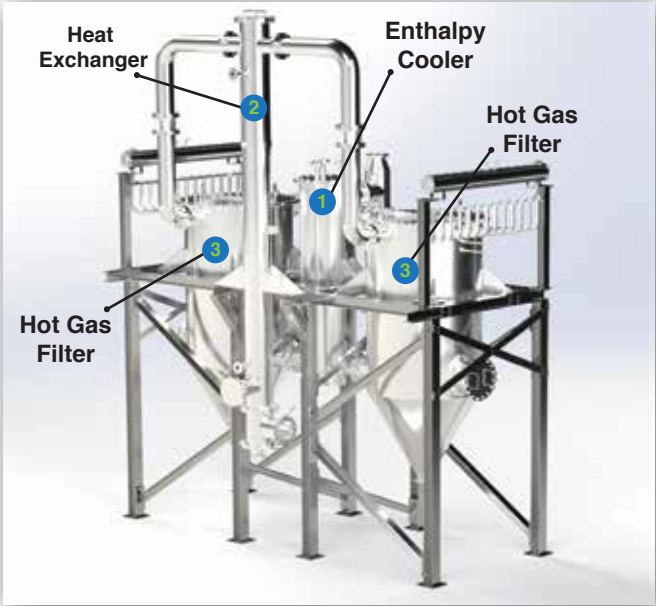


AHT Product Scope - Dry Gas Conditioning



Overview

Inside the gas conditioning unit, the raw syngas generation in the gas generation unit is processed so that it can be utilized efficiently in the subsequent gas utilization step. Depending on the final gas utilization, the gas conditioning involves hot and cold as well as dry & wet gas conditioning steps. Generally, the key parameters of the syngas exiting the gas conditioning unit include pressure, temperature, and gas composition. In addition, particular attention is given to the concentrations of the main permanent gases, as well as dust and tar loading.



Products

AHT CleanTec provides two Gas Conditioning solutions tailored to different reactor specifications, which are Dry Gas Conditioning, and Wet Gas Conditioning. For the Dry Gas Conditioning, it is the treatment process that comes directly after the Gasification process, where the raw syngas is cleaned and condition to be used to fulfill whatever the user needs.



Dry Gas Conditioning

Technical Data

	EcoFilter-Dry Compact	EcoFilter-Dry Performance	EcoFilter-Dry Industrial
Dry Gas Conditioning			
Dust Removal	<10 mg/Nm ³		
Tar Removal	n.A.		
Outlet Pressure	150 mbar		
Outlet Temperature of Syngas	300 °C		
Total Extracted Heat from Syngas	~35 kW (at ~85°C)	~80 kW (at ~85°C)	~160 kW (at ~85°C)
Water Consumption	Fresh Water: ~70 kg/h	Fresh Water: ~145 kg/h	Fresh Water: ~290 kg/h

Process Breakdown

- 1** Firstly, high-temperature raw syngas from the gasifier enters the enthalpy cooler, where it is cooled using the enthalpy of water vaporization, reducing the temperature to approximately 500°C for safe downstream handling.
- 2** Through the previous step, the initial cooling step conditions the gas for high-temperature cleaning, ensuring stable flow conditions for efficient particulate removal.
- 3** The syngas then passes through the hot gas filter, where solid particulate matter larger than 2 μm is captured on filter candles at high temperatures, ensuring a clean gas stream and preventing it from contaminating the downstream equipment.
- 4** Following this, the thermal energy is then recovered in the hot gas heat exchanger, where it can be potentially stored, or reused in the gas conditioning process.
- 5** Furthermore, this heat recovery process also accomplishes the goal of cooling the syngas to conditions that are suitable for the subsequent compression of the raw gas inside the gas blower.
- 6** Finally, the conditioned gas is then conveyed via the hot gas blower to the end-user, at temperatures of approximately 250–350°C to be used to fulfill whatever the user needs

Benefits

Through our dry gas conditioning process, a wide range of benefits can be achieved, including:

01

High Gas Purity

Through dry gas conditioning process dust contaminants are reliably removed from the raw syngas, resulting in a clean and stable syngas.

02

Efficient Heat Recovery

As the gas within our hot gas heat exchanger is cooled below the water dew point, this releases extra heat that can be recovered. As such, this maximizes the energy recovery, making it more efficient.

03

Modular & Customizable Design

Our modular Gas Conditioning system can be configured to project-specific requirements, allowing integration across various different applications.

04

Optimized Tar Handling

Due to our heat exchanger being designed to account for partial tar condensation, controlled cooling is maintained to ensure that the tar remains flowing so that it does not solidify within the heat exchanger.