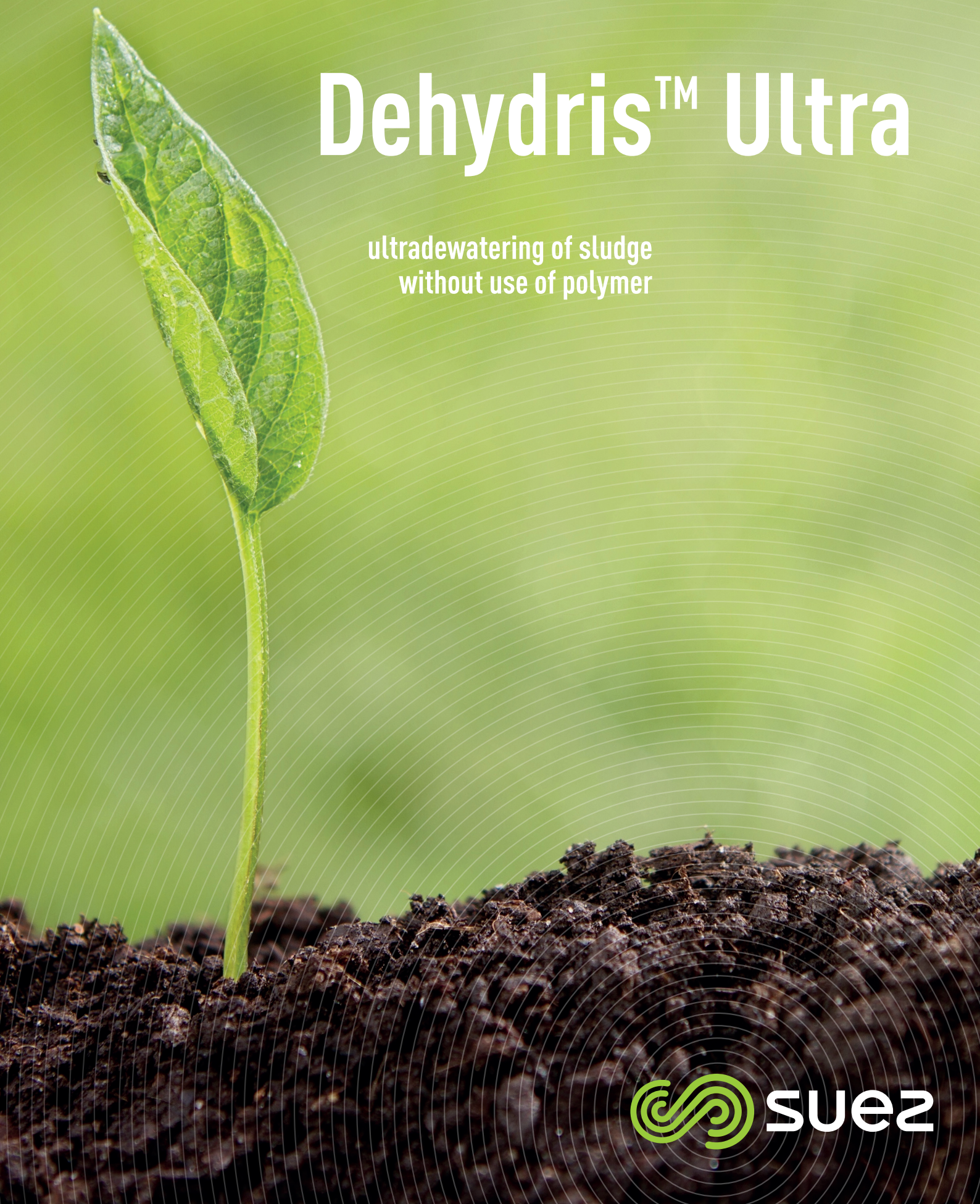
achieving 70% dry solids

Dehydris™ Ultra

ultradewatering of sludge without use of polymer



SUEZ

Dehydris™ Ultra

Turning waste sludge into a green biosolids product at 70% dry solids that is free of pathogens (class A standard), easily spreadable and has a calorific value equal to OECD solid waste through an ultradewatering process without use of polymer and with no odour nor syngas issues.

Dehydris™ Ultra technology

Dehydris™ Ultra is a solution for sludge dewatering based on the combination of HTC (HydroThermal Carbonization) followed by mechanical dewatering by a piston press filter.

The solution is developed on the basis of SUEZ' more than 40 years experience using Porteuos cookers for sludge treatment implemented for example in the Acheres waste-water treatment plant in Paris.

Production of biosolids at 70% DS

- The biosolids product is suited for agricultural use as it is Pathogen free (Class A) and contains no polymer.
- The thermal conditioning process provides partial removal of micropollutants.
- The mechanical properties are very close to humus enabling use for soil and forest remediation.
- The biosolids have a high value as biofuel for coincineration plants as the calorific value is similar to OECD waste (LHV is 8–10 MJ/kg).

Benefits and advantages

70% dry solids achieved **without use of polymer**

Class A **pathogen free** product

Energy neutral dewatering

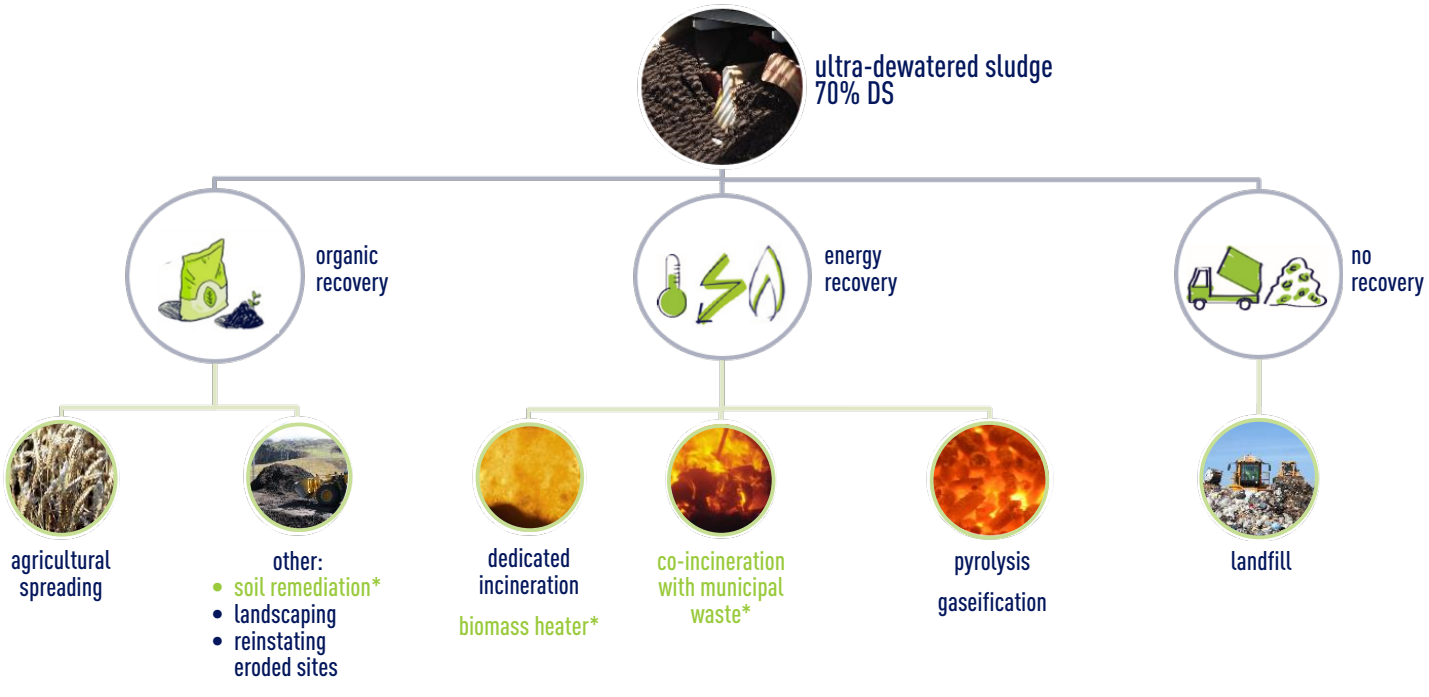
2–3 times less energy compared to thermal drying

Increased biogas production by **30–40%**

100% odor confined

Partial micropollutants removal

Multiple disposal routes of the biosolids production



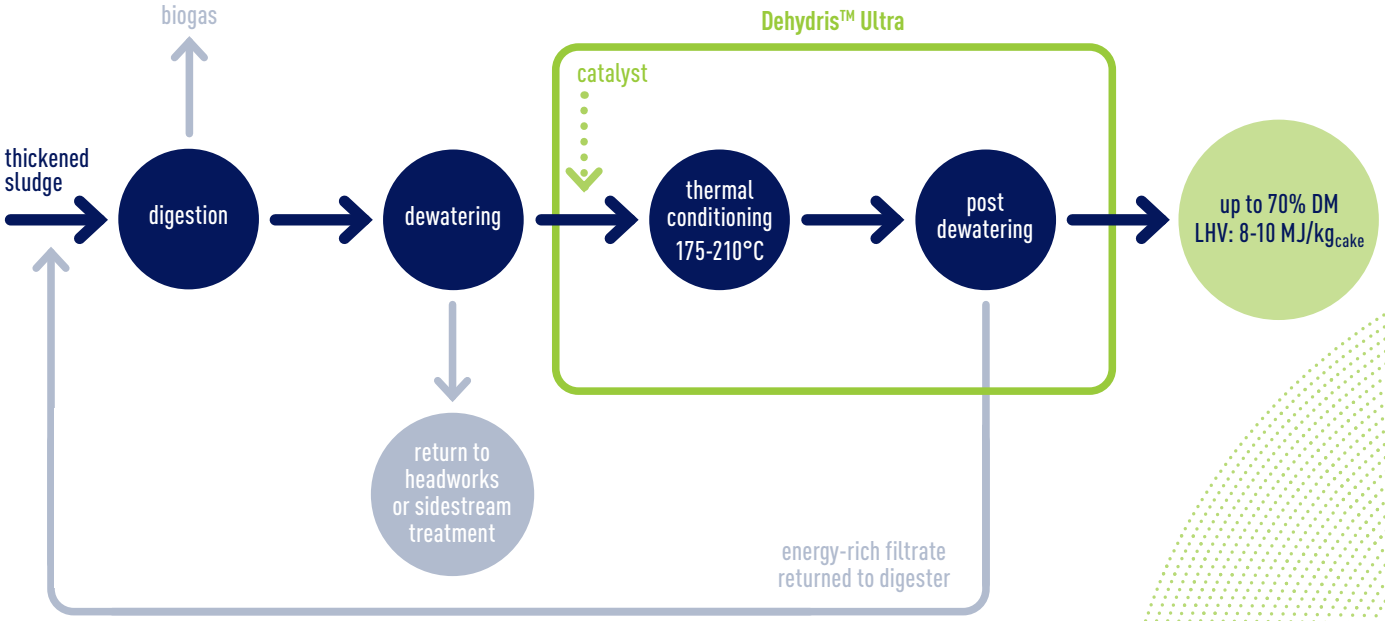
*new evacuation routes thanks to ultradewatered cake quality

The HTC process

The general HTC process mimics the natural process of coal generation from organic matter as it processes the biosolids at high temperature raging from 175°C to 350°C and high pressure, min. 12 bar.

This process goes further than THP, known as thermal hydrolysis, as it includes a thermo-chemical chain reaction (carbonization) by decarboxylation and dehydration that converts the molecules in the sludge into more energy concentrated, hydrophobic molecules.

The liquified sludge with hydrophobic solids coming out of the HTC process is easier to dewater by mechanical dewatering. Thus, by applying a piston press for post-dewatering it is possible to achieve dry solids **up to 70%**.



Boosting sludge treatment economics

Dehydris™ Ultra improves the economy of sludge treatment by addressing two key parameters:

- biogas production,
- sludge disposal volume.

Dehydris™ Ultra enables a **30–40%** increase in gross biogas production by returning the energy-rich filtrate from the final dewatering step into the anaerobic digesters.

The energy produced from this biogas exceeds the energy requirement of the Dehydris™ Ultra process, and thus the overall solution leads to a slight increase in net biogas production.

In terms of sludge disposal, the volume of the ultradewatered sludge (65–70% DS) is reduced **four times** compared to normal dewatering (20–25% DS).

24.000 PE demonstration unit in Handan, China

Dehydris™ Ultra has been developed from lab to full-scale through several years of research, testing and concept development.

Final concept validation has been achieved through a full-scale demonstration unit (24.000 PE) operated at the municipal wastewater plant in Handan, China.

The demonstration unit was operated for several years and it was tested with both a filter press and a piston press for the post dewatering.

Dehydris™ Ultra was successfully validated and is now ready for full commercialisation and full-scale implementation.

The picture below shows the thermal conditioning reactors of SUEZ' demonstration unit.


dewatered sludge


ultradewatered sludge


full-scale demonstration unit in Handan, China

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