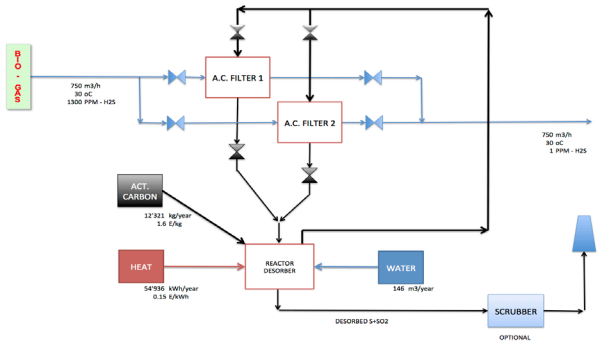
EcoCarb™ self-regenerating activated carbon bed

Activated carbon (AC) has intrinsic properties of adsorption and is thus applicable to the removal of a wide range of pollutants such as VOCs, H2S, mercaptans, solvents etc. Often, AC is the only reliable sorbent for the removal of certain pollutants, especially organic molecules, as they are typically difficult to remove inexpensively by other sorbents and methods.

Despite its high pollutant removal efficiency, however, with traditional AC beds, rapid depletion of the AC adsorptive potential has considerably limited the use of AC beds for industrial gas cleaning. Frequent exhaustion and subsequent replacement of AC beds result in high operating and maintenance costs.

BoldEco's proprietary EcoCarb™ technology allows for fully automatic in-situ regeneration of the AC. The EcoCarb™ AC filter beds extend the frequency range for sorbent replacement from 10 to 20 times compared to conventional fixed AC filter beds. The EcoCarb™ system substantially reduces operating costs, as well as maintenance labor requirements and the cost of final disposal of the spent carbon, thereby expanding the application of AC filter bed technology to a wider variety of waste gas streams, including biogas, industry, power generation, landfills and incineration.

simplified control schematic



The BoldEco EcoCarb™ in-situ regenerating activated carbon bed system is a highly efficient way to reduce the costs of compliance with today's environmental regulations.

in-situ activated carbon bed regeration

The EcoCarb™ system is composed of two or more compact AC beds operating in parallel. As the operational bed becomes saturated, the standby bed is placed on-line. The operational bed is then isolated from the exhaust gases.

Once isolated and purged, the regeneration phase is initiated by gravity conveying the spent carbon into a heated desorption chamber located immediately below the two beds.

The temperature of the desorption chamber is precisely controlled to fully eliminate the pollutant from the carbon, returning it to virtually an as-new condition. The concentrated vaporized compounds leaving the desorption chamber are treated in a proprietary high-efficiency scrubber, where the pollutants are removed from the exhaust gas stream.

At the end of the thermal desorption process, the carbon is cooled down to ambient temperature inside the desorption chamber with a spray of finely atomized water.

After the cooling stage, the carbon and water are pneumatically transported back to the bed where any water is completely removed and the AC is dried, ready to be put back into service. The cooling/washing stage also allows for the removal of the fine particles that inevitably form in the handling of AC and from accumulation of particulate contained by the gas stream, preventing the regeneration process from contaminating the exhaust gas stream with particulate.

In addition to maximizing the efficiency in capturing the gas laden pollutants, the EcoCarb™ system is highly flexible, allowing for the application of whichever specific type of AC may ensure the most efficient thermal regeneration. In general, in order to end up with a non-hazardous waste at the end of the lifetime of the AC, the system does not use chemically treated activated carbon, yielding additional cost savings for its disposal.

During EcoCarb™ regeneration, load cells monitor the level of activated carbon present in the beds. The system automatically replaces any lost material automatically to avoid any potential reduction in system performance. Throughout the entire process, regeneration is handled completely automatically, requiring no labor input until the AC reaches the end of its useful life.

Because it is using continuously refreshed AC, EcoCarb™ requires much smaller AC beds. As a result, the BoldEco EcoCarb™ system is a highly effective way to remove harmful vapors and pollutants from a gas stream at substantially lower capital and operating cost.

main benefits

- minimal operating cost
- very low installation cost
- automatic regeneration of carbon beds
- extends useful life of the activated carbon consumable
- allows for smaller activated carbon beds
- simultaneous removal of fouling particulate
- comprehensive removal of a broad spectrum of pollutants
- co-removal of H2S and VOCs
- virtually no emissions
- eliminates need to continuously handle spent carbon

low-cost • guaranteed • retrofits & upgrades • financing

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