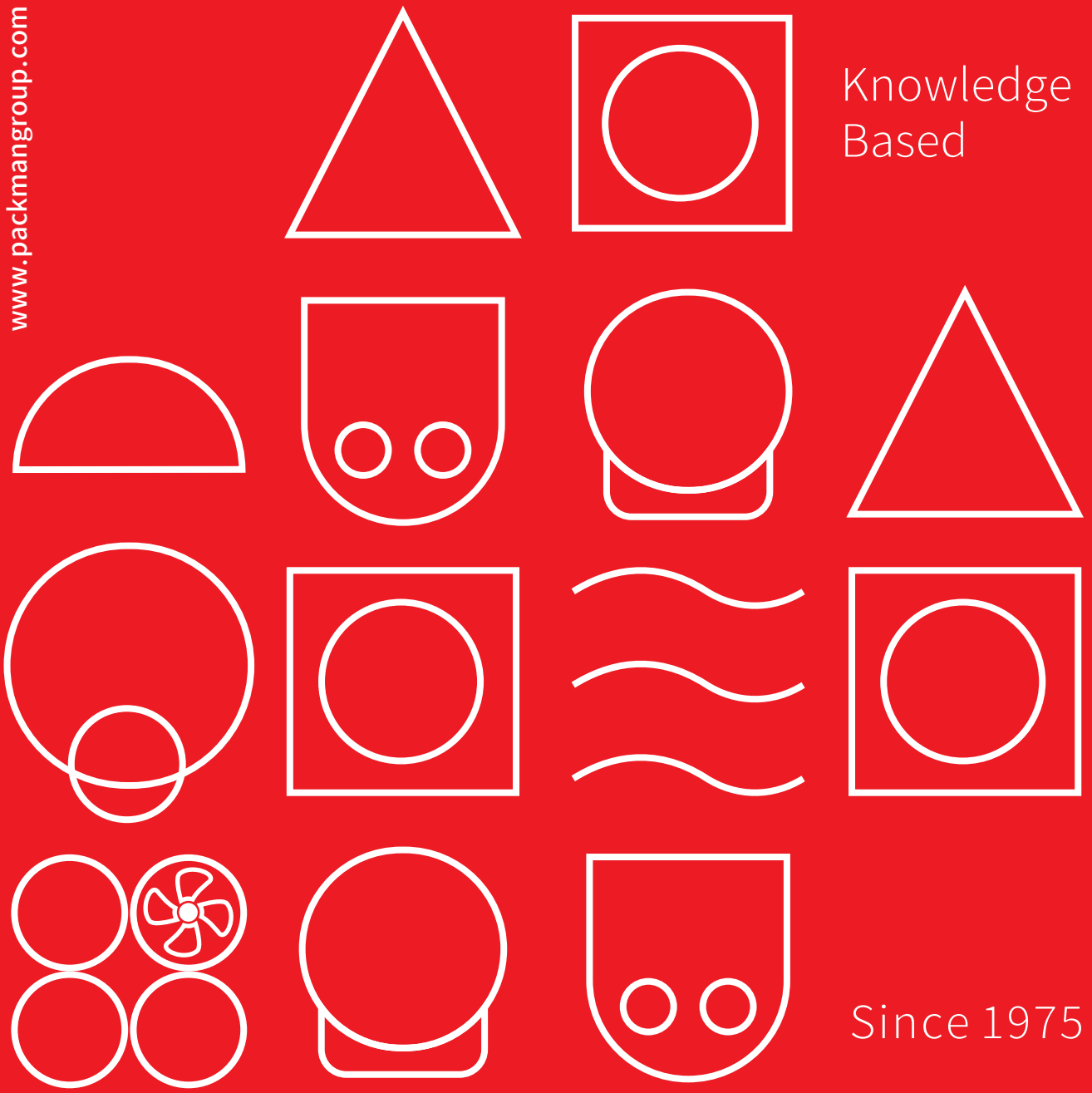


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Knowledge
Based

Since 1975



PACKMAN
Industrial Group

 External Economizer



External Economizer

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Product Description

Packman External Economizers specifically designed to recover the lost heat exiting from exhaust stacks and preheat water. Our broad line of economizers covers the spectrum of boiler sizes, ranging from very small hot water boilers with burner inputs of 1,000 kg/hr to large boilers delivering steam at 100,000 kg/hr in two types of water & fire tube. In addition, Cain produces boiler feedwater systems, condensate tank and pump systems, exclusive soot blower assemblies, and unique modulating internal exhaust gas bypass systems.

System Description

Exhaust heat from combustion typically leaving the stack and into the atmosphere is instead transferred from the exhaust stream by means of an economizer. This lost this lost exhaust heat is now captured and saved to various heat sinks such as boiler feedwater, cold makeup water, process water, swimming pool water, glycol, and thermal fluids. Combustion source fuel types including natural gas, light & heavy oil and No.2-6 fuel oil are all heat sources which can be retrofitted with Packman heat exchangers.

Packman External Economizer for cylindrical or rectangular stack connections, large or small boilers, a particular pinch point requirement, stack or liquid temperature control, special heat sink requirements, special heat transfer metallurgy requirements, specific maintenance concerns, optional equipment requirements, installation space and weight concerns, and package system requirements.

Exhaust Application

- Steam Boilers (Water & Fire Tubes)
- Hot Water Boilers
- Hot Oil Heaters
- Dryer Furnace
- Specific Combustion Sources

Cylindrical Economizer (PECO)

PECO is a custom-designed heat exchanger which can be construct fire & water tube and applied in confined areas and is offered in stainless steel, carbon steel, or Aluminum finned tubing. Design flexibility allows specific engineering requirements to be met such as fin spacing for fouling conditions



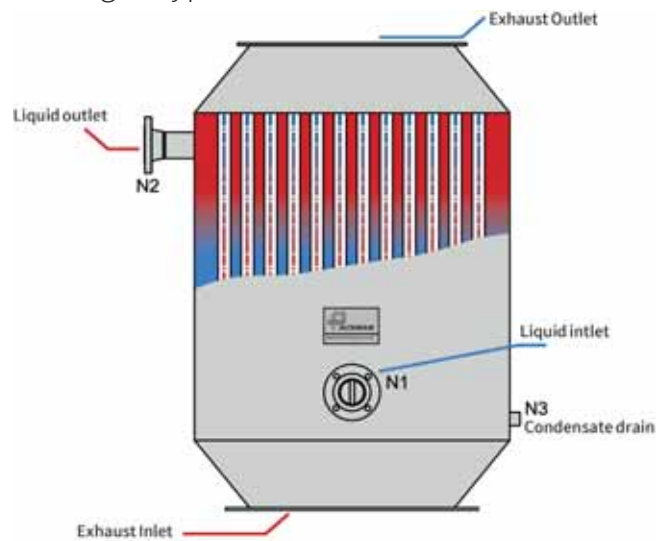
and low gas pressure drops.

Features

- Internal thermal expansion design
- Cylindrical heat transfer coil(s) design
- Mounting flanges for bolting to mating flanges
- Quick release tension latches
- Internal bypass
- Condensate drain catch ring assembly
- Safety & Control Instruments
- Hinged stainless steel access door panels

Optional Equipment

- Exclusive manual or timed automatic water cleaning
- Circulating pump kit to maintain desired liquid flow rate
- Vertical pressurized storage tank, to create a “bulge” or temporary heat sink in the event of no-water-flow conditions
- Liquid temperature control assembly including temperature-regulated modulating exhaust gas bypass and remote indicators



General Design Specification

- Furnish and install economizers on each of the combustion sources (boilers, hot water heaters, hot oil heater, etc.) as designed and manufactured by Packman.
- The Economizer shall be a light weight design for easy installation, cylindrical with counterflow heat transfer design manufactured and tested in accordance with the requirements of Section VIII, Division 1 of the ASME Boiler



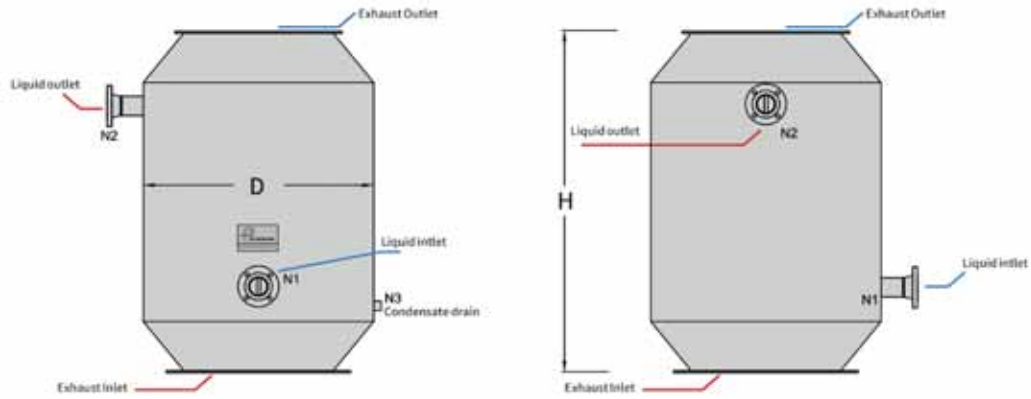
and Pressure Vessel Code, and is stamped to a minimum design pressure of boiler. Each Economizer shall be designed to include as standard, a carbon steel, internal, Flue Gas Bypass Diverter to provide for full emergency bypass, requiring no additional ductwork for controlling: 1. Stack corrosion, 2. Turn down performance, 3. Back pressure.

- Each Economizer have continuous hinged, gas-tight, carbon steel inspection panels, which provide for complete access to the entire heating surface for inspection and/or cleaning. The inspection panels shall be secured by adjustable, quick release tension latches and no tools shall be required for the opening of the inspection panels.
- Heat Recovery unit shall be either a single, multiple, or parallel coil design and must be completely drainable when mounted vertically.
- Header manifolds, where used, shall be SA105, connections shall be threaded or flanged as specified.
- Exterior surfaces other than stainless steel shall be primed and painted with a high temperature metallic paint rated for 500°C.

A Packman external boiler economizer can often be installed in-line with your existing stack, resulting in a relatively quick and cost-efficient installation process with minimal retrofitting, labor, materials, and downtime. Generally, because of their lighter weight and smaller size, the PECO requires little, if any, additional support (usually suspended from the ceiling). In applications where additional support is required.

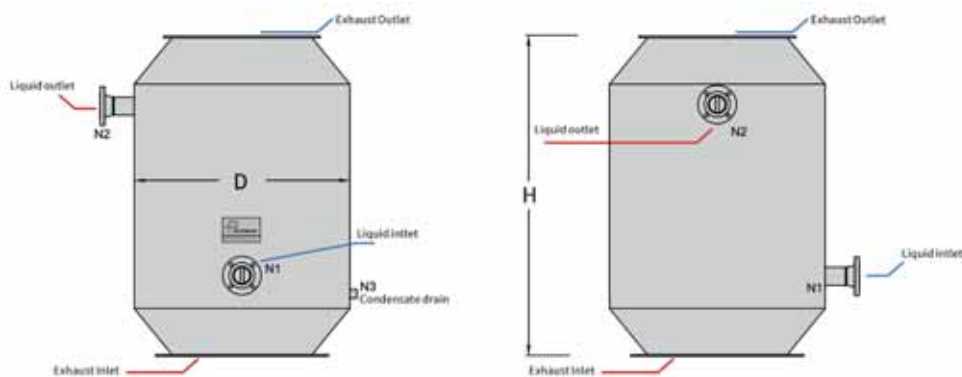
The Firetube Series boiler economizer is comprised of 14 standard models. An “off the shelf” unit, it is designed primarily for boilers with round stacks and a combustion capacity of 1 to 35 t/h with entering gas temperatures between 150° and 350°C. The standard stack connections can be easily modified to fit specific boiler stacks with 10” to 34” diameters, alleviating the cost of stack adapters. The units come standard for operation with No. 2 fuel oil and/or natural gas and depending on the efficiency of the combustion.

Model	Unit	PECO
Technical Data		
Exhaust Outlet Temperature	°C	150
Water Inlet Temperature	°C	105
Water Flowrate	Kg/hr	Based on Boiler Flowrate
Exhaust Inlet Temperature	°C	250°C
Water Outlet Temperature	°C	140°C

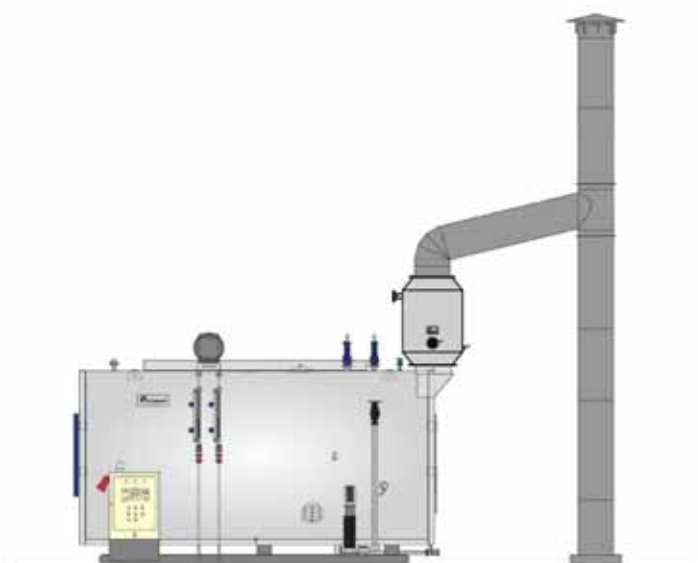


Model	Unit	PECO-1	PECO-1.5	PECO-2	PECO-2.5	PECO-3	PECO-4	PECO-4.5
Technical Data								
Boiler Capacity	Kg/hr	1,000	1,500	2,000	2,500	3,000	4,000	4,500
Heating Surface	ft ²	110	170	220	260	350	460	590
Diameter	mm	550	550	550	700	700	700	700
Height	mm	750	920	920	920	1100	1100	1250
Stack ID	in	14	14	14	16	16	16	16
Water Connection	in	1	1	1-1/4	1-1/4	1-1/2	1-1/2	1-1/2
Drain Connection	in	1/2	1/2	1/2	1/2	1/2	1/2	3/4
Total Weight	kg	210	323	418	494	665	874	1121

Model	Unit	PECO-5	PECO-6	PECO-8	PECO-9	PECO-11	PECO-12	PECO-14	PECO-15
Technical Data									
Boiler Capacity	Kg/hr	5,000	6,000	7,500	9,000	11,000	12,000	13,500	15,000
Heating Surface	ft ²	650	740	890	1,059	1,186	1,313	1,450	1,620
Diameter	mm	950	950	1100	1100	1100	1100	1100	1250
Height	mm	1250	1250	1250	1250	1450	1450	1450	1500
Stack ID	in	20	20	20	24	24	24	24	30
Water Connection	in	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	2	2	2
Drain Connection	in	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
Total Weight	kg	1235	1406	1691	2012	2253	2495	2755	3078



Model	Unit	PECO-18	PECO-20	PECO-22	PECO-25	PECO-28	PECO-30	PECO-32	PECO-35
Technical Data									
Boiler Capacity	Kg/hr	18,000	20,000	22,000	25,000	28,000	30,000	32,000	35,000
Heating Surface	ft2	1,980	2,200	2,490	2,750	3,120	3,370	3,580	3,860
Diameter	mm	1250	1500	1500	1500	1500	1750	1750	1750
Height	mm	1500	1800	1800	1900	1900	2000	2200	2200
Stack ID	in	30	36	36	36	36	36	40	40
Water Connection	in	2	2	2	2	3	3	3	3
Drain Connection	in	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
Total Weight	kg	3762	4180	4731	5225	5928	6403	6802	7334



PACKMAN GROUP

History

The Packman Company was founded in February 1975, and was soon afterwards registered in companies Registration Office. In early years the Packman construction and service branch focused on building installations. Different mega power plants were built by cooperating with Brown Boveri and Asseck companies in 1976.

The company started its official activities in construction of High-Pressure Vessels such as Hot-Water Boilers, Steam Boilers , Storage Tanks, Softeners and Heat Exchangers from 1984.

Packman Company is one of the first companies which supplied the high quality and standard hot water boilers to the customers.

Packman has exported its products to countries such as Uzbekistan, United Arab Emirates and other countries in the Middle East. It is one of the largest producers of hot-water and steam boilers in the Middle East.

Now we are proud to announce that the Packman industrial group has five major sub-brands that have product titles in all field of HVAC equipment and engineering services, and we do not know this success except with the help and support of our customers.

1. Construction Services Industry Association
2. Industry Association
3. Construction Companies' Syndicate
4. Technical Department Association
5. Mechanical Engineering Association
6. Engineering Standard Association

Departements:

Sales Deps:

- ∩ Power Plant & Petrochemical
- ∩ Industrial
- ∩ Hospitally Service
- ∩ Commercial & Residential
- ∩ Sport Complex & Pool

Technical Deps:

- ≡ Manufacturing R&D
- ≡ Innovation Center
- ≡ EPC Execute Unit
- ≡ Product Develop Unit
- ≡ Sales Engineering Dep.

Others:

- ≈ After Sales Service
- ≈ Project Control
- ≈ Financial Office
- ≈ Commercial Office
- ≈ Marketing Department



PACKMAN GROUP Brands



PACKMAN
Industrial Group

Designer & manufacturer of Condensing, Hot Water, Steam, Hot Oil & Waste Heat Boilers, Heat Exchangers, Autoclave Pressure & Storage Vessels & etc



GREENMAN
Green mindset, green future

Engineering & Designing Commercial Greenhouse Plant, CO2 Dosing System, Flue gas Condenser & Special HVAC Systems, Sustainable Agriculture & etc



ROMAN
Water solution

Designer & manufacturer Reverse Osmosis Plant & Package, Water Treatment, Softener & Filters and Chemical Dosing Systems & etc



RAADMAN
a look to the future

Designer & manufacturer of Industrial Mono & Dual Block Gas, LPG, Light & Heavy Oil Burners, Premixed & Postmixed Burners, Water tube burners, Process burners, Special application burners & Combustion Solutions & etc



CHILLMAN
Coolest hvac around

Designer & manufacturer of Air & Water Cooled Chillers, Air Handling Units, Fancoil, HVAC Equipment, Cold Storage Room & etc



1. Isfahan Factory



2. Vilashahr Factory



3. Parand Factory



4. Parand (2) Factory



5. Bonyad Factory

SOME OF Certificates are



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