

## Innovative recycling of sewage sludge

The future-proof alternative

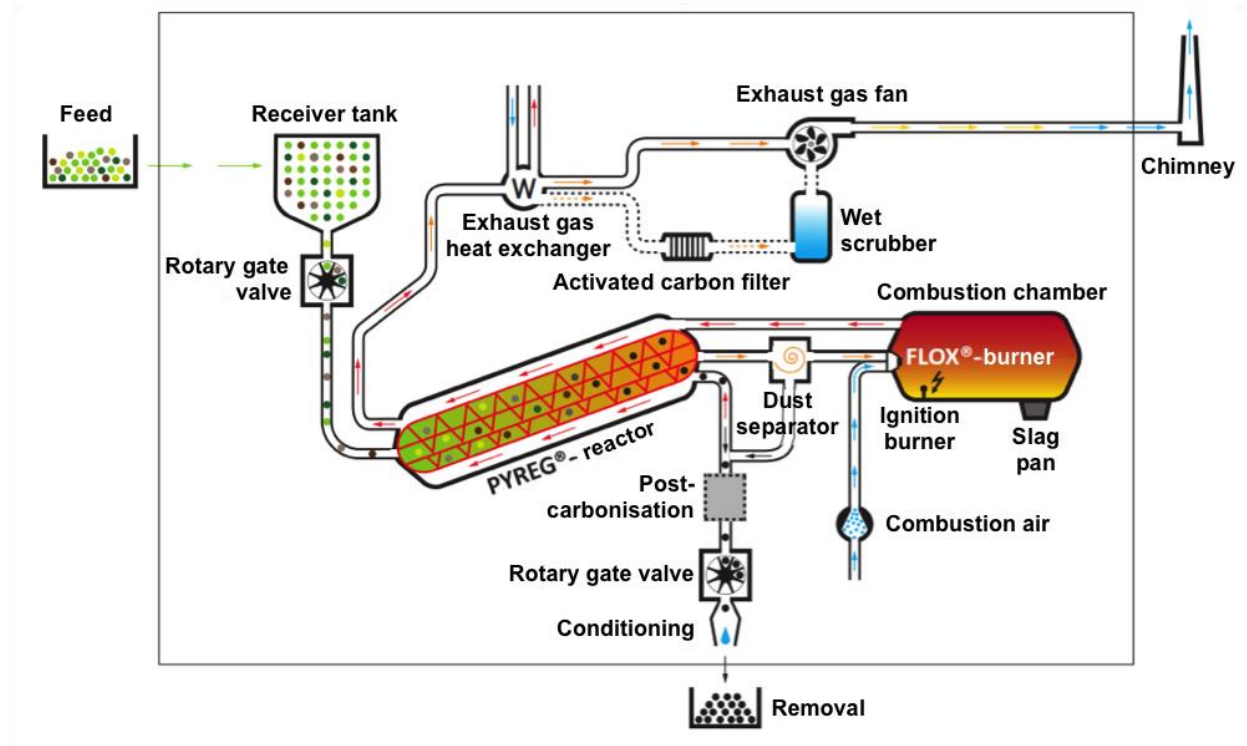


Systems for material and energetic sewage sludge processing:

- Recycling of phosphorus
- Production of fertiliser

The PYREG<sup>®</sup> process:

### Thermal sewage sludge recycling



### A reliable technology

The PYREG<sup>®</sup> system operates according to the principle of dry carbonisation. In the two-stage process, the dried sewage sludge is first heated up to 650°C in the PYREG<sup>®</sup> reactor. In the process, the sludge is not incinerated, but is carbonised and mineralised to sewage sludge ash. In a second stage, the syngas developing in the reactor is completely

incinerated at about 1,250°C in the combustion chamber. In the PYREG<sup>®</sup> process, no substances of concern (SOC), such as condensates, tars, are produced as the syngas does not cool down, but is oxidised. In combination with the exhaust air treatment, the heavy metal contamination, such as mercury, is eliminated.

safe

profitable

clean

## Phosphorus recycling by PYREG® process

The sewage sludge ash produced by the PYREG® process contains phosphorus with very high plant availability on account of the comparatively low reactor temperatures. The PYREG® process uses the advantages of decentralised thermal recycling (hygienisation, mass/volume reduction); but avoids the negative consequences of centralised mono-incineration (i.e. high investment and operating costs, recycling of phosphorus from undissolved ash, complex sewage sludge transportation, local public objection, etcetera).

### Requirements on the sewage sludge

- Dry Substance content (DS) of at least 65 %, i.e. drying is required
- Pourable and free flowing
- Minimum calorific value of 10 MJ/kg

### Quantity balance of a PYREG® module

- Input: 1,000 t p.a. DS = 1,250 t p.a. Original Substance (OS) with 80 % DS
- Output: approx. 500 t p.a. Ash with up to 20 % of phosphorus

→ A PYREG® utilisation module corresponds to a treatment capacity of approx. 40,000 to 50,000 population equivalent

safe

## Unique characteristics of PYREG®500

### End-of-pipe technology:

Production of phosphorus-containing ash which can be marketed directly as raw material for the fertiliser industry without any elaborate processing.

### Recuperative process:

The thermal processes are self-perpetuating using the energy of sewage sludge used. At the beginning of the process only a very small volume of third party gas is required.

### Decentralised use with little space required:

Ideal implementation directly at the wastewater treatment plant; utilisation of the infrastructure present.

### Modular container solution:

Scaling up is possible by using several modules.

### Spare renewable energy:

Up to 250 kW<sub>th</sub> can be used for example for drying sewage sludge.

## Advantages for the operator

- Utilisation in conformity with the planned amendment of the Sewage Sludge Regulation as well as the Fertiliser Ordinance and the Federal Emissions Protection Law (BlmschV)
- Disposal security until 2025 and beyond
- Permanent low-cost recycling
- Long-term predictability of costs
- Reduction of lorry transport by up to 90 %
- No interim storage of ash

profitable

PYREG GmbH offers a future-oriented recycling technology against the background of the planned termination of the agricultural use as well as the co-incineration of sewage sludge.

Make an appointment and learn how a PYREG® plant can be integrated successfully in your cycle of materials.

We are looking forward to meeting you!



PYREG GmbH  
Trinkbornstr. 15-17  
56281 Dörth  
T +49 6747 95388-0  
F +49 6747 95388-19  
E Mail info@pyreg.de  
www.pyreg.de

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