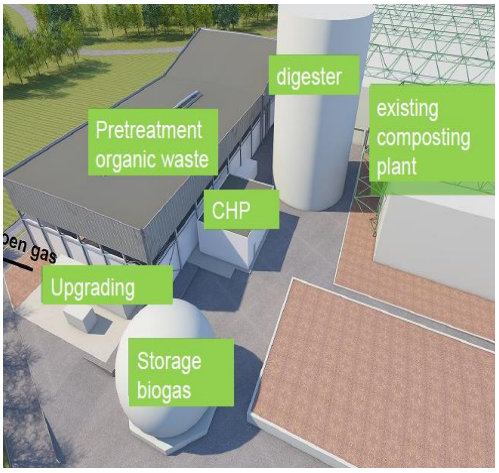
TECHNOLOGY FOR N&P RECOVERY AS COMPOST STARTING FROM VEGETABLE, FRUIT AND GARDEN WASTE WITH "IOK AFVALBEHEER" ANAEROBIC DIGESTION AND COMPOSTING PROCESS

Keywords: *•digestion • composting • biomethane • hygienisation • recuperation NPK and C*

Key facts:

- → **Technology category:** Vfg (vegetable, fruit and garden waste)-predigestion + -composting
- → Input material:
  - vfg-waste (vegetable-fruit-garden waste) – Vlarem-conform – including kitchen-waste
  - green waste (from parks, public domain,..)
- → **Output products:** vfg-compost
- → **Capacity:** 25.000 ton vfg-compost/y
- → **Focusing geographical areas**: EU28
- → **Technology status**: TRL9
- → **EC/MS Authority permits**: 'Omgevingsvergunning'



Summary of the technology:

Technological elements of the recuperation proces at IOK site are:

- shredder and crane
- paddle wheel
- conveyor belts
- drum sieve (with 2 sieves)
- Dranco dry thermophilic anaerobic digester (OWS)
- CHP engines (Jenbacher), and
- membrane technology (Bright Biomethane)

Vfg pre-digestion allows for a energy carrier biogas and/ or (upgrade to) biomethane to emerge besides creating a digestate. The minerale-rich digestate is used a base for a second organic treatment phase which is adding of fresh organic matter (green waste) and starting a composting process, aka biological aerobic breakdown and stabilisation of organic matter through a variety of microorganisms. This aerobic phase is a controlled (= measuring temperature and moist, turning, forced aeration, and/or increasing water content) transformation proces in, an open or closed environment, that mimics the natural conversion process from organic matter to humus in the soil, humification. During the composting process, biodegradable organic material is converted mainly into carbon dioxide, heat, minerals, water and stable organic material. At the end of the maturation phase about the compost represents 1/3 to 1/2 of the weight of the treated inputs. The temperatures achieved by the microbial activity allow for the hygienisation of the end product. Composting/compost in Flanders is among the most highly monitored and appreciated in the EU. Allowed input for green composting is selectively retrieved vfg-waste..

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Competitive position and advantages:

- → (dry, thermophilic) pre-digestion leading to energetic recuperation in the form of biogas (for CHP-based production of green electricity and heat) and biomethane (natural gas grid-injection)
- → Post-composting with green compost including (ensiled) roadside cuttings
- → Robust technology leading to hygienised and stabilized end product
- → Further upgrade of recuperation process possible/in progress by capturing carbon dioxide (available through biogas upgrading) and using as nutrient in nearby greenhouses
- → End product scoring negative footprint (CFP)

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