



ENVIRONMENT & SUSTAINABILITY

INDUSTRY 4.0

Enhancing production of Biomethane and Biogas from organic waste

CIRCULAR WASTE MANAGEMENT - FOOD WASTE | CIRCULAR WASTE MANAGEMENT - URBAN WASTE | PRODUCTION OPTIMIZATION

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102024000006946

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PATENT STATUS

📌 Filed

LICENSE

Italy

TRL

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LOOKING FOR

INDUSTRIAL PARTNER

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RESEARCH TEAM | INVENTORS

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Method to manage production of Biomethane and Biogas from organic waste treatment, to prevent possible performance fluctuations in the anaerobic digestion process. A statistical system, based on a multivariate analysis function, studies, monitors and predicts the bioreactor behaviour, thus optimising the productivity and the process safety.

Technical Features

Biomethane and **Biogas** plants, treating organic waste by anaerobic digestion process, tend to instability when working with higher loads, needing therefore continuous and complex stability controls in order to guarantee operational continuity. This monitoring should rely on objective, rather than empirical basis, and on a trend forecast, to timely adjust the input load in the bioreactor.

The invented method uses a statistical system, based on a multivariate analysis operative function, that studies the bioreactor behaviour and **predicts its performance and trends**. The system interweaves different parameters related to the process stability, such as pH, alkalinity, volatile fatty acids, quantity and composition of gas produced. The algorithm measures non-casual variations in the course and foresees critical conditions, to promptly intervene and rebalance the process before having to interrupt the input load.

Possible Applications

- Management and control of anaerobic digestion plants for organic waste treatment;
- Waste management, and more generally companies working in this sector;
- Biomethane and Biogas production (mainly methane and carbon dioxide).

Advantages

- Continuous and synergic parameters measurement;
- Continuous production, without temporary process stops;
- Higher productivity, allowing high loads treatment;
- Process safety.

PATENT OWNERS

Università Ca' Foscari Venezia

 knowledge share

UIBM

 Netval

 Difesa e Territorio

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