



macrotek

Advanced Clean Air Solutions

SULFCAT[®] H₂S Treatment

Macrotek Inc.

Advanced Gas Clean Up System

www.macrotek.com

Landfill Gas

- Landfill gas:
 - 40-50% CH₄
 - 40-50% CO₂
 - 0-10% N₂ + H₂S + other trace compounds

Opportunity to upgrade the gas to pipeline quality, offsetting natural gas production



H₂S 101

- Sources - MSW landfills
 - WWTP sludge
 - Pulp & paper mill wastes
 - Gypsum/drywall (C&D)
- Wet sites generate LFG (and H₂S) more quickly
- Sulfate reducing bacteria (SBR) consumes waste and produces sulfides

Changing waste compositions are trending concentrations upwards in many locations



Options to Remove H₂S

Non-Regenerative

- Vessels filled with one-time use media
 - Run gas through media until it is spent, then replace
 - Simpler operation, high OPEX due to media consumption

Regenerative

- 3-step process to capture H₂S, regenerate the chemistry, and remove the byproducts
- All accomplished while online and within the process
 - Higher CAPEX, 5-10x lower OPEX

Selection Criteria

- Higher H₂S loading will favour regenerative systems
- Typical application range for regenerative systems:
 - 50-10,000kg/day H₂S

Macrotek SULFCAT Process

H₂S Removal

- Contaminated gas is contacted with the Sulfcats[®] solution in the H₂S Removal Vessel
- H₂S is selectively removed and treated gas exits the vessel
- H₂S is converted to elemental sulfur

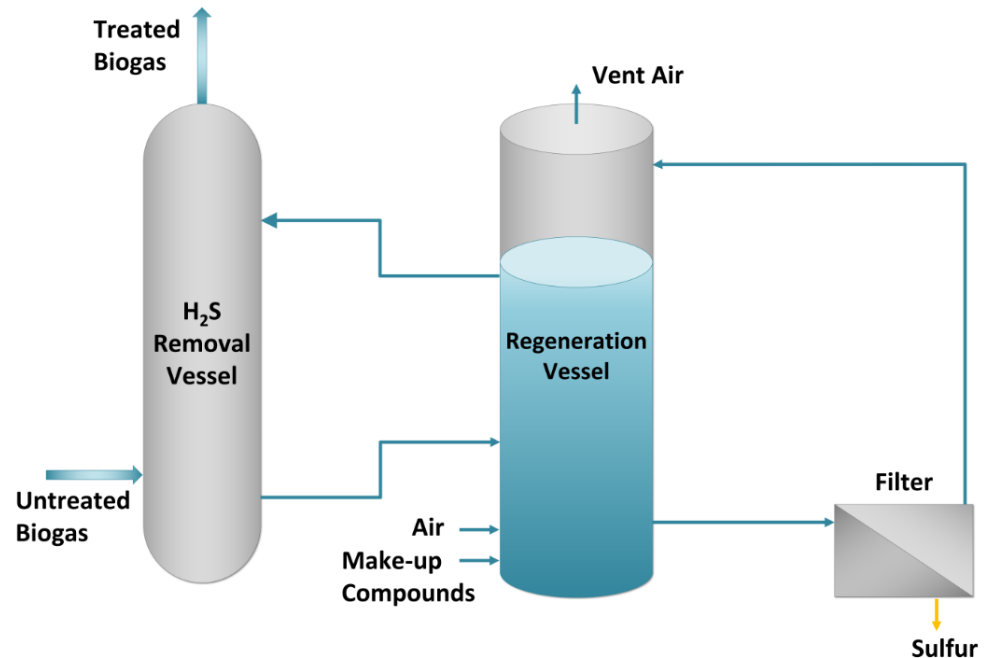
Regeneration

- The spent solution enters the oxidation vessel to regenerate the solution using air

Sulfur Separation

- Sulfur is settled from the solution
- A filter is used to provide high quality cake and recover the valuable Sulfcats[®] solution

1) H₂S Removal Stage 2) Regeneration Stage 3) Sulfur Separation Stage



Macrotek SULFCAT Process

Inputs

- Untreated Gas
- Chemical Reagents
- Electric Power
- Water



PROCESS



Outputs

- Treated Gas
- Sulfur Cake
- Vent Air



Macrotek SULFCAT Advances

Advances

- Chemistry
- Modular Design
- Operability



Results

- Lower Installed Cost
- Lower Operating Cost
- Simplified Operation





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Thank You

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