



PAQUES CBD®

Anaerobic treatment for effluents with high solids

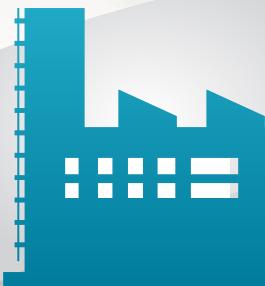
Clean Bottom Digester technology handles effluents with high organic and inert solids

revitalizing resources

Handles effluents with high organic and inert solids

The PAQUES CBD® is an innovative anaerobic reactor operating at a low to medium loading rate employing flocculent biomass. It is capable of effectively treating high strength influent (25-150 g/l COD and up to 100 g/l TSS) and is uniquely designed to handle heavy solids, such as sand, struvite and other inert material by continuously removing them from the process stream to eliminate detrimental accumulation within the reactor.

The advanced engineering of the CBD Reactor System virtually eliminates the occurrence of operational difficulties and process failures typically caused by poor mixing, dead zones and top layer scum buildup as frequently experienced in many conventional CSTR's and similar anaerobic digesters. As described below, the utilization of the Bottom Scraper for heavy sludge removal, the efficient Influent/Biomass distribution through nozzles at the top of the reactor, along with the downflow of the biomass, operating as a plug flow reactor, results in the highest possible conversion efficiency of COD to valuable biogas.



PAQUES CBD®

PAQUES CBD® is the newest member of the anaerobic reactors developed by Paques. Fundamental and applied research into biological, physical and mechanical aspects of the system, together with over 40 years of experience and 1,500 successful anaerobic installations, enables Paques to provide every customer with a tailor made wastewater treatment system that exceeds the client's expectations.



About PAQUES CBD®

- No dead zones: no accumulation of heavy solids and precipitates
- The plug flow regime results in lower fatty acid concentrations in effluent compared to completely mixed systems
- No short-circuiting
- No scum buildup
- No mechanical mixers
- Optimized mixing
- Maintenance external to tank only
- Simple operation
- Compact footprint
- Worldwide available

PAQUES CBD®

Working principle

Wastewater (1) is together with recirculation water (6), pumped from the bottom to the top, evenly distributed across the top of the reactor. The water is pumped through nozzles oriented to break up any floating scum. The scraper collects heavy solids from the bottom of the reactor, moving them to a series of hoppers in tank floor, where they are pumped to the recirculation line (2). In certain applications where detrimental solids, such as sand, struvite and other inert solids are expected, a hydrocyclone (3) is employed to selectively remove these unwanted solids from the process stream.

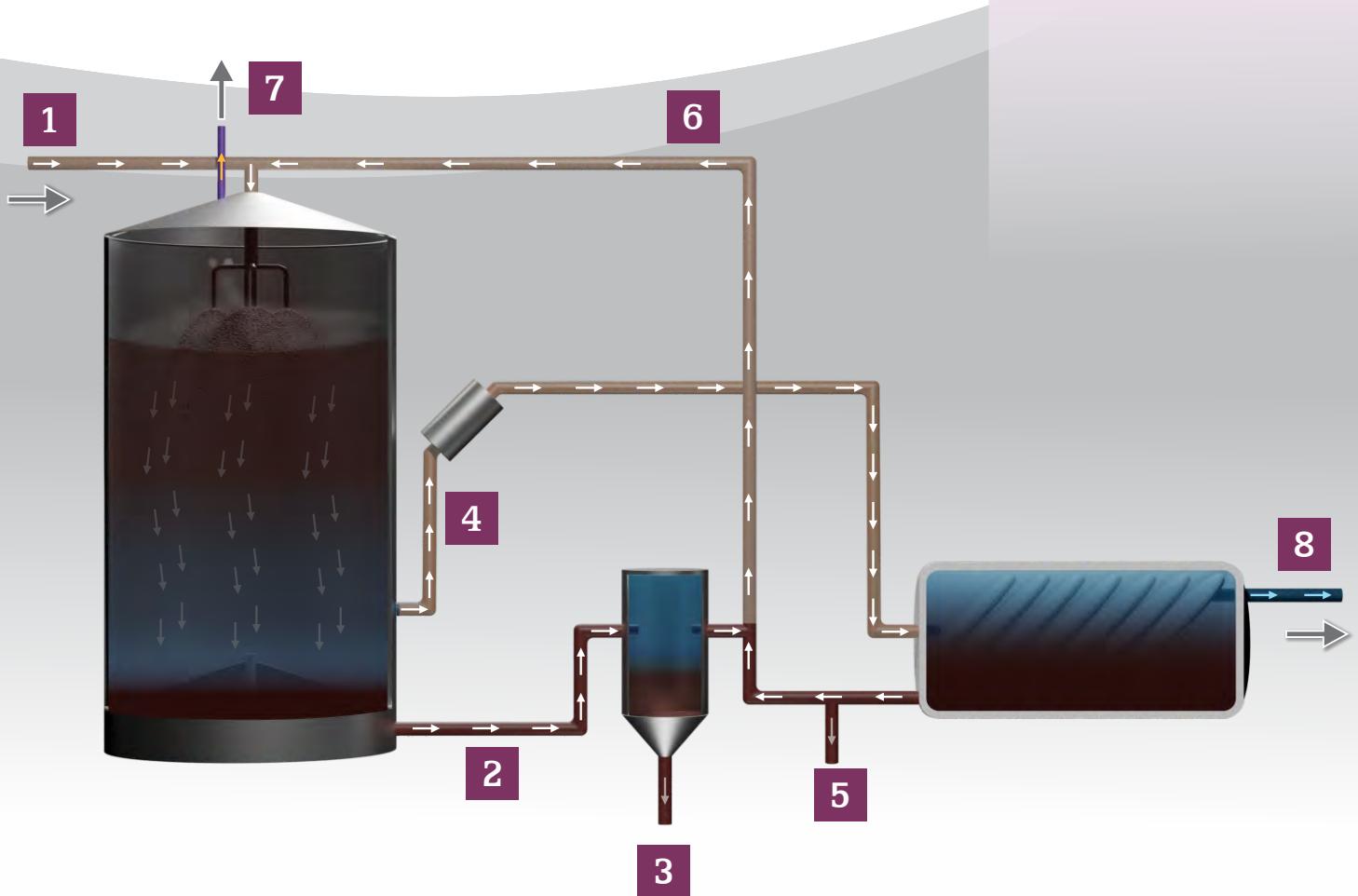
The treated final effluent (8) is discharged for further treatment and ultimate disposal.

Biodegradable COD from the influent is converted by the anaerobic biomass to biogas, which leaves the reactor via the biogas pipe (7) at the top of the reactor and is delivered to the downstream biogas handling system.

The experience and expertise of Paques' engineers ensure that reliability and ease of maintenance are never sacrificed to achieve the CBD's exceptional performance efficiency. The design intention is that all service functions are performed while the System is in operation and the interior of the reactor tank should not require access for at least 10-15 years of continuous operation.

PAQUES CBD®, how it works

- 1** Wastewater
- 2** Solids recirculation / removal line
- 3** Hydrocyclone (optional)
- 4** Reactor effluent
- 5** Solids outlet
- 6** Recirculation water including sludge return
- 7** Biogas outlet
- 8** Treated effluent





Paques: leading in biological wastewater and gas treatment

For more than 40 years, Paques has been the world's leading company in the field of development and construction of cost-effective purification systems for water, wastewater and gases, based on innovative biotechnology. With over 3,000 reference installations worldwide, Paques has helped companies and municipalities succeed at one of the major challenges of today: to reduce their water and carbon footprints and reclaim valuable resources.

The biogas produced by wastewater treatment plants can be used as green energy in boilers or gas engines. Beyond our headquarters in The Netherlands, Paques has subsidiaries and/or production locations in Brazil, China, India, Malaysia, Thailand and the United States. In many other countries, Paques is represented by licensed partners. This ensures our local presence and the best service for our clients worldwide.



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