



**THERMAL  
PROCESS  
SYSTEMS**

# EXCALIBAER™

## GET EXCALIBAER™

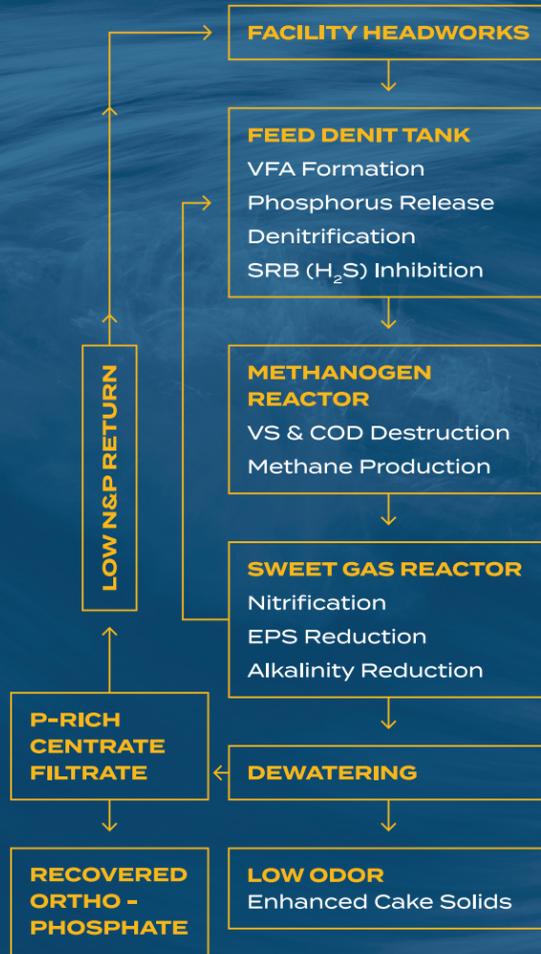
The good news is you don't need to make major changes to your anaerobic digestion process to boost biogas production, while reducing H<sub>2</sub>S up to 99%.

## ABOUT TPS

Thermal Process Systems was founded by experienced wastewater treatment professionals and we are focused exclusively on biosolids processes.

Our team of subject matter experts has a deep understanding of complex issues of biosolids processing and re-use.

The result of sustainable development and continuous innovation over two decades are the proprietary ThermAer™ and ExCalibAer™ processes.



## CONTACT

**Thermal Process Systems, Inc.**

627 East 110th Avenue  
Crown Point, IN 46307

+1 (219) 663-1034

info@thermalprocess.com  
thermalprocess.com

## GET YOUR BUGS IN GEAR

- Inhibits H<sub>2</sub>S production in methanogen reactor
- Higher quality biogas
- Up to 65% VS destruction
- Substantial volume reduction >50% TS
- Enhanced cake solids from mechanical dewatering
- Reduction of polymer for dewatering (up to 50%)
- Elimination of ferric dosing
- VFA/PAO return for BNR
- Automated process control
- Low Odor Class 'B' biosolids

## GROUP YOUR BUGS FOR MAXIMUM BIOGAS PRODUCTION



The ExCalibAer™ process utilizes different environments specifically tailored for the biological kinetics of each reactor. What makes ExCalibAer unique is the process control mechanism. The Sweet Gas Reactor (SGR) is a mesophilic aerobic digester that follows the anaerobic portion of the process and serves as the engine to provide a driving force for process and nutrient control. As the final process step the SGR is ideally suited for nitrification, EPS reduction and biosolids conditioning before dewatering. Aerobically treated material headed for dewatering is wasted out of this reactor, while a portion of material is recycled back to the beginning of the process providing pH and nutrient control across the entire system.

The Feed Denit Tank (FDT) accepts raw feed, while creating an ideal environment for fermentation through temperature control, a short HRT and optimal growth kinetics. Fresh feed material undergoes the rapid processes of hydrolysis and acidogenesis that convert the organic material into volatile fatty acids (VFAs), while the recycled material is the driving force for pH control, H<sub>2</sub>S suppression, and long-term stability by offsetting feed fluctuations. The conditions established facilitate rapid and efficient denitrification, releasing N<sub>2</sub> gas from the system, while reclaiming alkalinity that maintains ideal values for pH and the VFA to alkalinity ratio.

VFA-rich material from the FDT is transferred to a conventional or existing Methanogen Reactor (MR) designed to convert VFAs into a methane-rich biogas. The environmental conditions established enable the system to achieve a high conversion of VFAs to methane, while reducing both the toxicity related to H<sub>2</sub>S and ammonium in the liquor to prevent precipitation of minerals. The control offered by the ExCalibAer process allows mother nature to thrive.

