Ecoonex PolyMore Solutions

Solutions for corrosive environments

Ecoonex PolyMore Heat Exchangers:

Unyielding Excellence in Corrosive Environments

The Ecoonex PolyMore Heat Exchangers line is tailored to withstand the harshest of conditions, where corrosive agents like sulphuric acid (H_2SO_4), hydrochloric acid (HCl), hydrofluoric acid (HF) and ammonium bisulfates (ABS) pose a constant threat to conventional heat exchangers. We understand the unique demands of such environments and have designed our solutions to not only withstand these challenges but excel in them.

Our versatile range of heat exchangers includes tubular, bundle, and plate-type designs, ensuring that you receive a solution perfectly suited to your specific application.

Whether it's for chemical processing, metallurgy, or any industry that demands reliable heat exchange, Ecoonex PolyMore Heat Exchangers have you covered.

What sets Ecoonex PolyMore Heat Exchangers apart is not just their resistance to corrosive elements, but also their adaptability. Each unit is meticulously customized, offering you a bespoke solution that seamlessly integrates into your existing infrastructure. Our designs prioritize both efficiency and performance, without the need for system expansion, ensuring your operations run seamlessly.

"Key Properties"	PolyMore-PGr	PolyMore-PGF	PolyMore-P	PolyMore-ET	PolyMore-EP	PolyMore-EB
Maximum Temperature [°C/°F]	200°C / 400°F	270°C / 520°F	200°C / 400°F	260°C / 500°F	250°C / 480°F	400°C / 750°F
Maximum Pressure [barg/PSIG]	30 barg / 435 PSIG	0.5 barg / 7.25 PSIG	0.5 barg / 7.25 PSIG	75 barg / 1088 PSIG	0.3 barg / 4.35 PSIG	0.5 barg / 7.25 PSIG
Layout	Cross/Counter	Cross/Counter	Cross/Counter	Cross/Counter	Cross	Cross
Modular	Yes	Yes	Yes	Yes	Yes	Yes
Scalable	Yes	Yes	Yes	Yes	Yes	Yes
On-Line cleaning	Yes	Yes	Yes	Yes	Yes	Yes
Weight	Low	Low	Low	High	High	High
Maintenance	Low	Low	Low	Low	Low	Low
Installation	Easy	Easy	Easy	Easy	Moderate	Easy
Compactness	-	+	++	-	++	+

Flowrates: 1,000 – 1,000,000 kg/hr
2,000 – 2,000,000 lb/hr

"Corrosion Resistance"						
Sulphuric acid (H_2SO_4)	+	+	+	+	+	+
Hydrochloric acid (HCl)	+	+	+	+	+	+
Hydrofluoric acid (HF)	+	+	+	-	-	-
Ammonium bisulfate (ABS)	+	+	+	+	+	+

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next level heat recovery

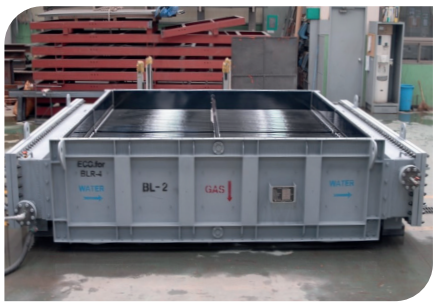

Fig 2

Fig 3

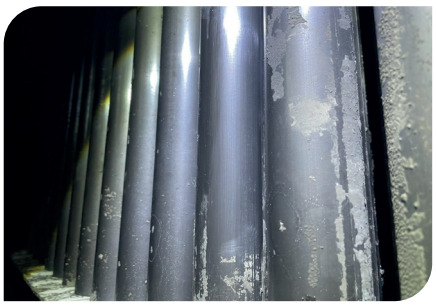

Fig 4

Case study

Plume Abatement

Wet scrubbers are air pollution control devices designed to capture and remove pollutants from industrial exhaust gases. They are commonly used to reduce emissions of particulate matter and acidic gases.

The process by which the final exhaust gas is discharged through the ESP from the boiler combustion chamber is shown in *Fig 1.*

Process Flow Diagram

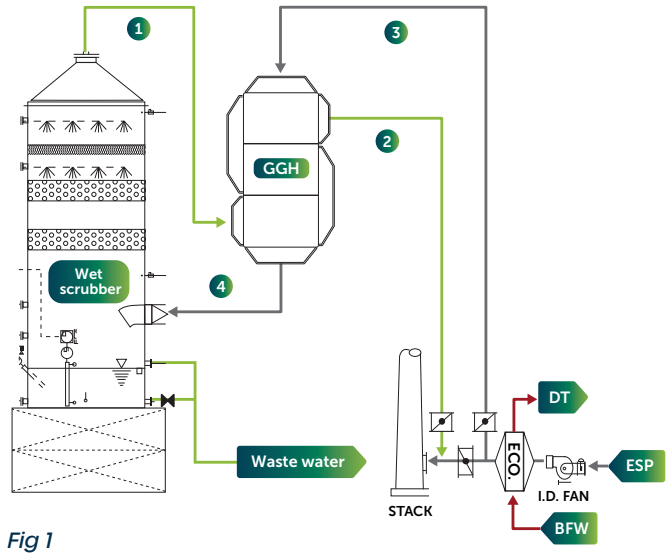

Fig 1

With the economizer installed, the temperature of the exhaust gas discharged through the chimney is about 140°C, which is above the dew point, but the temperature of the tube surface is below 80°C, which is not much different from the water temperature. Therefore, if a corrosion-resistant material is used, acid damage is avoided. Corrosion problems can be solved and the feed water temperature recovered from the process as much as possible.

The original third party economizer was made of carbon steel tubes with PFA sleeves to protect against corrosion. However the sleeves were quickly destroyed and corrosion of the economizer was initiated. The economizer was replaced using Ecoonex PolyMore-ET solution *fig 2* to solve this issue. After the Economizer the waste gas is routed through a gas to gas heat exchanger (GGH) *fig 3* in order to achieve efficient air pollution control.

This combination of a GGH *fig 4* and wet scrubber is a common and effective approach for air pollution control in various industrial applications, especially those involving the removal of particulate matter and acidic gases from exhaust gases.

Economizer (required for fuel efficiency):		
Boiler Exhaust Gas Flow	77,633 kg/h	170°C → 140°C
BFW flow	54,000 kg/h	75°C → 86°C
Duty	595,639 kcal/hr	
Annual operation time	7,598 hrs/year	
Fuel Cost Savings	€ 95,000.00 / year	
Investment cost	€ 84,000.00	
Payback	0.9 year	

Gas/Gas Exchanger (required to improve performance of wet scrubber)		
Boiler Exhaust Gas Flow	77,633 kg/h	140°C → 90°C
Cleaned Boiler Exhaust Gas Flow	77,633 kg/h	60°C → 108°C
Duty	947,000 kcal/hr	
Annual operation time	7,598 hrs/year	