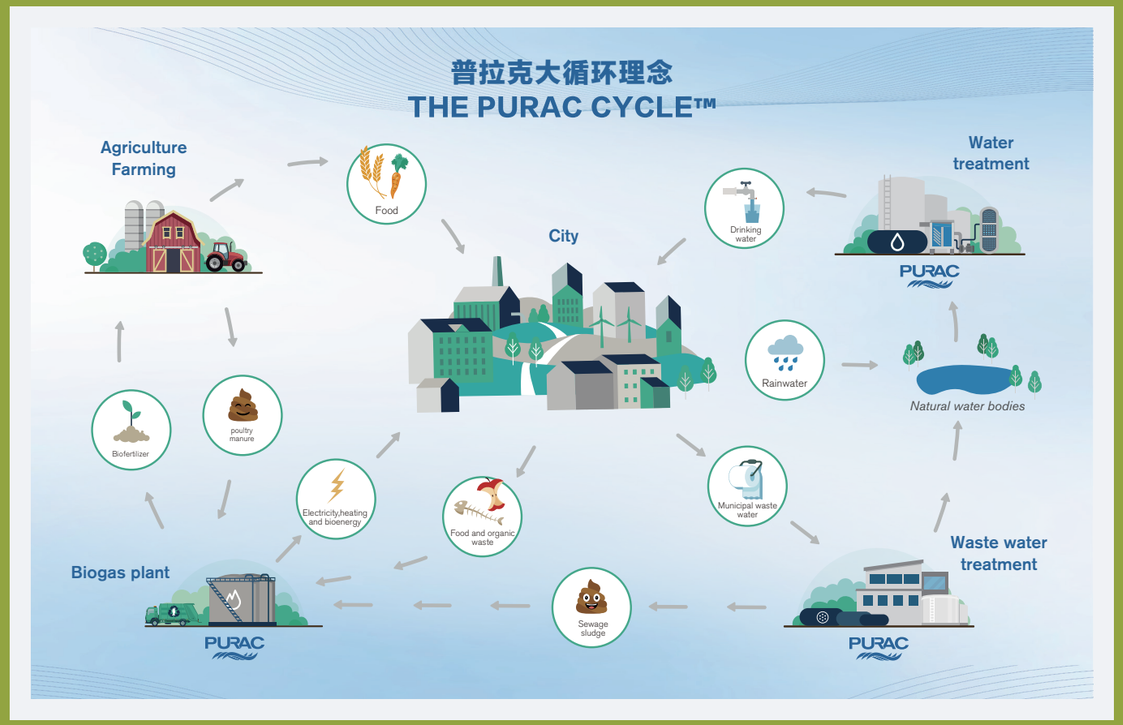


## World-class Provider of Green Organic Solid Waste Treatment Service

Founded in Sweden in 1956, PURAC has completed over 5,000 projects across more than 70 countries. Its business scope covers Food Waste Treatment, municipal sludge treatment, sewage treatment, industrial wastewater treatment, and comprehensive utilization of green energy, with a total global daily organic solid waste treatment capacity exceeding 36,000 tons.

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From Waste to Energy

# PURAC's Green Treatment Solution for Organic Solid Waste

# Why Biogas?

Nature is great at waste management. Growth, death, decomposition and new growth – this is the natural circle of life. But, the problem is that we humans create enormous amounts of waste that needs to be taken care of in a responsible manner. One such method is to extract biogas from various kinds of biodegradable substrates. As a biomass green energy, anaerobic treatment of organic waste not only solves environmental pollution problems but also reduces reliance on fossil fuels and carbon emissions.

Welcome to Purac, a world leading company in biogas production.

# Why Purac?

Founded in Lund, Sweden in 1956, PURAC currently has offices in Lund (Sweden), Beijing (China), Sri Lanka and other regions. It has completed over 5,000 projects worldwide, covering more than 70 countries, mainly in Northern Europe, China, Malaysia, Mongolia, and Sri Lanka.

**Its business scope includes** Food Waste Treatment, municipal sludge treatment, sewage treatment, industrial wastewater treatment, and comprehensive utilization of green energy. It provides customized services such as design consulting, key equipment supply, project management, and EPC engineering. In the field of organic solid waste treatment, all projects produce over 2 billion cubic meters of biogas annually.

Whether for single-source materials such as food waste, municipal sludge, and high-concentration organic wastewater, or mixed organic wastes from multiple sources, PURAC can provide customized integrated solutions, including Anaerobic Systems such as Wet digestion, Dry digestion, or Semi-Dry digestion, Pretreatment Systems such as Hydraulic Pulping or Sorting-Pulping etc., as well as Biogas Slurry Treatment Solutions such as CRP (Concentration and Recycle Process) or Anammox etc..

Over decades of development, PURAC has created numerous successful projects worldwide. In the future, relying on advanced Swedish technology, a professional international team, and strong contract execution and after-sales service capabilities, PURAC will continue to create value-added services for customers around the world and share a better future.

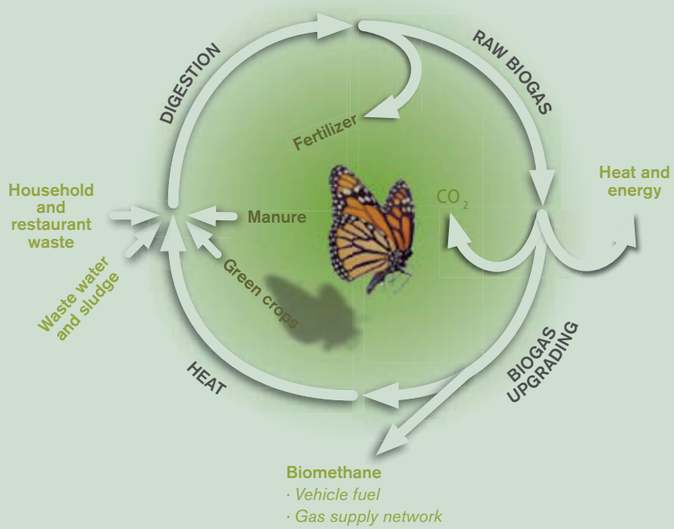
**5000+**
Completed Projects Worldwide

**70+**
Countries Served

**Over 2 Billion m³**
of Biogas Produced Annually by All Projects








## The Cycle of Life

Biodegradable waste follows a natural decomposition process where anaerobic bacteria breaks down the material and releases energy in the form of methane. Naturally occurring methane, a greenhouse gas about 20 times more aggressive than carbondioxide, is re-leased into the atmosphere. The remaining material becomes a bio-fertiliser and eventually ends up as a nutrient rich soil. With custom designed biogas plants, Purac can speed up this process and, most importantly, extract the bio-methane and make it available for a multitude of environment friendly applications and stop uncontrolled emissions of methane.

## Waste—a valuable resource

Interestingly enough, organic waste can become a very valuable resource. Sewage sludge, agricultural waste, restaurant and slaughterhouse waste, household waste and waste water from industries such as pulp and paper mills, breweries, dairies and sugar mills can all be used to extract large amounts of biogas. The remaining composted sludge can be utilised as a soil improver replacing industrially produced fertiliser.

## Typical Green Treatment Process for Organic Solid Waste

Pretreatment System | Anaerobic System | Biogas Slurry Treatment System

## HP Hydraulic Pulping Process — For Higher Resource Recovery

The HP Pretreatment and Impurity Removal Process began to be applied to organic waste treatment projects in Europe in the 1980s, and was introduced to the Jiaonan Municipal Waste Treatment Plant in Qingdao, China in 2008. After years of upgrading and optimization, it can be widely applied to the pretreatment of organic wastes **such as Food Waste and Municipal Sludge.**

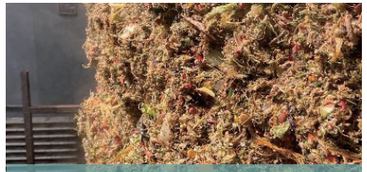
The high-efficiency impurity separator of the HP pretreatment system generates a powerful flow field. Through continuous variations in flow regime and velocity, intense collisions, friction, and rubbing occur among the materials, thoroughly separating and trapping both light and heavy impurities, such as plastic bags and grit. This ensures that organic matter and grease/oil within the waste are fully retained in the liquid phase. The resulting slurry is then pumped to downstream oil separation and anaerobic digestion sections, while the separated high-solids impurities are sent for subsequent disposal.

### Features:

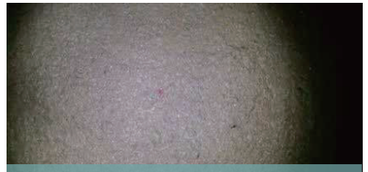
- Single-line capacity >30 tons/hour, strong system stability
- Minimal loss of organic matter to reject, high oil recovery rate
- Small footprint, saving civil engineering costs for owners
- Closed-system operation, easy to deodorize
- Residue dry matter content 30-40%
- High degree of automation, low demand for operators

Full-Process 3D Simulation Diagram

Raw Materia



Residue



Slurry

### Representative Projects:

Nangong Food Waste Hydraulic Pulping Pretreatment Project, Beijing. Capacity 400 tons/day.

Dongcun Classified Waste Comprehensive Treatment Food Waste Pretreatment and Anaerobic Reconstruction Project, Beijing. Capacity 550 tons/day.

Fengtai District Circular Economy Industrial Park Food Waste Pretreatment Project, Beijing. Capacity 720 tons/day.

Changping Organic Matter Ecological Treatment Station Upgrading Food Waste Pretreatment Project, Beijing. Capacity 300 tons/day.





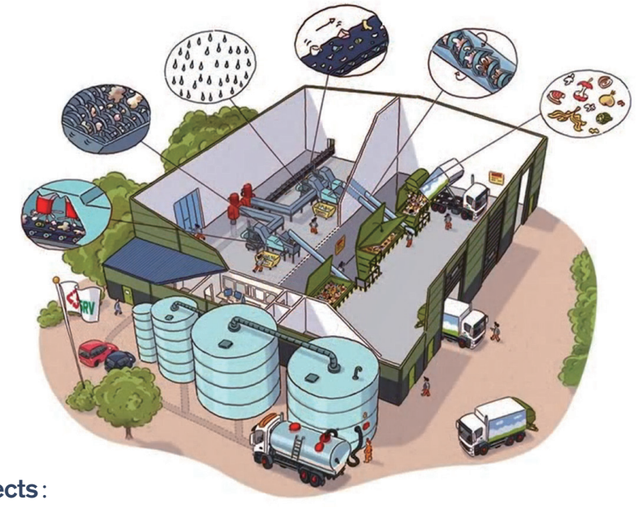
## EFWA Sorting and Pulping Modular Design Suitable for Complex Raw Materials

PURAC EFWA sorting and pulping process features simple system, less equipment, good separation effect, and low energy consumption etc.

First, wet waste is unloaded into the receiving hopper by transport vehicles, then conveyed to the crusher via a screw conveyor. A durable, high-capacity double-shaft roller crusher is used to crush the waste. Crushed materials undergo magnetic separation to remove metal impurities, then are fed into the integrated sorting and pulping machine. As the machine shaft rotates rapidly, fragile food waste is made into slurry under centrifugal force and passes through the sieve, while non-friable impurities such as plastic and fiber are intercepted and transported to a temporary collection device via the impurity outlet. After sorting and pulping, the organic slurry is de-grit and then pumped to the subsequent anaerobic system.

### Features

- Capacity 10-14 ton/hour each line,stable and durable system
- <5% of organic material, high resource utilization rate
- Good separation effect, enabling continuous pulping and separation of light and heavy materials
- Visible impurities in the slurry (>2mm): <0.5% of Dry Solids
- Modular design with high integration
- Easy operation and low maintenance costs
- Low power consumption and no need to add fresh water



### Representative Projects:

Heishizi Food Waste Phase I-IV Treatment Project, Chongqing. Capacity 1000 tons/day.

Södertörn Biogas Plant, Sweden.

Kunming Food Waste Treatment Project. Capacity 250 tons/day.

Suzhou Industrial Park Food & Green Waste Treatment Phase I Project. Capacity 400 tons/day.

## ANAMET® Wet Anaerobic Process

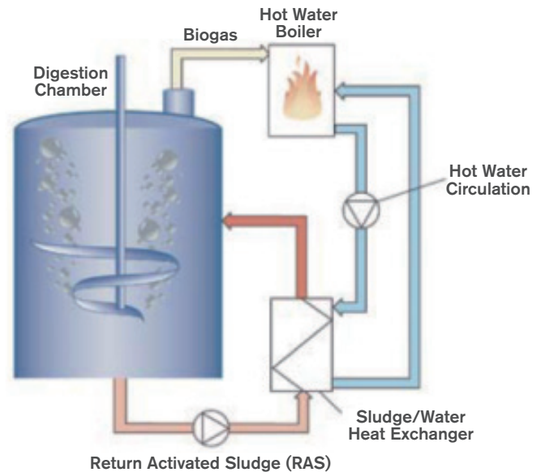
Anaerobic digestion can be classified into wet and dry types based on the properties of the raw materials and the materials inside the digester. Wet anaerobic digestion refers to an anaerobic process where the solid content in the reactor is below 10% and the materials have good fluidity.

ANAMET® is an improved fully mixed wet anaerobic process. It adopts high-performance mechanical stirring and heat exchange systems to achieve complete mixing of microorganisms and materials, minimizing concentration and temperature gradients in the reactor. It is especially suitable for treating high-suspended solid materials such as Food waste, municipal sludge, agricultural waste, and high-concentration industrial wastewater and residue.

PURAC's ANAMET® Anaerobic process has over 40 years of global application experience, with more than 100 anaerobic treatment projects for Food Waste and other organic wastes, and a total treatment capacity exceeding 36,000 tons/day, ranking top in the industry.

### Features:

- The reactor can be made of steel, with shorter construction period and longer service life. At present, there are steel reactors that have been in operation for more than 20 years in China
- Volume of single reactor can be up to 14000m³ for sludge and organic waste digestion treatment at present
- Less system equipment, simple maintenance & control, and land saving for large scale projects
- Simple start-up and commissioning, stable operation, and shock load resistance
- Specially customized mechanical agitator, homogenous mixing, low energy consumption
- Equipped with proprietary heat exchanger for external heat exchange, high efficiency, and easy maintenance
- Patented scum and sediment discharge technology




### Representative Projects:

Baoshan Renewable Energy Utilization Center Wet Waste Treatment Project, Shanghai. Capacity 800 tons/day.

Changsha Food Waste Treatment Project, Capacity 800 tons/day.

Guangming Environmental Park Food & Kitchen Waste Treatment Project,Shenzhen. Capacity 1000 tons/day.

Tongzhou Urban Organic Waste Co-Anaerobic Treatment Project,Beijing. Capacity 600 tons/day.

Linköping Biogas Plant, Sweden.



Wet Anaerobic Treatment

## Jet-mix Anaerobic Process

The JET-MIX anaerobic process is an anaerobic digestion system utilizing hydraulic jet mixing technology. While ensuring homogeneous mixing of the substrate, it effectively breaks up and suppresses the formation of foam and scum. The system can achieve long-term, stable operation under high organic loading rate (OLR) and high oil and grease (O&G) conditions, demonstrating excellent grease degradation efficiency. Since no core mechanical equipment is installed at the top of the tank, the anaerobic reactor can be structurally integrated with a double-membrane biogas holder. This integrated design not only simplifies installation and construction, but also significantly reduces the land footprint.

### Features:

**Feature 1**
Low investment and O&M costs, compact footprint

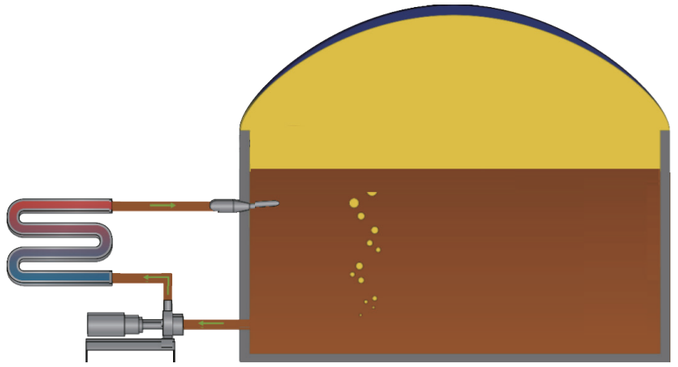
**Feature 2**
Integrated design, easy installation, short construction period

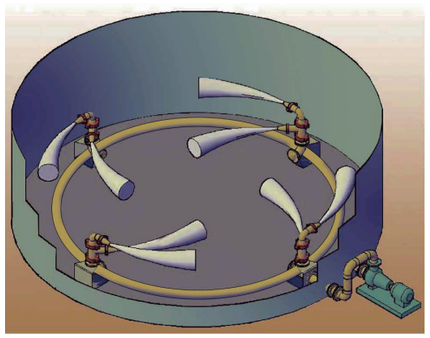
**Feature 3**
Maintenance-free inside the reactor

**Feature 4**
Standardized and modular design, strong scalability

**Feature 5**
Strong adaptability and operational flexibility, suitable for treating various organic wastes

**Feature 6**
High tolerance and superior degradation capability for oil and grease





### Representative Projects:

Dongcun Sorted Waste Comprehensive Treatment Food & Kitchen Waste Anaerobic Retrofitting Project, Beijing. Capacity 550 tons/day.

Fengtai Circular Economy Industrial Park Food & Kitchen Waste Anaerobic Retrofitting Project, Beijing.

Biokraft Biogas Plant,Norway.

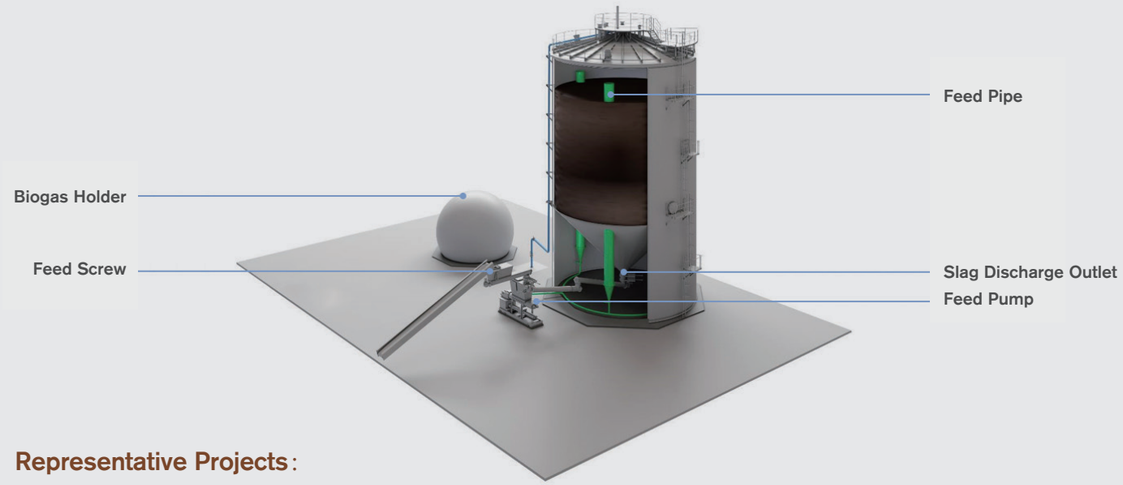
## DRANCO® Dry Anaerobic Process

The total solids (TS) content of dry anaerobic feed ranges from 20% to 55%, with the raw material being semi-fluid or solid. Compared with wet anaerobic digestion for treating the same dry matter waste, dry anaerobic process features a smaller footprint, lower energy consumption, and less digestate production, significantly easing the pressure of digestate disposal. Owing to these advantages, it has been applied on a commercial scale in Europe since the 1980s. The DRANCO® dry anaerobic process is a vertical dry anaerobic technology developed by OWS (Organic Waste Systems) in Belgium. Over 40 years of engineering practice in Europe has proven that DRANCO® is a highly efficient anaerobic digestion technology suitable for treating high-solid organic substrates such as kitchen waste.

PURAC is an officially authorized partner supplier of DRANCO® technology in China. With its unique feeding and mixing method, DRANCO® is one of the typical representatives of dry fermentation processes in the world. Its unique vertical fermentation system without mechanical mixing has numerous international applications, mainly for the treatment of kitchen waste, garden waste, straw, livestock manure, and industrial organic solid waste. Compared with the wet anaerobic process, this technology can adapt to a larger feed solids content range (20%~55%), and has lower pretreatment requirements for incoming materials (to reach the particle size ⩽50mm, and the organic content⩾70%).

### Features:

- Simple system and small footprint demand
- Adaptable and flexible
- High heating efficiency and fast degradation rate
- Less equipment and maintenance free
- Low energy consumption and low biogas slurry production
- Large single-tank treatment capacity




### Representative Projects:

Luoqi Kitchen Waste Dry Anaerobic Project, Chongqing. Capacity 300 tons/day.

Bresse Mixed Waste Dry Anaerobic Project, France. Capacity 110 tons/day.



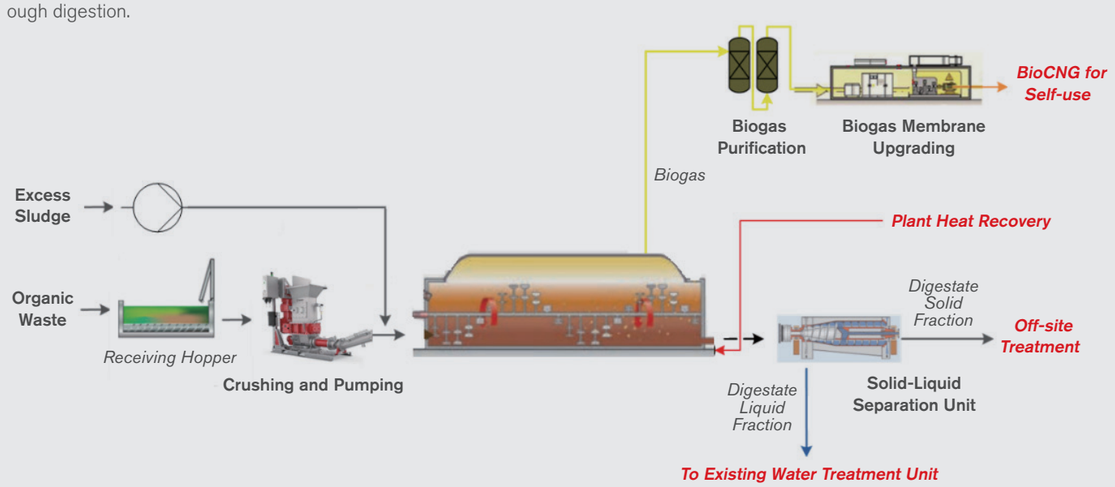


## Semi-Dry Anaerobic Treatment

Semi-dry anaerobic digestion represents a fermentation state where the total solids (TS) content of the substrate inside the reactor lies between that of dry and wet anaerobic digestion, typically ranging from 10% to 15%. This process is particularly suitable for feedstocks that cannot be properly treated by dry or wet anaerobic digestion without complex pretreatment. It features a remarkably simplified pretreatment process, eliminates the need for additional dilution water, generates minimal digestate, and is especially well-suited for treating food processing waste and organic residue.

- Ideal for sites with limited footprint: Can be designed with a gas holder integrated with the anaerobic reactor into a single structure.
- Suitable material concentration (e.g., waste food) inside the tank results in minimal scum/foam accumulation and negligible inert impurities like sand, stone, and glass, making it highly compatible with semi-dry anaerobic digestion.
- Mature technology: Enables long-term, stable operation using both imported and domestic equipment.

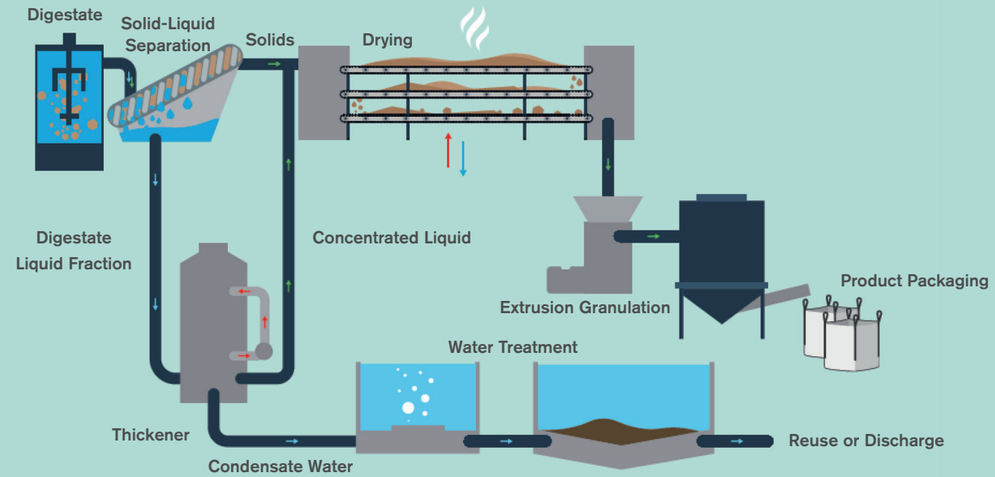
The organic waste is buffered in a receiving hopper, roughly crushed, and directly pumped into the anaerobic reactor. The raw material is mixed at a specific ratio with recirculated digestate at the front end of the reactor before entering the digestion system, where anaerobic fermentation is completed.The biogas generated during fermentation is sent to downstream biogas purification and utilization systems. After anaerobic digestion, the digestate is discharged from the rear end and pumped to subsequent solid-liquid separation units for dewatering or comprehensive utilization.A key feature of this system is that the material moves through the reactor from front to back in a plug-flow regime, following a First-In, First-Out (FIFO) pattern. This design prevents short-circuiting and ensures complete and thorough digestion.



## CRP (Concentration Recycle Process) Concentration & Resource Recovery Technology — Transforming Digestate into Green Functional Fertilizer

In addition to a certain amount of refractory organic matter, the digestate produced after the anaerobic digestion of organic solid waste is rich in essential nutrients such as Nitrogen (N), Phosphorus (P), and Potassium (K). If conventional direct discharge treatment routes are used, it not only results in high costs and poor economic returns, but also wastes valuable resources. To address this issue, PURAC has conducted years of research and developed the CRP Concentration & Resource Recovery Technology. This technology solves the technical challenges of digestate treatment while simultaneously recovering organic matter and nutrients for reuse as green fertilizers.

Process Description:The digestate following anaerobic digestion first undergoes simple solid-liquid separation. The separated solid fraction is combined with the concentrated liquid fraction and dried to produce a green, slow-release functional fertilizer to replace chemical fertilizers for high-value utilization. Meanwhile, the clarified liquid separated during concentration undergoes simple biological treatment and can be directly reused, truly achieving a green, low-carbon, and eco-friendly process.





Concentrator


Effluent

Bio-organic Fertilizer

### Representative Projects:

Luleå Organic Waste Treatment Plant Biogas Slurry Treatment Project, Sweden.

Biokraft Aquaculture Waste Treatment Project, Norway.



Digestate Slurry Treatment

## DeAmmon® High — Efficiency Nitrogen Removal Process

PURAC has accumulated extensive experience in process design, engineering, and commissioning for Anammox (Anaerobic Ammonium Oxidation) technology. We are capable of undertaking various types of high-ammonia nitrogen wastewater treatment projects with C/N imbalance. Our construction and commissioning team guarantees the efficient startup and operation of the entire project, complemented by continuous follow-up technical services post-commissioning.

PURAC's Anammox process utilizes an integrated flocculent and biofilm system. By breaking through multiple technical barriers, it has developed into a mature technology characterized by strong shock resistance and high operational stability. It is well-suited for nitrogen removal from wastewater with high ammonia concentrations, high salinity, and high suspended solids (SS).

### Features:

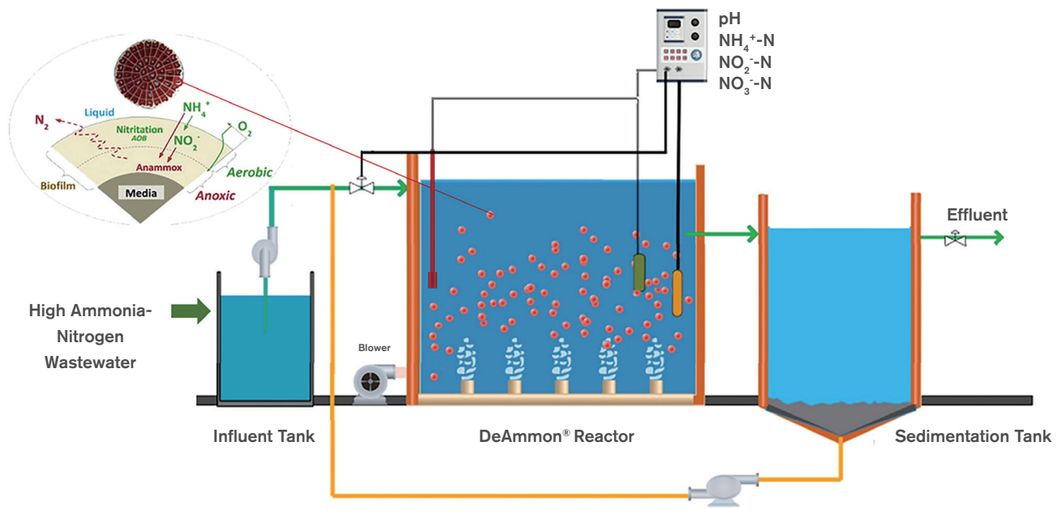
01 No carbon source

02 Low sludge production, often 10% of conventional treatment

03 Low operational costs, 60 % lower power consumption than conventional nitrogen removal

04 $CO_2$ emissions reduced by more than 85%, $N_2O$ emissions significantly lower than conventional nitrogen removal

05 High tolerance and strong adaptability to varying operating conditions




### Representative Projects:

Bekkelaget WWTP, Oslo, Norway. Capacity 1000 kgN/d.

Himmerfjärden WWTP, Sweden. Capacity 480 kgN/d.

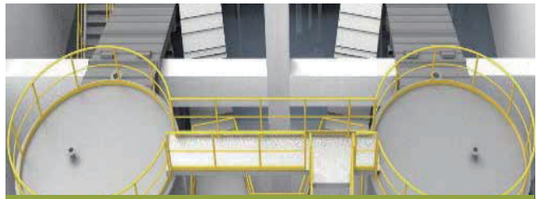
Hattingen, Germany. Capacity 200 kgN/d.

# Representative Projects

## HP Pretreatment

Nangong Food Waste Hydraulic Pulping Pretreatment Project, Beijing. Capacity 400 tons/day. (2022)

Dongcun Classified Waste Comprehensive Treatment Food Waste Pretreatment and Anaerobic Reconstruction Project, Beijing. Capacity 550 tons/day. (2023)

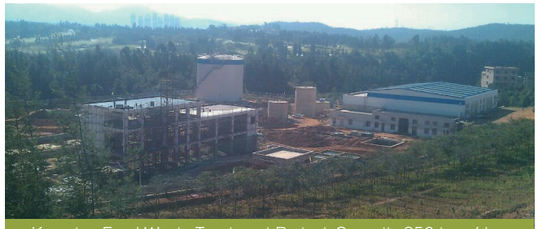


Fengtai District Circular Economy Industrial Park Food Waste Pretreatment Project, Beijing. Capacity 720 tons/day. (2024)

Changping Organic Matter Ecological Treatment Station Upgrading Food Waste Pretreatment Project, Beijing. Capacity 300 tons/day. (2024)

## EFWA Mechanical Pulping Process

Heishizi Food Waste Phase I-IV Treatment Project, Chongqing. Capacity 1000 tons/day. (2012)



Kunming Food Waste Treatment Project. Capacity 250 tons/day. (2013)

Suzhou Industrial Park Food & Green Waste Treatment Phase I Project. Capacity 400 tons/day. (2018)


Södertörn Biogas Plant, Sweden. Capacity 110 tons/day. (2014)



# Representative Projects

## ANAMET Wet Anaerobi

Baoshan Renewable Energy Utilization Center Wet Waste Treatment Project, Shanghai.Capacity 800 tons/day. (2023)

Changsha Food Waste Treatment Project.Capacity 800 tons/day. (2014)

Guangming Environmental Park Food & Kitchen Waste Treatment Project, Shenzhen. Capacity 1000 tons/day. (2023)

Xiong'an Integrated Waste Treatment Facility Phase I Anaerobic Project, Heibei. Capacity 600 tons/day. (2024)

Tongzhou Urban Organic Waste Co-Anaerobic Treatment Project, Beijing. Capacity 600 tons/day. (2018)

Linköping Organic Waste Biogas Plant, Sweden. Capacity 270 tons/day. (1996)

# Representative Projects

## JET-MIX Jet Anaerobic

Dongcun Sorted Waste Comprehensive Treatment Food & Kitchen Waste Anaerobic Retrofitting Project, Beijing. Capacity 550 tons/day. (2023)

Fengtai Circular Economy Industrial Park Food & Kitchen Waste Anaerobic Retrofitting Project, Beijing. (2024)

Biokraft Biogas Plant, Norway. (2017)

## DRANCO Dry Anaerobic

Luoqi Kitchen Waste Dry Anaerobic Project, Chongqing. Capacity 300 tons/day. (2023)

Bourg-en-Bresse Mixed Waste Dry Anaerobic Project, France. Capacity 110 tons/day. (2015)

Brecht Organic Waste Dry Anaerobic Project, Belgium. Capacity 140 tons/day. (2000)



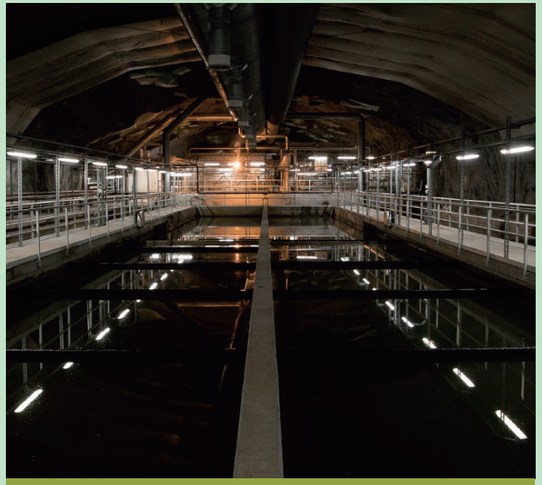
Representative Projects

## CRP Biogas Slurry Treatment

Luleå Organic Waste Treatment Plant Biogas Slurry Treatment Project, Sweden. Capacity 30,000 tons/year. (2021)

Biokraft Aquaculture Waste Treatment Project, Norway. (2017)

## Anammox Biogas Slurry Treatment



Bekkelaget WWTP, Oslo, Norway. Capacity 1000 kgN/d.(2014)

Himmerfjärden WWTP, Sweden. Capacity 480 kgN/d. (2007)