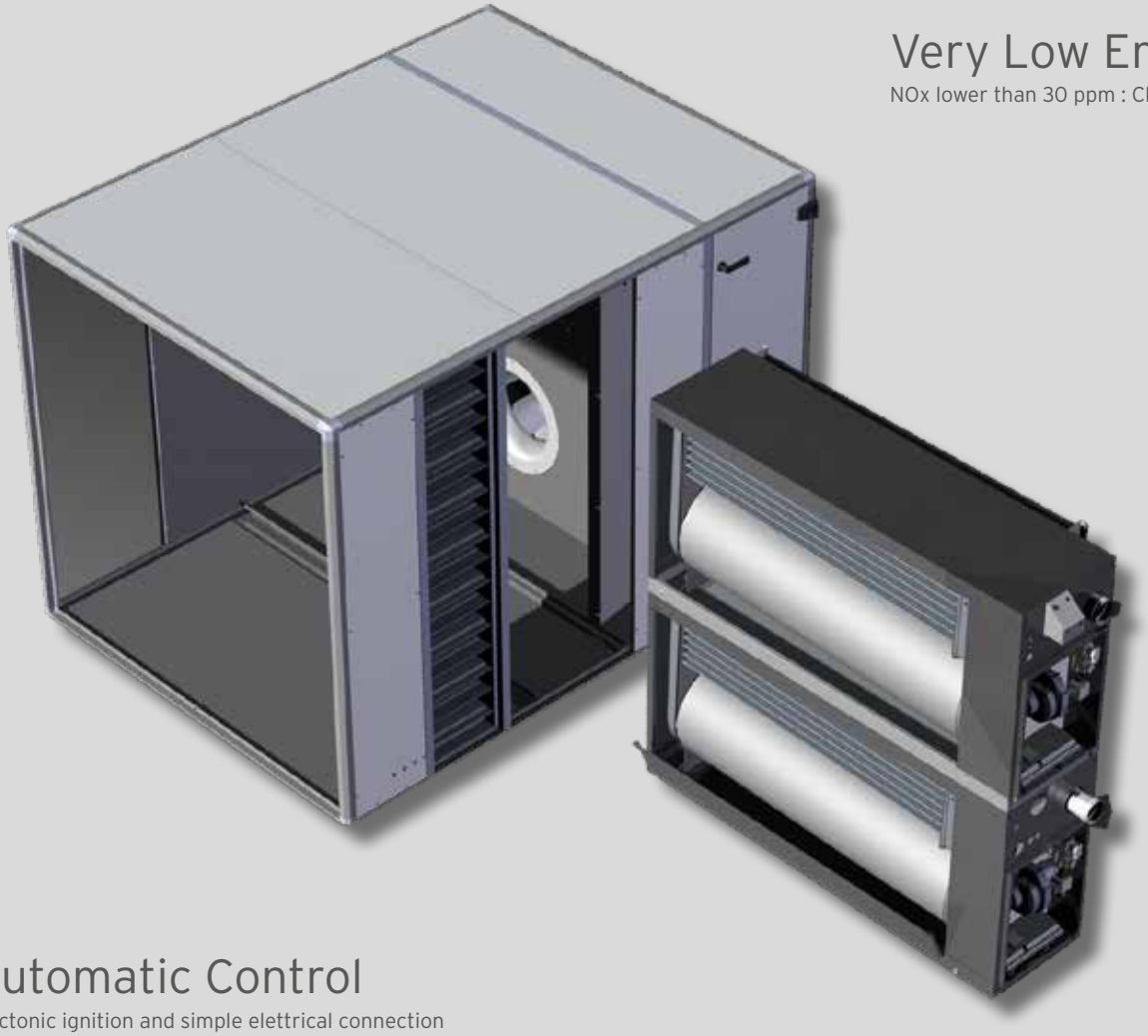
PCH: efficiency up to 109%

Capacity Range

14 models from 5 kW to 400kW

Very Low Emissions

NOx lower than 30 ppm : Class 5



Automatic Control

Electonic ignition and simple elettrical connection

Fine Tuning

Standard power level managed by 0 - 10 volt control input from air handling unit

Extended Modulation

Standard continuous modulation from 100% to 20%

PCH New Series:
Condensing Gas Exchanger Modules

Apen Group has designed and developed the new PCH heating module, specially designed for insertion into air treatment units and roof-tops, with premix and modulation technology, allowing condensation to reach up to 109% calculated based on the lower calorific value (Hi).
The new heating module is built with environment-friendly, totally recyclable materials, such as stainless steel and aluminium, which produces "ecological and rational" thermal energy due to the "clean combustion" achieved with the burner that fully premix air-and gas, and due to the ability to continuously and rationally adapt the thermal power delivered to the time variations of energy requirements of the rooms to be heated.
A microprocessor-based device controls continuous modulation of thermal power output and adjusts it to heat requirements.
An innovative main burner power device monitors and modulates, in the correct proportions, the amount of combustion air and fuel gas during the thermal power modulation phase.

Clean Combustion

The new exchanger module is equipped with a burner that fully premix air and gas. The thermal power modulation device characterizes condensing modules with:

- NO emissions of carbon monoxide (CO = 0);
- Very low emission of nitrogen oxides, below 30 parts per million (NOx < 30 ppm);
- Low emission of CO_2, thanks to high combustion efficiency (109%) and to reduction of fuel consumption arising from heat output modulation.

Undirect Heat Exchange

A few minutes are enough for the environment to warm up thanks to the absence of thermal inertia.
The heat produced PCH is directly transferred to ambient air through undirect exchange with combustion products.
These products flow inside a sealed system, totally separated from the air heated for environment.
No intermediate fluid is required, so the hydraulic circuit is unnecessary and water freezing becomes an out-of-date issue.

No Need for Boiler Room

The heat exchanger module also allows:

- Savings on plant building cost (boiler, burner, pumps, safety and regulation devices, masonry work);
- Less space is required (units are smaller and require less clearance);
- No need for plant certification (our PCH module is already fully certified).

Savings on Fuel Consumption Up to 50%

The high combustion efficiency of up to 109% (referring to lower calorific power), the continuous modulation of the delivered thermal power, the reduced warm air stratification allows to save fuel from 30% to 50% compared to conventional heat exchangers.

Available Configurations

New PCH Gas Modules presents an extended power range which goes from 5 kW to 400 kW.

This result is achieved thanks to the possibility to assemble standard modules in parallel configurations.
We can choose between three gas module configurations:

A - Single Modules

A System

Consist of a single exchanger. The range includes 6 models for PCH with maximum power output up to 100 kW.
The modules can be installed either vertically or horizontally, depending on the air flow direction. If the installation is expected that the air flow direction is vertical, you must indicate this when ordering.

B - Horizontally Combined Modules

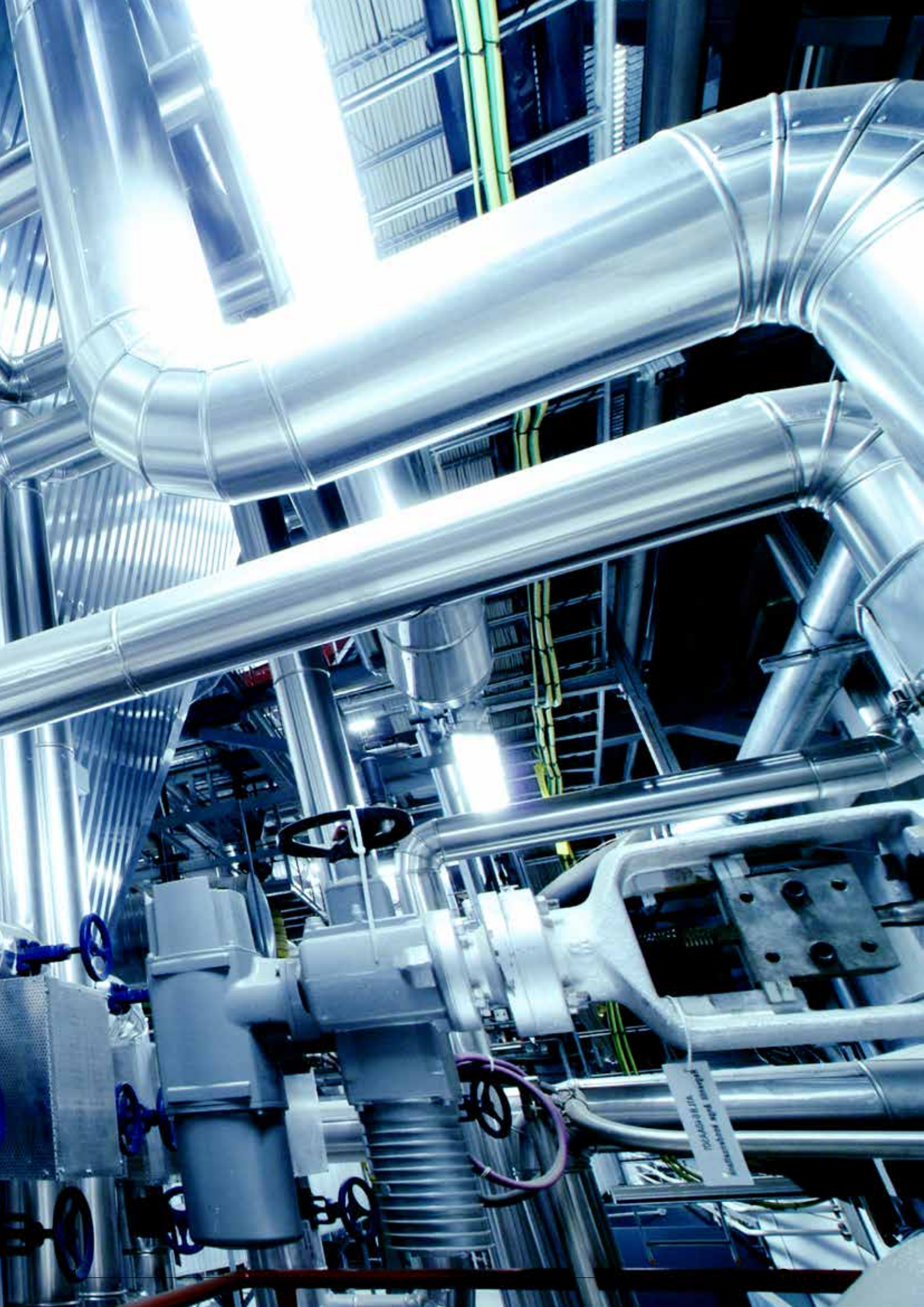
B System

They consist of two or more exchangers: burners, gas appliancess and chimneys are equal in number to the number of the heat exchangers.
Gas and electrical connection is unique for the double modules.
For modules with three or four exchangers there are two gas connections and one electrical connection.
The range includes the models in two modules, three modules and four modules, to arrive at a maximum output power of about 400kW.
The modules are inserted in cascade with the signal 0/10 Vdc and/or with the ON/OFF signal carried on the single module.
The modules can be installed either vertically or horizontally, depending on the air flow direction, regardless of the orientation of the generator.
If the installation is expected that the air flow direction is vertical, you must indicate this when ordering.

C - Vertically Combined Modules

C System

They consist of two exchangers: burners, gas appliancess and chimneys are equal in number to the number of the heat exchangers.
Gas and electrical connection is unique for all modules.
These modules present a width limited space and low pressure loss to the air flow.
The range includes the models in two modules, up to a maximum power of about 200 kW.
The modules are inserted in cascade with the signal 0/10 Vdc and/or with the ON/OFF signal carried on the single module.
The modules can be installed only with the direction of the horizontal airflow.



Heat Exchanger

Furnace and air/flue exchanger are entirely manufactured with stainless steel (with low carbon content) AISI 441 which assures maximum reliability and long life cycle.
The new cylinder shaped furnace and the air/flue exchangers, whose tube bundle is custom designed, guarantee performance that place PCH/new modules among the leading units for heat efficiency, with an outstanding value of 109%.

Premix Burner

The burner is entirely made of AISI 430 steel and undergoes specific engineering processing that guarantee top reliability and high thermal-mechanical performance.

Safety and Control Devices

The safety and control devices are constitued by:

1. Safety thermostat with manual reset and positive safety;
2. Electronic ignition device for the burner and ionization flame control device;
3. Ignition and flame detection electrodes.
4. Pressure switch/ condensation sensor.

Air/Gas Mixing : Guaranteed Safety

An advanced technique of air/gas mixing guarantees total safety. The gas valve delivers gas according to the air/gas ratio set at the premises. If combustion air fails, the gas valve shuts up.

If combustion air decreases, the valve automatically reduces gas flow while maintaining optimal combustion parameters.

Electronic Card

The microprocessor-based electronic card regulates continuous modulation of heat output and controls both the electrical fan for air/gas mixing and the gas valve.

Multifunction LCD Panel

The PCH module is fitted as standard with a multifunction LCD panel located inside the burner housing, and is used to control, configure and diagnose all operating parameters of the equipment..

The instrument panel is fitted with a red 3 digits LCD display and 4 function keys:

↑ , ↓ , ESC and ENTER.

The display allows the user to display the heater operating mode and its Faults.

Gas Directive Certification

Technical features of PCH modules have been thoroughly checked and tested, then they have been approved and certified by KIWA GASTEC, the respected and renowned Body for European Certification.

By assigning to PCH modules the approval number 0476CQ0451, KIWA GASTEC has certified that these modules comply with the following Directives:

- 2009/142/CE - Directory on appliances burning gaseous fuels.
- 2006/42/CE - Machinery Directive.
- 2006/95/CE - Low Voltage Directive.
- 2004/108/CE - Directive on Electromagnetic Compatibility.

CAD Drawings

When ordering the PCH modules, ask for its size drawings. We supply drawings in 3D CAD format to ease your assembling work of the PCH module into your installation!

Exhausted Fumes

PCH heat exchanger modules are certified for exhaust fumes and air intake in the following ways:

- "C" type: sealed combustion circuit, with combustion air being drawn from outside;
- "B" type: open combustion circuit and with combustion air being drawn from the heater installation site.

Standard Accessories

PCH exchanger modules are provided with some essential accessories for the proper installation:

- An intake terminal;
- An exhaust terminal for application of B23 type;
- An exhaust fumes terminal.

Accessories on Request

PCH exchanger modules are provided with front panel made of galvanized sheet that not suitable for outdoor installation and without door panel.

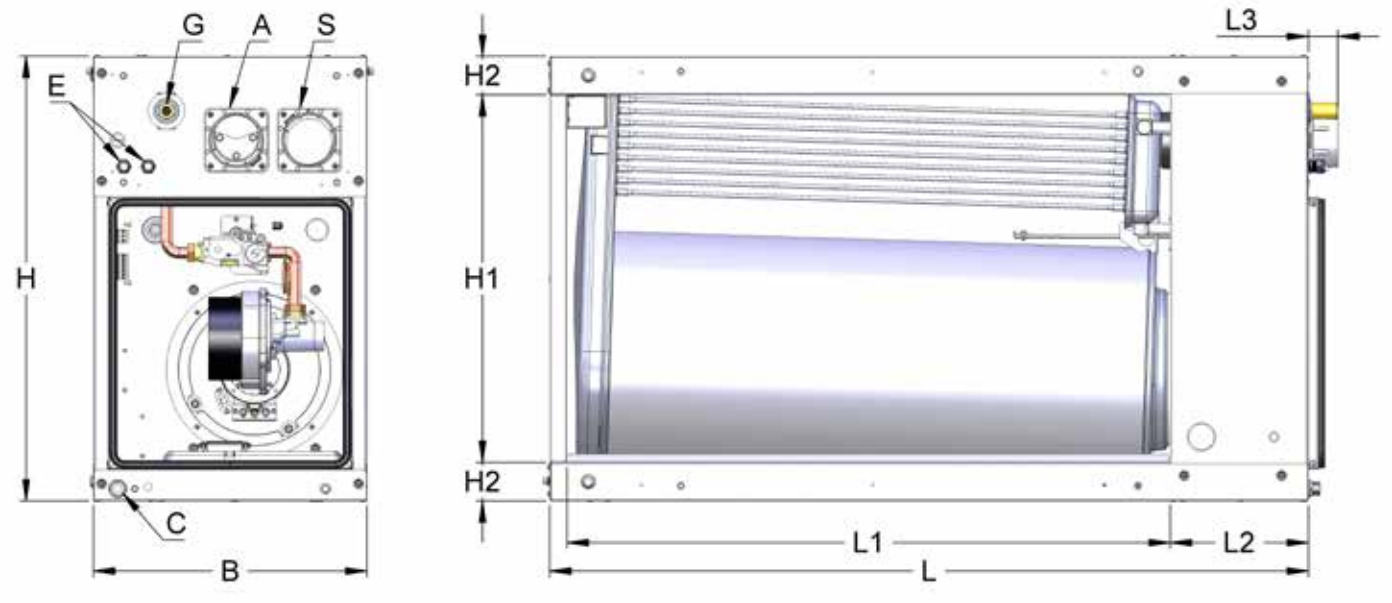
A kit including one front panel and one door panel is available upon request.

Kit front panel and door panel

PCH /Technical Data (A System)

Model		PCH020		PCH034		PCH045		PCH065		PCH080		PCH105	
Type of appliance		B23P - B53P - C13 - C43 - C53 - C63 - C83											
CE approval	PIN.	0476CQ0451											
ECA approval		NO		YES √		YES √		YES √		YES √		YES √	
NOx class	Val	5											
		min	max	min	max	min	max	min	max	min	max	min	max
Burner heat output (Hi)	kW	4,75	19,00	7,60	34,85	8,50	42,00	12,40	65,00	16,40	82,00	21,00	100,00
Useful Heat output [P_{min}, P_{rated}]*	kW	4,97	18,18	8,13	33,56	8,97	40,45	13,40	62,93	17,77	80,03	22,77	97,15
Hi Efficiency (N.C.V) [η_{pl}, η_{nom}]*	%	104,63	95,68	106,97	96,30	105,50	96,30	108,06	96,82	108,35	97,60	108,40	97,15
Hs Efficiency (G.C.V) [η_{pl}, η_{nom}]*	%	94,26	86,20	93,37	86,76	95,07	86,76	97,36	87,22	97,62	87,93	97,68	87,52
Flue losses with burner ON (Hi)	%	0,4	4,3	0,6	3,7	0,5	3,7	0,2	3,2	0,3	2,4	0,2	2,8
Flue losses with burner OFF (Hi)	%	< 0,1		< 0,1		< 0,1		< 0,1		< 0,1		< 0,1	
Envelope loss factor [F_{env}]* (1)		0%		0%		0%		0%		0%		0%	
Max. Condensation (2)	l/h	0,4		0,9		1,1		2,1		3,3		2,7	
Carbon monoxide CO (0% di O_2) (3)	ppm	< 5		< 5		< 5		< 5		< 5		< 5	
Emissions of Nitrogen oxides - NOx* (0% di O_2) (Hi) (4)		38 mg/kWh 22 ppm		42 mg/kWh 24 ppm		33 mg/kWh 19 ppm		39 mg/kWh 22 ppm		41 mg/kWh 23 ppm		39 mg/kWh 22 ppm	
Available flue pressure	Pa	80		90		100		120		120		120	
Gas Consumption (15°C-1013mbar) with GAS G20-Cat. E-H	m^3/h	0.51	2.01	0.80	3.69	0.90	4.44	1.31	6.88	1.74	8.68	2.22	10.58
Supply voltage	V	230 Vac - 50 Hz monophase											
Rated electricity consumption [el_{min} - el_{max}]*	kW	0.011	0.045	0.011	0.074	0.024	0.082	0.015	0.097	0.020	0.123	0.020	0.130
Power input in stand by [el_{sb}]*	kW	0.005											
Protection rating	IP	IP X5D											
Working temperatures	°C	From -15°C to +40°C - (for lower temparatures, a burner housing heating kit is required)											
Ø Gas connection	GAS	UNI/ISO 228/1-G 3/4"		UNI/ISO 228/1-G 3/4"		UNI/ISO 228/1-G 3/4"		UNI/ISO 228/1-G 3/4"		UNI/ISO 228/1-G 3/4"		UNI/ISO 228/1-G 3/4"	
Intake/exhaust pipes Ø	mm	80/80		80/80		80/80		80/80		80/80		80/80	
Minimum air flow rate (5)	m^3/h	1.490		2.750		3.330		5.160		6.560		7.960	
Max applicable pressure	Pa	1.200		1.200		1.200		1.200		1.200		1.200	
Net weight	kg	39		48		58		72		98		118	

NOTE:
* Symbol of conformity with Reg.EU/2281/2016.
(1) The losses from the enclosure must be regarded as zero as the machine is installed in an air handling/roof top unit.
(2) Max. condensation produced acquired from testing at 30%Qn.
(3) Value referred to cat. H (G20).
(4) Weighted value to EN1020:2009 ref. to cat. H (G20), referred to net calorific value (Hi, N.C.V).
(5) The minimum air flow rate has been calculated for a Δ of 35°C. For process systems or special applications using a Δt > 40°C, please contact Apen Group.



DIMENSIONS (mm)

Model	B	H	L	H1	H2	H3	L1	L2	L3	E	G*	A	S	C*
PCH020	450	660	710	534	63	-	450	230	47	2X Ø21	G 3/4''	Ø 80	Ø 80	G ½''
PCH034			950				690							
PCH045		730		604										
PCH065			1.250				990							
PCH080		815	1.440	689			1.180							
PCH105			1.670				1.410							

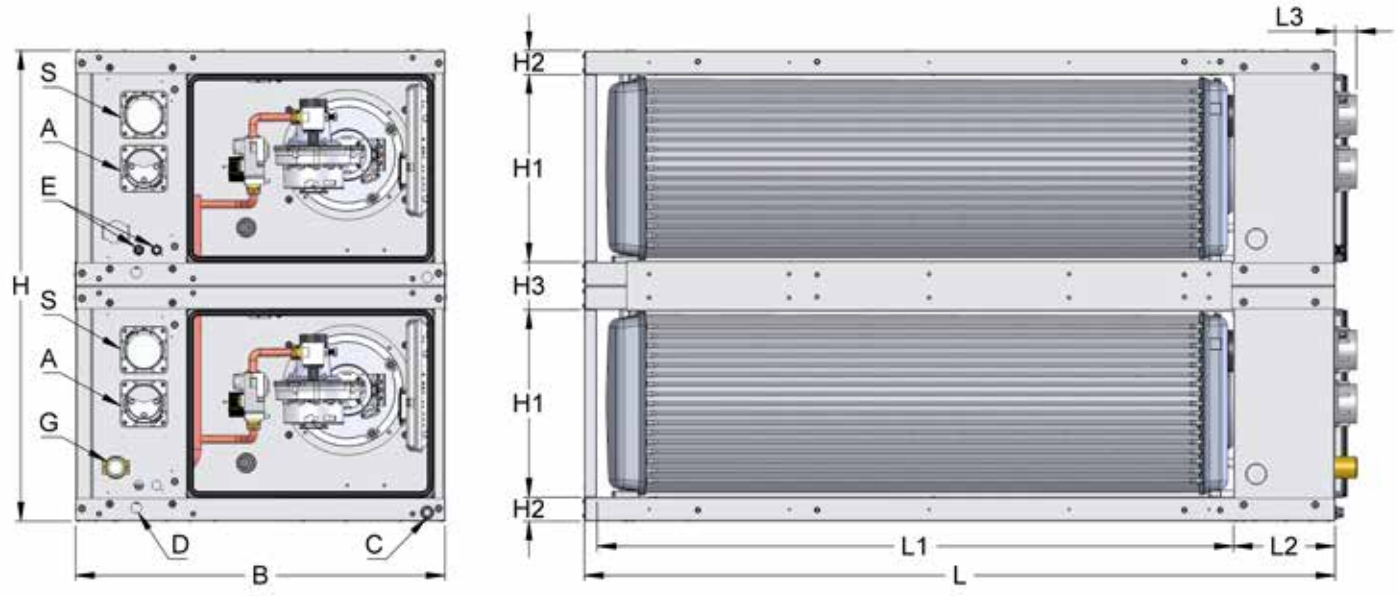
KEY:
E electrical connections;
G gas connection;
A intake;
S flue gas drainage;
C condensate drainage (for PCH models only);
* reference ISO 228/1.

PCH/new Technical Data (B system)

Model		PCH130		PCH160		PCH210		PCH320		PCH420	
Type of appliance		B23P - B53P - C13 - C43 - C53 - C63 - C83									
CE approval	PIN..	0476CQ0451									
ECA approval		YES √		YES √		YES √		YES √		YES √	
NOx class	Val	5									
		min	max	min	max	min	max	min	max	min	max
Burner heat output (Hi)	kW	12,40	130,00	16,40	164,00	21,00	200,00	21,00	300,00	21,00	400,00
Useful Heat output [P_{min}, P_{rated}]*	kW	13,40	125,86	17,77	160,06	22,77	194,30	22,77	291,45	22,77	388,60
Hi Efficiency (N.C.V) [η_{pl}, η_{nom}]*	%	108,06	96,82	108,35	97,60	108,40	97,15	108,40	97,15	108,40	97,15
Hs Efficiency (G.C.V) [η_{pl}, η_{nom}]*	%	97,36	87,22	97,62	87,93	97,68	87,52	97,68	87,52	97,68	87,52
Flue losses with burner ON (Hi)	%	0,2	3,2	0,3	2,4	0,2	2,8	0,2	2,8	0,2	2,8
Flue losses with burner OFF (Hi)	%	< 0,1		< 0,1		< 0,1		< 0,1		< 0,1	
Envelope loss factor [F_{env}]* (1)		0%		0%		0%		0%		0%	
Max. Condensation (2)	l/h	4,2		6,6		5,4		8,1		10,8	
Carbon monoxide CO (0% di O_2) (3)	ppm	< 5		< 5		< 5		< 5		< 5	
Emissions of Nitrogen oxides - NOx* (0% di O_2) (Hi) (4)		39 mg/kWh 22 ppm		41 mg/kWh 23 ppm		39 mg/kWh 22 ppm		39 mg/kWh 22 ppm		39 mg/kWh 22 ppm	
Available flue pressure	Pa	120		120		120		120		120	
Gas Consumption (15°C-1013mbar) with GAS G20-Cat. E-H (6)	m^3/h	1,31	13,76	1,74	17,36	2,22	21,16	2,22	31,74	2,22	42,32
Supply voltage	V	230 Vac - 50 Hz monophase									
Rated electricity consumption [el_{min} - el_{max}]*	kW	0.015	0.194	0.020	0.246	0.020	0.260	0.020	0.390	0.020	0.520
Power input in stand by [el_{sb}]*	kW	0.005									
Protection rating	IP	IP X5D									
Working temperatures	°C	From -15°C to +40°C - (for lower temparatures, a burner housing heating kit is required)									
Ø Gas connection	GAS	UNI/ISO 228/1- G 1½"		UNI/ISO 228/1- G 1½"		UNI/ISO 228/1- G 1½"		UNI/ISO 228/1- 1 x G 1½" + 1 x G ¾"		UNI/ISO 228/1- 2 x G 1½"	
Intake/exhaust pipes Ø	mm	2 x 80/80		2 x 80/80		2 x 80/80		3 x 80/80		4 x 80/80	
Minimum air flow rate (5)	m^3/h	10.320		13.120		15.920		23.880		31.840	
Max applicable pressure	Pa	1.200		1.200		1.200		1.200		1.200	
Net weight	kg	154		206		250		375		500	

NOTE:
* Symbol of conformity with Reg.EU/2281/2016.
(1) The losses from the enclosure must be regarded as zero as the machine is installed in an air handling/roof top unit.
(2) Max. condensation produced acquired from testing at 30%Qn.
(3) Value referred to cat. H (G20).
(4) Weighted value to EN1020:2009 ref. to cat. H (G20), referred to net calorific value (Hi, N.C.V).
(5) The minimum air flow rate has been calculated for a Δ of 35°C. For process systems or special applications using a Δt > 40°C, please contact Apen Group.
(6) For PCH 130 max value of gas consumption is twice the PCH065 values;
for PCH160 max value of gas consumption is twice the PCH080 values;
for PCH210 max value of gas consumption is twice the PCH105 values;
for PCH320 max value of gas consumption is three times higher than the the PCH165 values;
for PCH420 max value of gas consumption is four times higher than the the PCH165 values.

PCH/new Dimensions (B system)



DIMENSIONS (mm)

Model	B	H	L	H1	H2	H3	L1	L2	L3	E	G*	A	S	C*	D
PCH130	740	1.050	1.260	418	53	108	1.000	230	47	2X Ø21	G 1 ½''	2X Ø 80	2X Ø 80	1 X G½''	Ø 21
PCH160	825		1.450				1.190								
PCH210			1.680				1.420								
PCH320		1.575									1xG 1 ½'' + 1xG 3/4''	3X Ø 80	3X Ø 80		
PCH420		2.100									2xG 1 ½''	4X Ø 80	4X Ø 80		

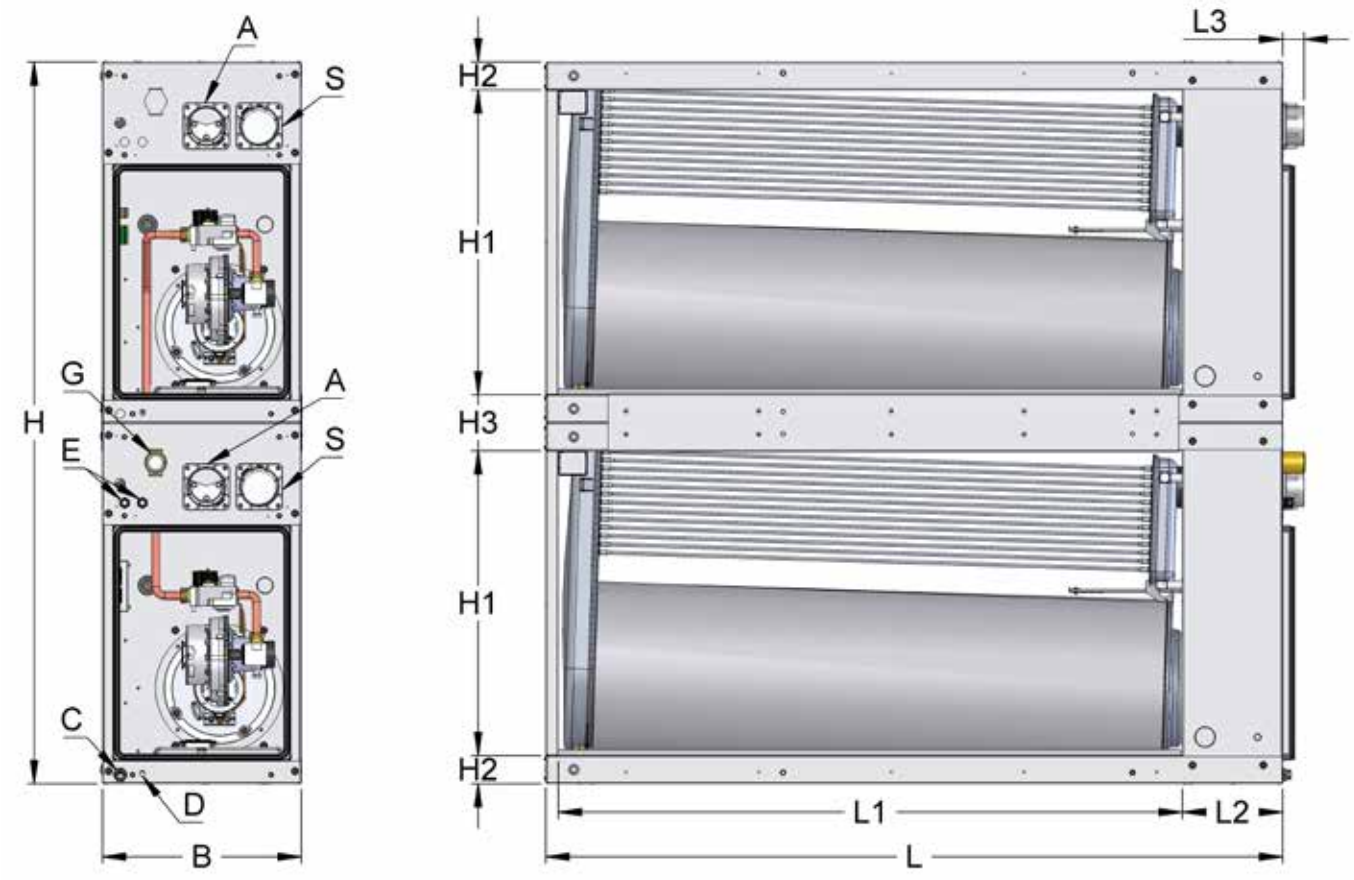
KEY:

E electrical connections;
G gas connection;
A intake;
S flue gas drainage;
C condensate drainage (for PCH models only);
D condensate vent;
* reference ISO 228/1.

PCH/new Technical Data (C system)

Model		PCH132		PCH162		PCH212	
Type of appliance	PIN.	B23P - B53P - C13 - C43 - C53 - C63 - C83					
CE approval		0476CQ0451					
ECA approval		YES √		YES √		YES √	
NOx class	Val	5					
		min	max	min	max	min	max
Burner heat output (Hi)	kW	12,40	130,00	16,40	164,00	21,00	200,00
Useful Heat output [P_{min}, P_{rated}]*	kW	13,40	125,86	17,77	160,06	22,77	194,30
Hi Efficiency (N.C.V) [η_{pl}, η_{nom}]*	%	108,06	96,82	108,35	97,60	108,40	97,15
Hs Efficiency (G.C.V) [η_{pl}, η_{nom}]*	%	97,36	87,22	97,62	87,93	97,68	87,52
Flue losses with burner ON (Hi)	%	0,2	3,2	0,3	2,4	0,2	2,8
Flue losses with burner OFF (Hi)	%	< 0,1		< 0,1		< 0,1	
Envelope loss factor [F_{env}]* (1)		0%		0%		0%	
Max. Condensation (2)	l/h	4,2		6,6		5,4	
Carbon monoxide CO (0% di O_2) (3)	ppm	< 5		< 5		< 5	
Emissions of Nitrogen oxides - NOx* (0% di O_2) (Hi) (4)		39 mg/kWh 22 ppm		41 mg/kWh 23 ppm		39 mg/kWh 22 ppm	
Available flue pressure	Pa	120		120		120	
Gas Consumption (15°C-1013mbar) with GAS G20-Cat. E-H (6)	m^3/h	1,31	13,76	1,74	17,36	2,22	21,16
Supply voltage	V	230 Vac - 50 Hz monophase					
Rated electricity consumption [el_{min} - el_{max}]*	kW	0.015	0.194	0.020	0.246	0.020	0.260
Power input in stand by [el_{sb}]*	kW	0.005					
Protection rating	IP	IP X5D					
Working temperatures	°C	From -15°C to +40°C - (for lower temparatures, a burner housing heating kit is required)					
Ø Gas connection	GAS	UNI/ISO 228/1- G 1½"		UNI/ISO 228/1- G 1½"		UNI/ISO 228/1- G 1½"	
Intake/exhaust pipes Ø	mm	2 x 80/80		2 x 80/80		2 x 80/80	
Minimum air flow rate (5)	m^3/h	10.320		13.120		15.920	
Max applicable pressure	Pa	1.200		1.200		1.200	
Net weight	kg	148		200		240	

NOTE:
* Symbol of conformity with Reg.EU/2281/2016.
(1) The losses from the enclosure must be regarded as zero as the machine is installed in an air handling/roof top unit.
(2) Max. condensation produced acquired from testing at 30%Qn.
(3) Value referred to cat. H (G20).
(4) Weighted value to EN1020:2009 ref. to cat. H (G20), referred to net calorific value (Hi, N.C.V).
(5) The minimum air flow rate has been calculated for a Δ of 35°C. For process systems or special applications using a Δt > 40°C, please contact Apen Group.
(6) For PCH 132 max value of gas consumption is twice the PCH065 values;
for PCH162 max value of gas consumption is twice the PCH080 values;
for PCH212 max value of gas consumption is twice the PCH105 values.



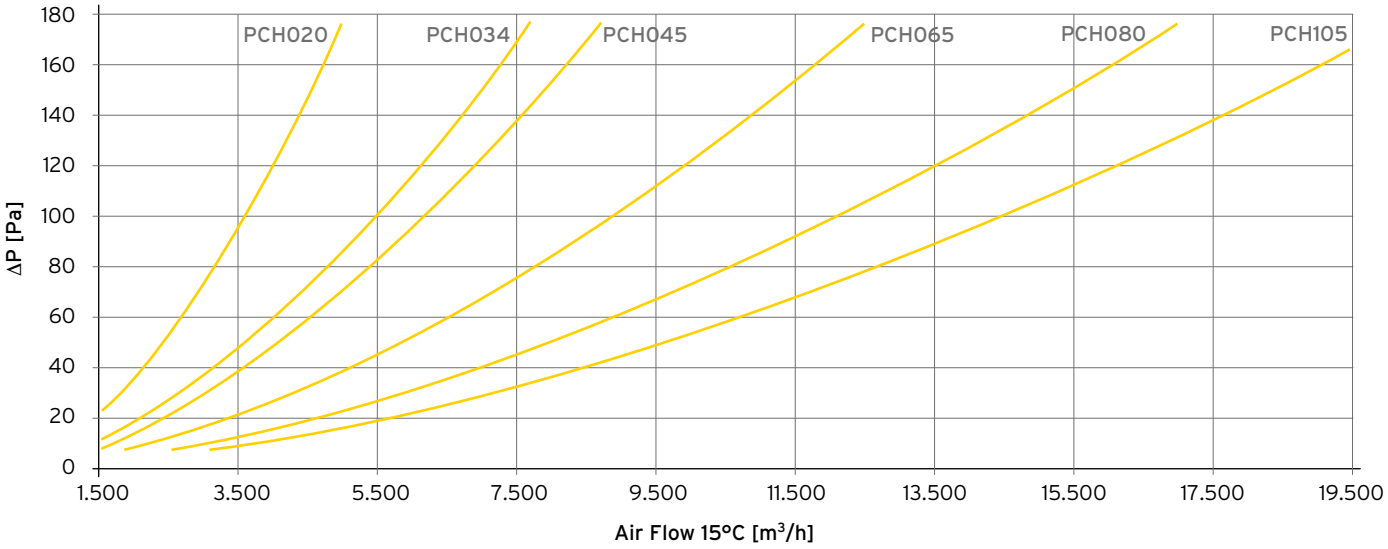
DIMENSIONS (mm)

Model	B	H	L	H1	H2	H3	L1	L2	L3	E	G*	A	S	C*	D
PCH132	450	1.460	1.250	604	63	126	990	230	47	2X Ø21	G 1 ½''	2X Ø 80	2X Ø 80	1 X G ½''	Ø 18
PCH162		1.630	1.440	689			1.180								
PCH212			1.670				1.410								

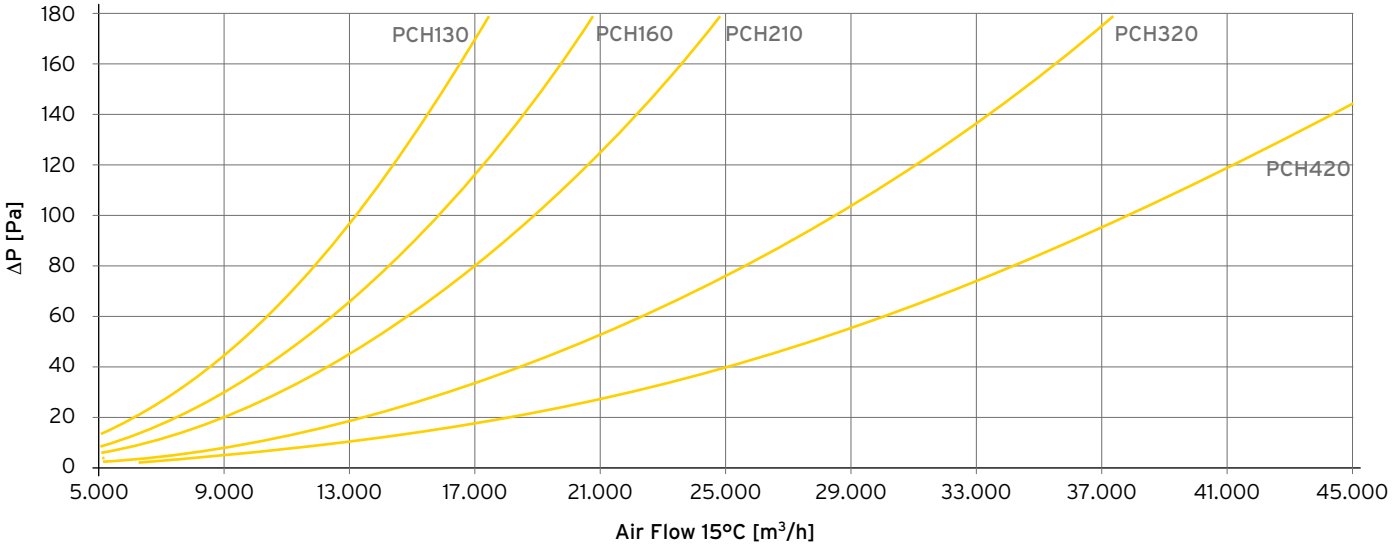
KEY:
E electrical connections;
G gas connection;
A intake;
S flue gas drainage;
C condensate drainage (for PCH models only);
D condensate vent;
* reference ISO 228/1.

PCH / Air Flow Rate - Pressure Drop Chart

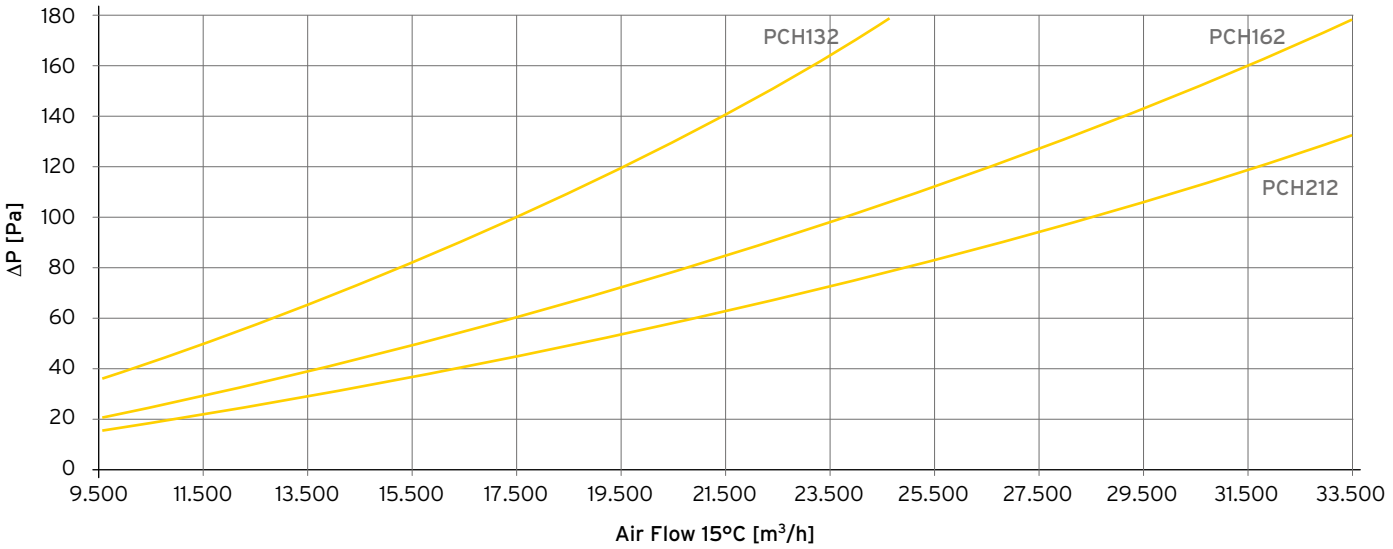
A - Single Modules



B - Horizontal Combined Modules

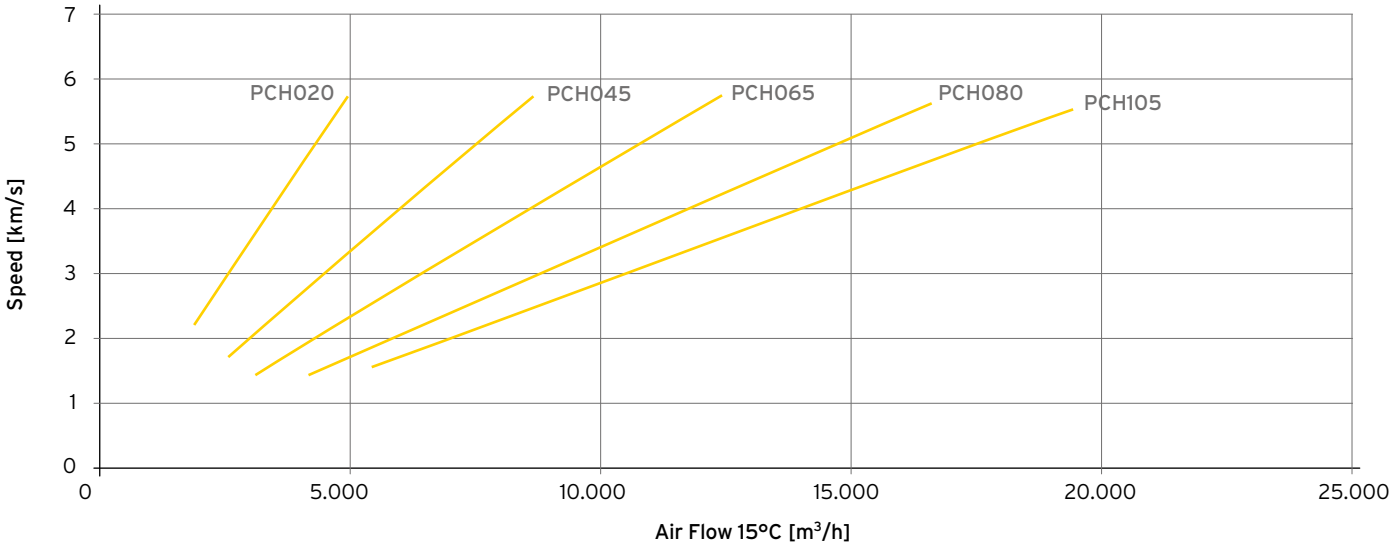


C - Vertical Combined Modules

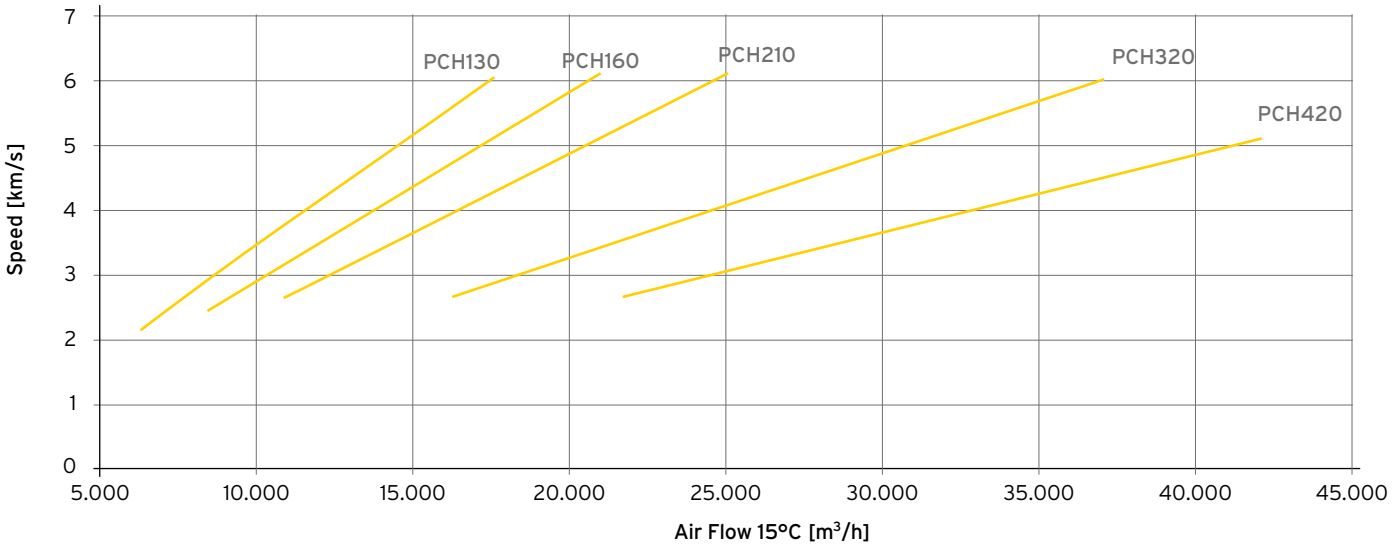


PCH / Air Flow Rate - Throughput Speed Chart

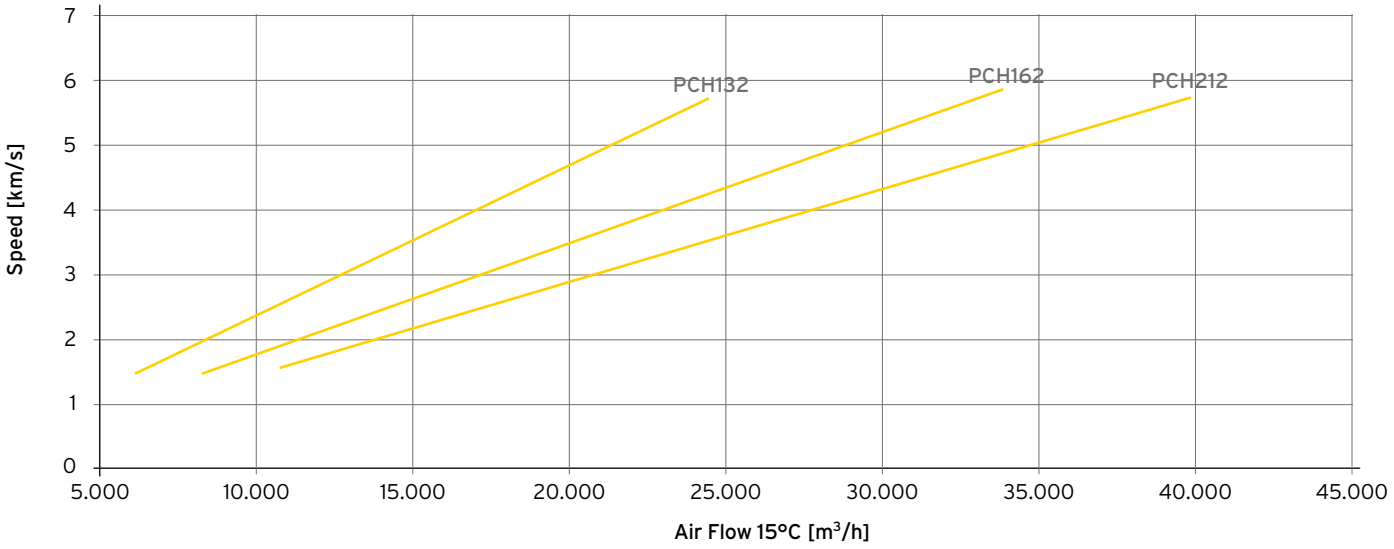
A - Single Module



B - Horizontal Combined Modules



C - Vertical Combined Modules



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