

## CH<sub>4</sub> Generating Reactor (CGR)

### ABOUT THE CGR

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The CGR (CH<sub>4</sub> Generating Reactor) system treats waste streams of moderate to very high organic strength. The CGR is a low-rate anaerobic in-ground system used predominantly for bioenergy production (in the form of biogas).

### APPLICATIONS

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- Palm oil mill effluent (POME)
- Sugar refinery
- Distillery
- Animal manure
- Food processing organic wastes
- Corn starch
- Potato starch
- Cassava waste

### ADVANTAGES OF THE CGR

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- Low operating and maintenance costs.
- Resilient against shock hydraulic and organic loadings.
- Overall enhanced process stability makes it easy to meet effluent limits on a consistent basis.
- Able to cope with moderate to high levels of solids.
- Built-in equalization for any downstream aerobic system.
- Able to digest waste aerobic sludge from a downstream aerobic system.
- Lower capital costs than tank-based systems.
- Less overall sludge generation in the treatment system.

### OUR CLIENTS RECEIVE

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- A robust system that is simple to operate.
- A valuable source of renewable energy.
- Savings on electrical energy.
- Savings on surcharges and pollution taxes.
- Savings on sludge handling/disposal costs.

- A potential payback on investment in as little as 2-5 years.
- Credit for reducing greenhouse gases.
- Aftercare service and advice from experienced anaerobic specialists.
- Process guarantees.
- PLC programming, providing easy interfacing and control of the CGR process.

## THE PROCESS

### The Distribution Zone

Wastewater is combined with recycled reactor contents in the mix tank. This provides excellent natural pH adjustment, and flow and load buffering. The wastewater enters the reactor via proprietary distribution and mixing system, ensuring optimum contact between the microorganisms and the feed. As the wastewater passes upward through the sludge blanket, microorganisms digest the BOD, COD, and TSS while generating biogas. The design of the system facilitates efficient mixing between the anaerobic sludge and the feedstock, and separates the hydraulic and solids residence times to enhance biogas production and solids breakdown. The large volume of the CGR offers extended biomass contact and good process stability.

In addition to biogas, the reactor generates a liquid effluent and a higher solids waste sludge. The liquid effluent can be irrigated onto farm land as a nutrient supplement or further treated with aerobic polishing to achieve a higher quality final effluent.

### The Settlement Zone

The settlement zone is designed to collect sludge, with a built in recycling/wasting system that enables the sludge to be recycled to the distribution zone. The same system is used to waste sludge when required. Sludge wasting is done on a very flexible schedule ranging from daily to annually.

### The Collection of Biogas

A UV-resistant cover minimizes heat loss, and offers easy field repair without a shutdown. It also provides superior corrosion resistance versus concrete or steel. The cover has an insulation option for further reduction of heat losses.

