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Degra cetaldehyde in Biotrickling Filters

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WHAT IS A BIOTRICKLING FILTER?

Biotrickling filters (BTFs) are an air treatment tec
use the metabolic action of microorganisms
organic compounds.

BTFs are packed beds. Desp
in an actual sense. Micro
packing material, formin
biofilm and are subsequ

BACK

- Emissions t
facilities in
pollutants
up to 30 p
- Acetaldeh
ethanol a
pollutant
from fer
distillers
driers.
- Current
control
regener
and che
- RTO is
environm
scrubbing
energy inpu
scrubber blo
discharged, or
- Biological treatme
a favorable alternati
- Two biofilters were
series in co-current

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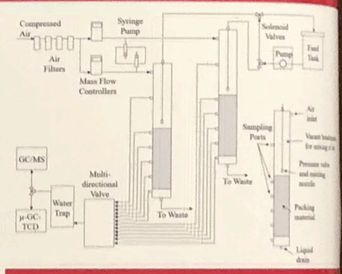
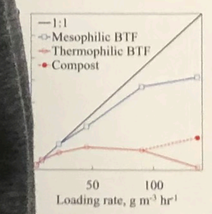
EXPERIMENTAL APPARATUS

ted in parallel. One is operated at room temperature and the
The room temperature column simulates emissions from
heated column predicts BTF performance from DDGS

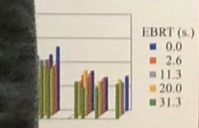
eam of filtered air and is fed to each
ident time (EBRT) of 31 seconds. A
intermittently at an average rate of
ed.

rom any of these ports
quantitative analysis.

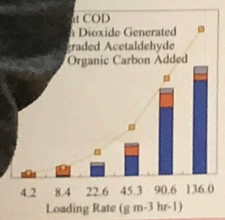




de Profile (400 ppm)



t COD
Dioxide Generated
raded Acetaldehyde
Organic Carbon Added



CONCLUSION

- The room temperature BTF showed excellent removal efficiency for loading rates below 90 g $^{3}hr^{-1}$. A maximum elimination capacity of 90 g $m^{-3}hr^{-1}$ is expected due to visible trend.
- For thermophilic BTF, a maximum elimination capacity of 20 g $m^{-3}hr^{-1}$ was achieved.
- At loading rates above 44 g $m^{-3}hr^{-1}$ performance of thermophilic BTF deteriorated.
- This deterioration due to lower Henry's law constant, extreme temperature fluctuations, and accumulation of salts
- Reseeding of thermophilic BTF with a slurry prepared from cooking compost revitalized the bed performance.
- Carbon balance performed over mesophilic BT shows CO2 generation and biomass accumula proportional to elimination capacity through p IV. Decrease in biomass accumulation in phas V and VI due to overgrowth and flushing of biomass
- Lower comparable effluent VSS and COD observed in thermophilic BTF, especially at hig loading rates
- Acetate identified as major soluble degradation byproduct.