

# HIGH EFFICIENCY DRY FERMENTATION Automatic Continuous Plug Flow System

Maximize Biogas Production Rate • Reduce Footprint • Minimize Digestate Amount

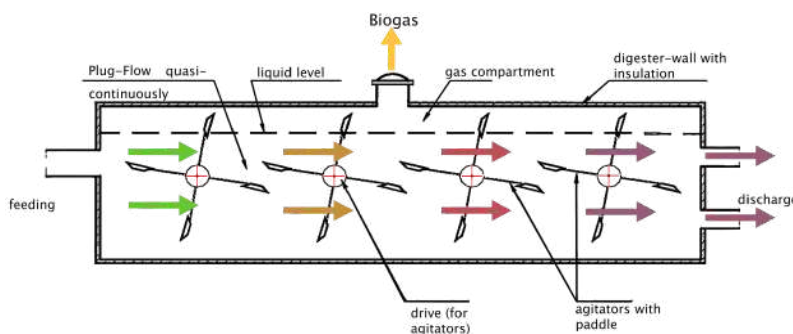
## INPUT Feature

- Automatic, continuous plug flow operation
  - Continuous feed, continuous biogas production
- High TS organic waste material processing
  - Maximize drier waste material use with TS > 15%
  - No addition of water needed
- Thermophilic reaction
  - Maximize biogas production rate



## Material: TS > 15%

- Chicken and cattle manure
- Separated solid fraction of pig manure
- Agricultural waste
- Market waste
- Household food waste
- Municipal green waste
- Organic fraction of municipal solid waste

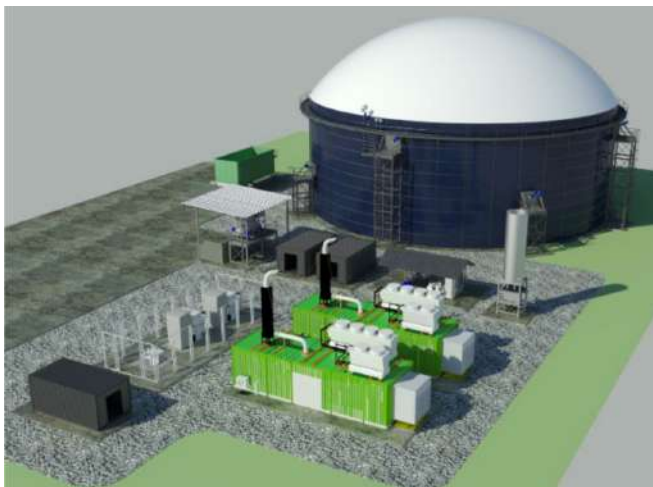


**INPUT**  
Ingenieure für Energietechnik  
Infrastruktur und Umwelt

# HIGH EFFICIENCY WET FERMENTATION Automatic Continuous System

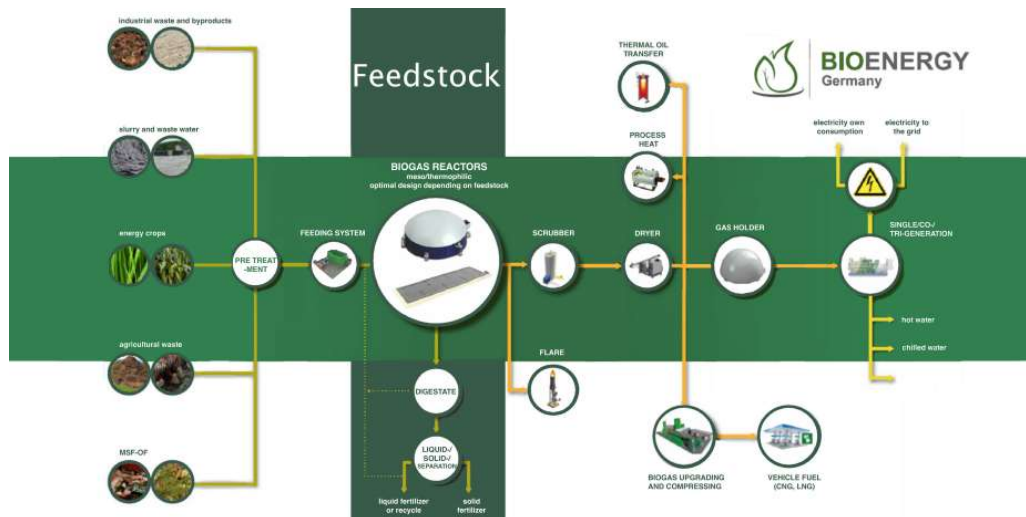
## System Features

- Specific design by site condition - RC or steel tanks
- Efficient management of various organic waste
- Easy maintenance to minimize plant shutdown
- Excellent mixing system
- High-quality system for better reliability and flexibility
- Global reference sites over 300



## Material: TS 4 - 15%

- Animal manure:
  - Chicken, cattle, and pig manure
- Slaughterhouse waste
- Agro-industrial waste
- Restaurant food waste
- Organic fraction of municipal solid waste

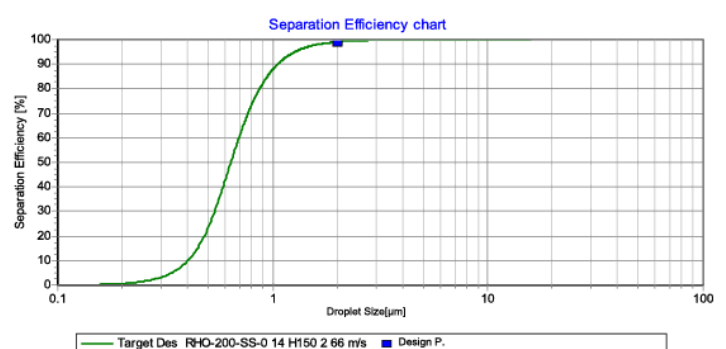
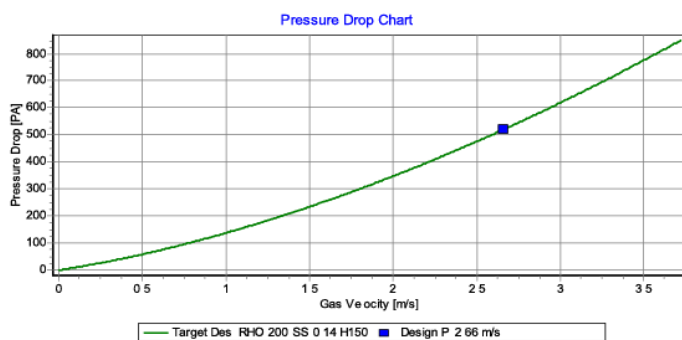


# BIOGAS DEMISTER & FILTRATION SYSTEM

## High Efficiency Removal of Water and Solid Particles to Avoid System Blockage, Wear & Tear

### System Features

- High removal efficiency
- Corrosion resistant
- Low pressure drop
- Auto-drain
- Maintenance without downtime
  - (1 duty 1 standby system)
- Low maintenance
- Simple and sustainable removal of system blockage
- Remote monitoring, analysis and diagnosis
- Automated functions



# HIGH EFFICIENCY BIOGAS DRYER-BLOWER SYSTEM

## System Features

- High efficiency moisture reduction and pressure boosting
- GERMAN corrosion resistant (SS316Ti) heat exchanger
- ITALIAN corrosion resistant ATEX blower
  - (H<sub>2</sub>S resistant up to 5,000 ppm)
- TAIWANESE corrosion resistant chiller
- System operation range by various types:
  - 50-1,000 Nm<sup>3</sup>/hr, 50-2,000 ekW
- Auto drain
- Continuous operation
- Low maintenance
- Remote monitoring, analysis and diagnosis



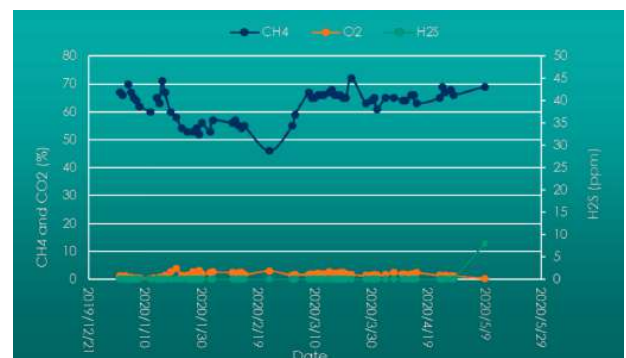
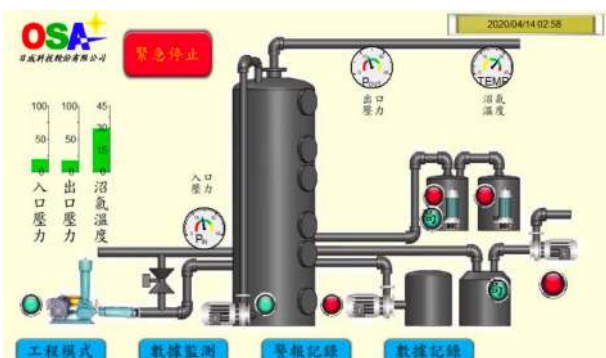
# HIGHLY INTEGRATED DESULFURIZATION ENABLED SYSTEM (HIDES)

## System Features

- Higher removal efficiency often with H2S levels
- Minimal dilution of the biogas
- Lower operational cost
- Fully automated system
- Minimal service and long service life
- Operation without secondary pollution
- Manual backwash when system pressure drop too high
- Integration system, save land
- Anti-corrosion FRP tank
- Remote monitoring, analysis, diagnostics using IIoT standards



## Biochemical Process



# BEST BIOGAS ANALYZER AND FLOWMETER INTEGRATED SYSTEM

## System Features

- Accurate
- Reliable
- Stable
- Durable
- Easy to operate
- Easy to maintain
- Long term operation
- Remote monitoring, analysis, diagnosis



## Biogas Flowmeter - AwiFLOW

- Standard flow and energy determination
- Simple pipe size installation from DN50 to DN350
- Cleaning and sensor replacement with minimum gas leakage
- High resistance even with humid gas containing H<sub>2</sub>S
- Improvement of measurement accuracy through sensor calibration
- Compensation of fluctuating gas composition in conjunction with AwiFLEX or AwiECO

| Biogas Analyzer              | AwiFLEX  | AwiECO  |
|------------------------------|--|---|
| Measurement Points           | Multiple<br>(CH <sub>4</sub> , CO <sub>2</sub> , CO, O <sub>2</sub> , H <sub>2</sub> S, H <sub>2</sub> )   | Single (CH <sub>4</sub> , CO <sub>2</sub> , CO, O <sub>2</sub> , H <sub>2</sub> S)<br>Two Points (H <sub>2</sub> S) |
| Measurement Range            | CH <sub>4</sub> 0 - 100%<br>CO <sub>2</sub> 0 - 100%<br>O <sub>2</sub> 0 - 25%<br>H <sub>2</sub> S 0 - 200 PPM / 0 - 500 PPM / 0 - 1,500 PPM<br>0 - 3,00 PPM / 0 - 5,000 PPM, 0 - 10,000 PPM<br>0 - 20,00 PPM / 0 - 50,000 PPM<br>H <sub>2</sub> 0 - 2,000 PPM / 0 - 5,000 PPM / 0 - 10,000 PPM<br>0 - 20,000 PPM / 0 - 50,000 PPM<br>0 - 100% |   |
| Gas Cooler                   | ●  |   |
| Stainless Steel IP55 Cabinet | ●  | ●   |
| HMI Touch Panel              | ●  | ●   |
| Upgradable                   | Integration of AwiFLOW to measure gas flow   |   |
| Application Examples         | Biogas system / Desulfurization system<br>Fermentation System / WWTP<br>Laboratory applications / Activated carbon monitoring  |   |

# 高效乾式沼氣醱酵系統

## 自動化連續推進式系統

沼氣產氣效率高·土地利用效率高·大量減少沼液處理量

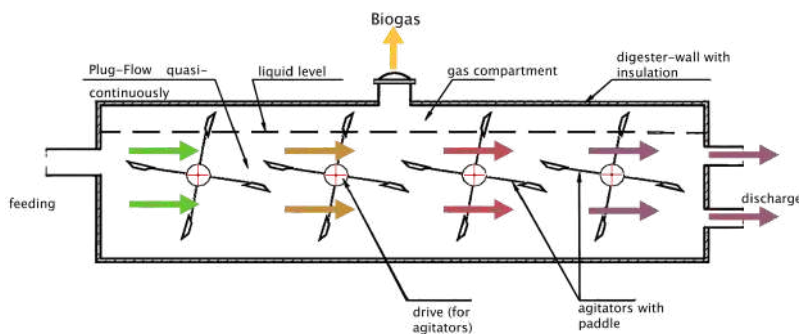
### 系統優勢

- 自動化推進式連續操作
- 連續推進式系統
- 高效乾式沼氣醱酵系統
  - 建議含固量(TS) > 15%
  - 無需額外添加
- 高溫醱酵反應
  - 提升沼氣產氣效率



### 可處理原物料 (TS > 15%)

- 雞糞、牛糞
- 豬糞尿固液分離後的固體
- 農業廢棄物
- 市場廢棄物 (葉菜、果皮及廢棄蔬果)
- 家庭生廚餘
- 市政或家庭園藝廢棄物



**INPUT**  
Ingenieure für Energietechnik  
Infrastruktur und Umwelt



# 高效濕式沼氣醱酵系統

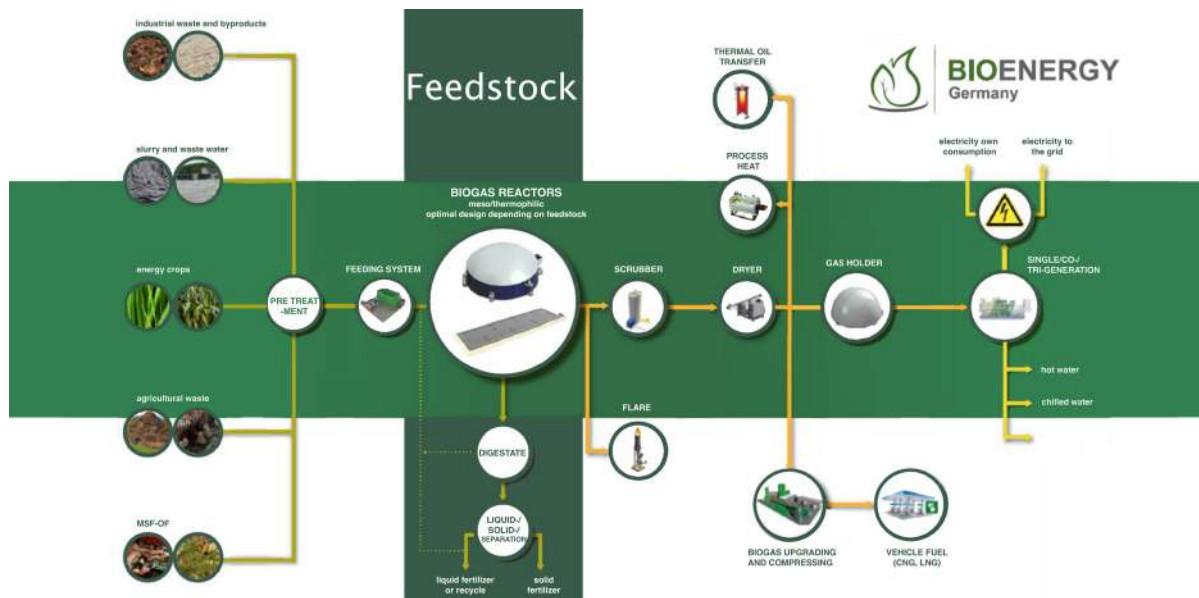
## 系統優勢

- 依現址條件可搭配最適合之槽體設計
- 有效管理各種可用生物質原物料
- 優化及簡便的維修操作，提高駕動動率
- 依流體動力學所設計之最佳混合系統
- 高品質的設備與材料實現最大系統在線率



## 可處理原物料 (TS 4 - 15 %)

- 動物糞便: 雞糞、牛糞尿、豬糞尿
- 屠宰場廢棄物
- 農業與農業加工業廢棄物
- 餐廳廚餘
- 市政固體有機廢棄物

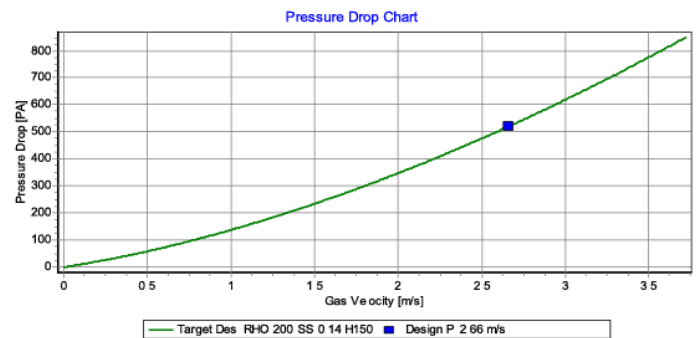
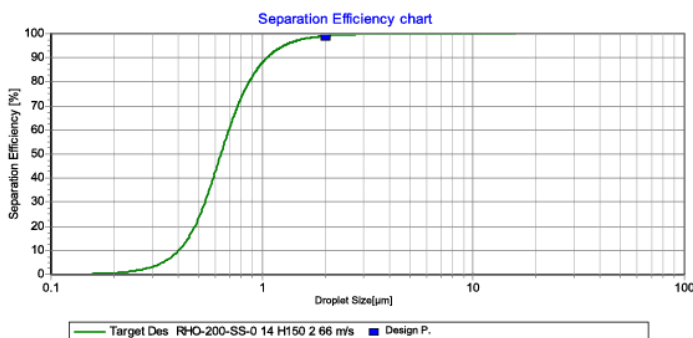


# 沼氣除霧、過濾系統

高效去除沼氣中固/液體顆粒 防止下遊設備阻塞及磨損

## 系統優勢

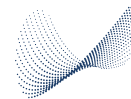
- 高去除效率
- 耐腐蝕材質
- 低壓損
- 系統自動排水
- 維護無需停機
  - (1用1備系統)
- 維護需求低
- 可遠端監控診斷
- 簡單且清除系統阻塞
- 自動化功能



# 高效沼氣除濕增壓系統

## 系統優勢

- 除濕升壓效率高
- 德國進口耐腐蝕SS316Ti熱交換器
- 義大利進口耐腐蝕防爆增壓鼓風機
- 可耐5,000 ppm硫化氫, ATEX/EX
- 國產耐蝕冰水機
- 系統可處理之沼氣流量範圍
- 50 - 1,000 Nm<sup>3</sup>/hr, 50 - 2,000 ekW
- 有效自動排除冷凝水
- 可連續操作
- 維護需求低
- 可遠端監控診斷



APROVIS



# 高度整合脫硫系統 (HIDES)

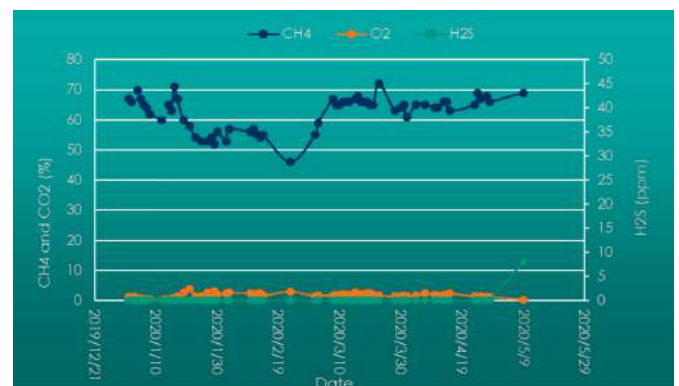
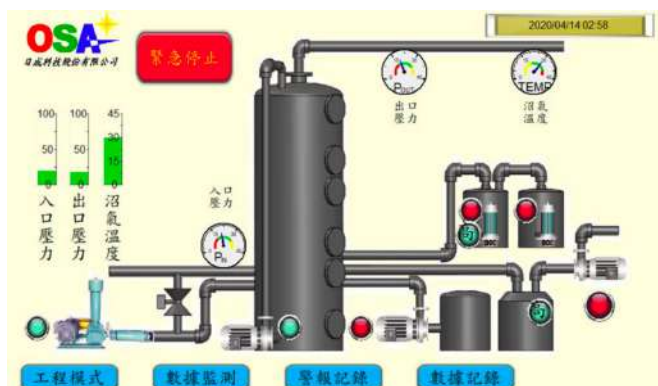
## 有效去除沼氣中硫化氫

### 系統優勢

- 高硫化氫去除效率、硫化氫出氣濃度低
- 沼氣稀釋比例低
- 低操作成本
- 自動化操作
- 維護頻率低、使用年限長
- 環保、無二次污染
- 系統具備反洗機制
- 整合性系統節省設置空間
- 耐腐蝕FRP槽體



### 系統脫硫微生物硫化氫代謝反應



# 最佳沼氣分析儀及流量計整合系統

## System Features

- 量測精準
- 可靠性高
- 穩定性高
- 耐用度高
- 操作簡便
- 容易維護
- 可長期運作
- 可遠端監控診斷



## 沼氣流量計 - AwifLOW

- 可搭配沼氣分析儀及時修正沼氣流量，並提供標準流量和能量
- 可安裝於 DN50 至 DN350 之管道
- 安裝簡易
- 清潔和更換傳感器不會大量損失氣體
- 可耐受潮濕及含硫化氫之氣體
- 經由校正氣體校正來提高測量精度

| Biogas Analyzer | AwiFLEX  | AwiECO  |
|-----------------|--|---|
| 量測通道            | 多通道<br>(CH <sub>4</sub> , CO <sub>2</sub> , CO, O <sub>2</sub> , H <sub>2</sub> S, H <sub>2</sub> )  | 單通道 (CH <sub>4</sub> , CO <sub>2</sub> , CO, O <sub>2</sub> , H <sub>2</sub> S)<br>雙通道 (H <sub>2</sub> S) |
| 量測範圍            | CH <sub>4</sub> 0 - 100%<br>CO <sub>2</sub> 0 - 100%<br>O <sub>2</sub> 0 - 25%<br>H <sub>2</sub> S 0 - 200 PPM / 0 - 500 PPM / 0 - 1,500 PPM<br>0 - 3,00 PPM / 0 - 5,000 PPM, 0 - 10,000 PPM<br>0 - 20,00 PPM / 0 - 50,000 PPM<br>H <sub>2</sub> 0 - 2,000 PPM / 0 - 5,000 PPM / 0 - 10,000 PPM<br>0 - 20,000 PPM / 0 - 50,000 PPM<br>0 - 100% |   |
| 氣體冷凝模組          | ●  |   |
| 不鏽鋼機櫃           | ●  | ●   |
| 觸控面版            | ●  | ●   |
| 擴充功能            | 可整合沼氣流量計(量測沼氣流量)   |   |
| 應用領域            | 沼氣系統 / 脫硫系統 / 醱酵系統<br>污水處理廠 / 實驗室應用<br>活性炭系統監測   |   |