

14.- Biomar® AHP, high-rate anaerobic reactor with gas recirculation

Title and name of product or technology	
Biomar® AHP: High-Rate Anaerobic Reactor with gas recirculation	
Abstract	
The Biomar AHP is a new type of high-rate anaerobic reactor, originally developed by the Technical University of Hamburg-Harburg (Prof. Märkl). It combines low footprint and effective mixing through recirculation of biogas, which is virtually non-dependent on biogas formation during anaerobic degradation. Inlet concentrations of more than 100.000 mg COD/L may be treated.	
Description including main features/advantages	
The anaerobic reactor is vertically staged (so called modules). Typically three modules are implemented at a total height of around 20 m. Modules are shaped as loops with inner and outer sections. Biogas is partially collected at the top of each module. Biogas from the lowest module is recirculated to the bottom of the reactor, inducing mixing in the vessel. Additionally the reactor may be equipped with external pressurized settling for improved effluent sludge separation.	
Innovative aspects	
<ul style="list-style-type: none"> - Multi-stage design (typically three modules) - Level-controlled removal of biogas at different reactor heights - Biogas recirculation for mixing - External biogas purification possible for reduction of H₂S partial pressure - Patented pressurized settling (external) 	
Current and potential industrial users/domains of application	
<ul style="list-style-type: none"> - Biofuel production - Chemical industry - Pharmaceutical industry - Treatment of concentrates / monosubstrates (e.g. glycerine, glycol...) 	
Current state of development	
Full scale, patented	

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