ULTIMATE

WATER SMART INDUSTRIAL SYMBIOSIS

Biogas production in CS6 Shafdan & Karmiel:

Immobilized high rate anaerobic system (AAT) & biogas process stabilizing measures

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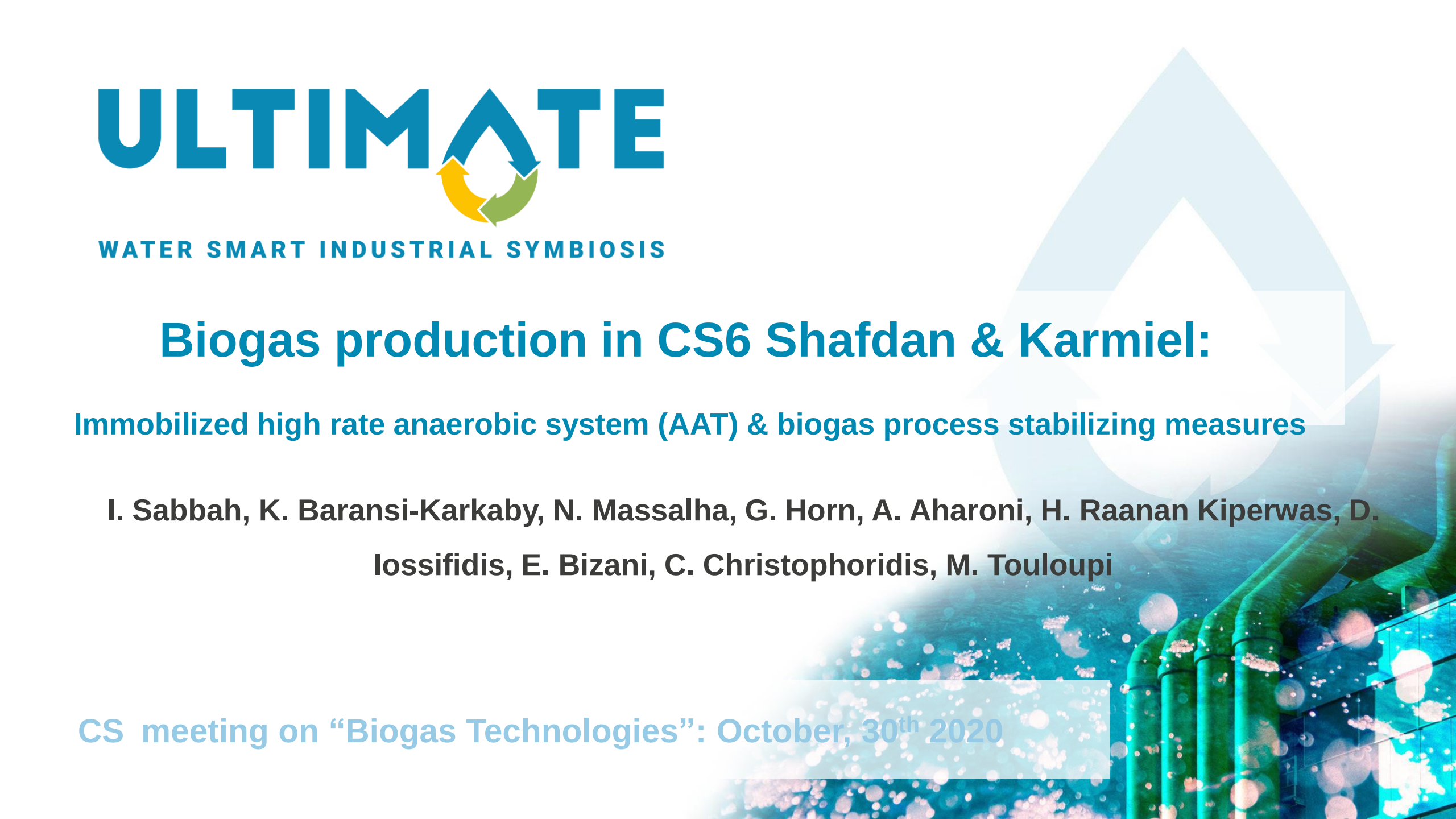

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Symbiosis in Karmiel and Shafdan:

Current situation

Karmiel

30 K m³/d → Karmiel WWTP

Municipal / Agro-industrial WW and (demo scale AAT)

- Pre-treatment
- Primary clarifier
- Activated sludge
- Sand filtration

Shafdan

400 K m³/d → Shafdan WWTP

Municipal / Agro-industrial WW

- Pre-treatment
- Primary clarfier
- Activated sludge
- Tertiary treatment via SAT

The project leading to this application has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 869318

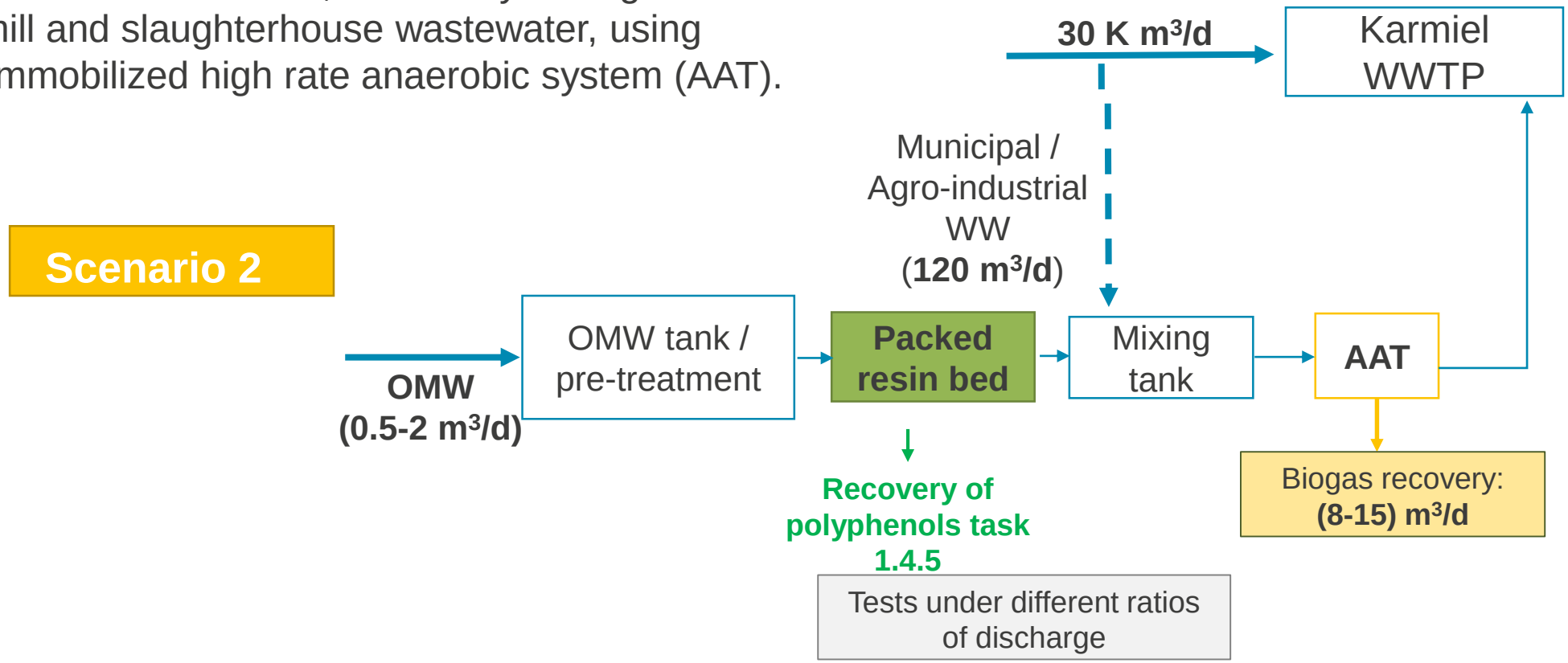
ENERGY - Task 1.3.3

Biogas production from anaerobic pre-treatment of municipal and/or industrial wastewater in **Karmiel**

Partners: MEKOROT Israel National Water Co., AgRobics, The Galilee Society, Greener than Green TECHNOLOGIES

OBJECTIVE:

Reducing the high organic load peaks in WWTP main stream, caused by mixing with olive mill and slaughterhouse wastewater, using iimmobilized high rate anaerobic system (AAT).



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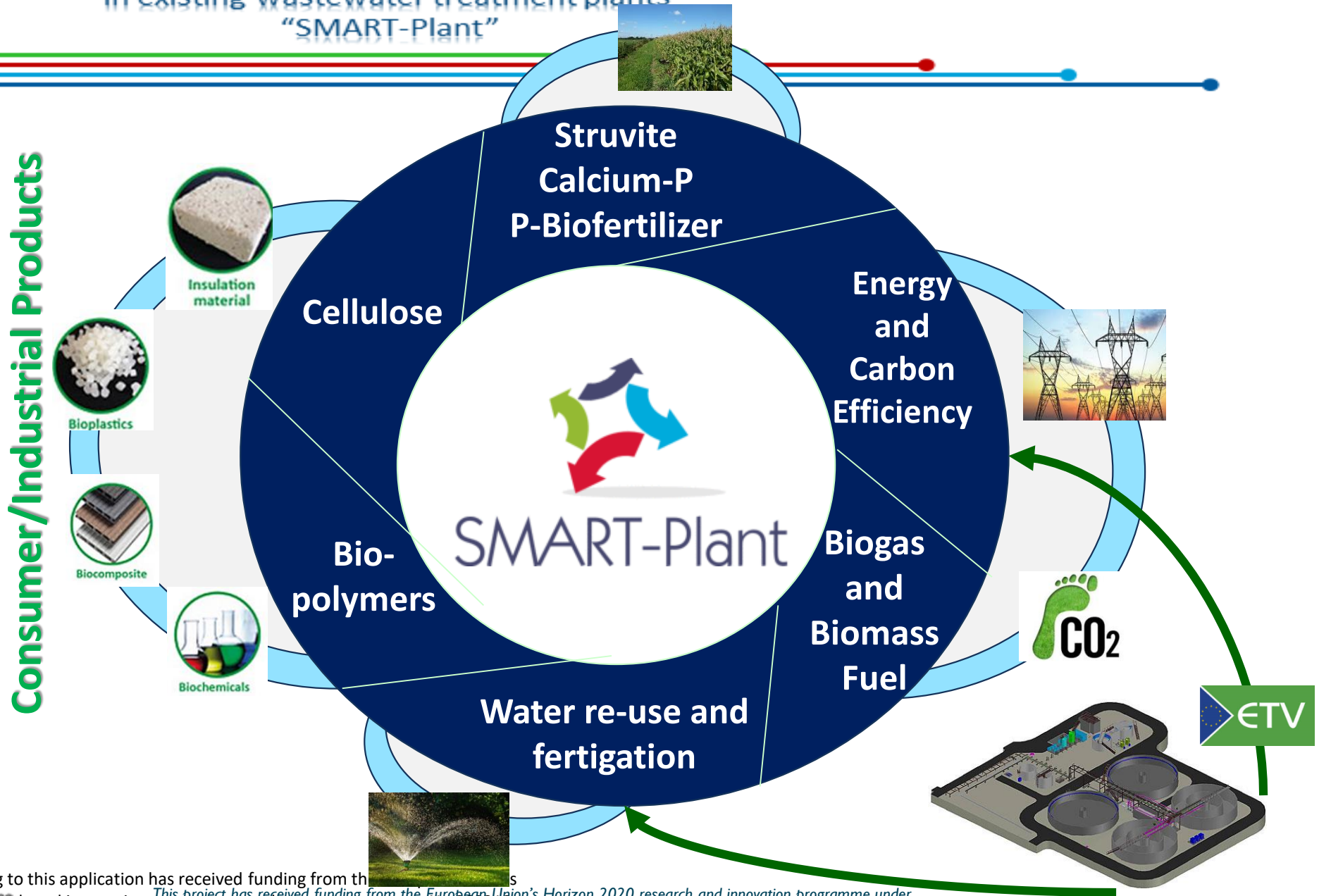
Methane Yield: 0.12-0.15 m³ CH_4/kg oDM

Scale-up of low-carbon footprint material recovery techniques in existing wastewater treatment plants "SMART-Plant"

Scale-up of low-carbon footprint MAterial Recovery Techniques in existing wastewater treatment PLANTs



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Scale-up of low-carbon footprint material recovery techniques in existing wastewater treatment plants "SMART-Plant"

Aim

Reduced **loads of COD and TSS** on the biological treatment system → Energy-efficient water reuse; **Biogas** production.

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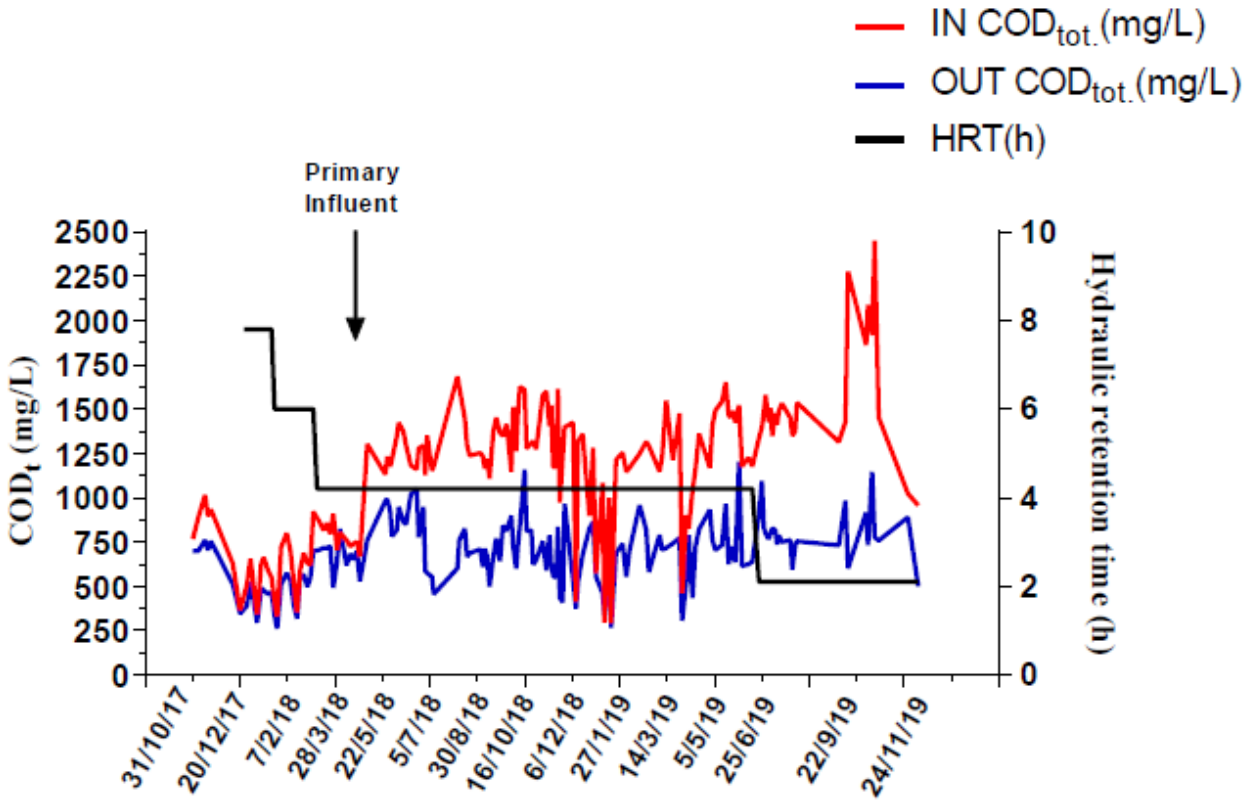
Operation

- 240 m³/d waste water flow
- 55-60% COD removal
- 50% TSS removal
- HRT= 2-4 hours

Recovery Efficiency

- 5-10 m³ biogas/day
- 72% CH4%



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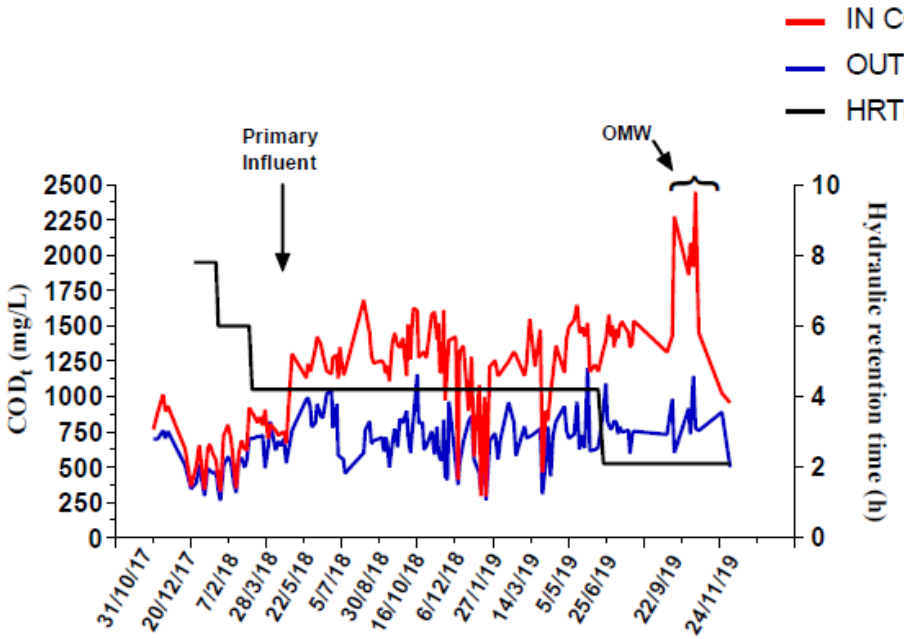
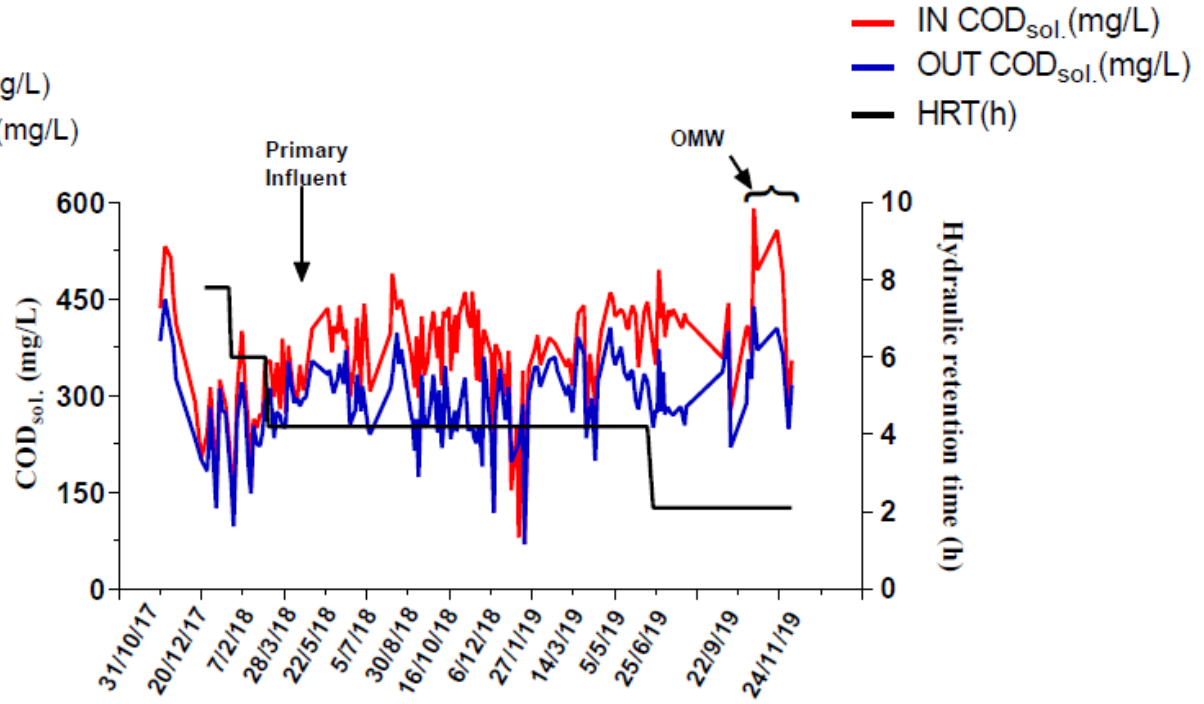
Shaving the peaks





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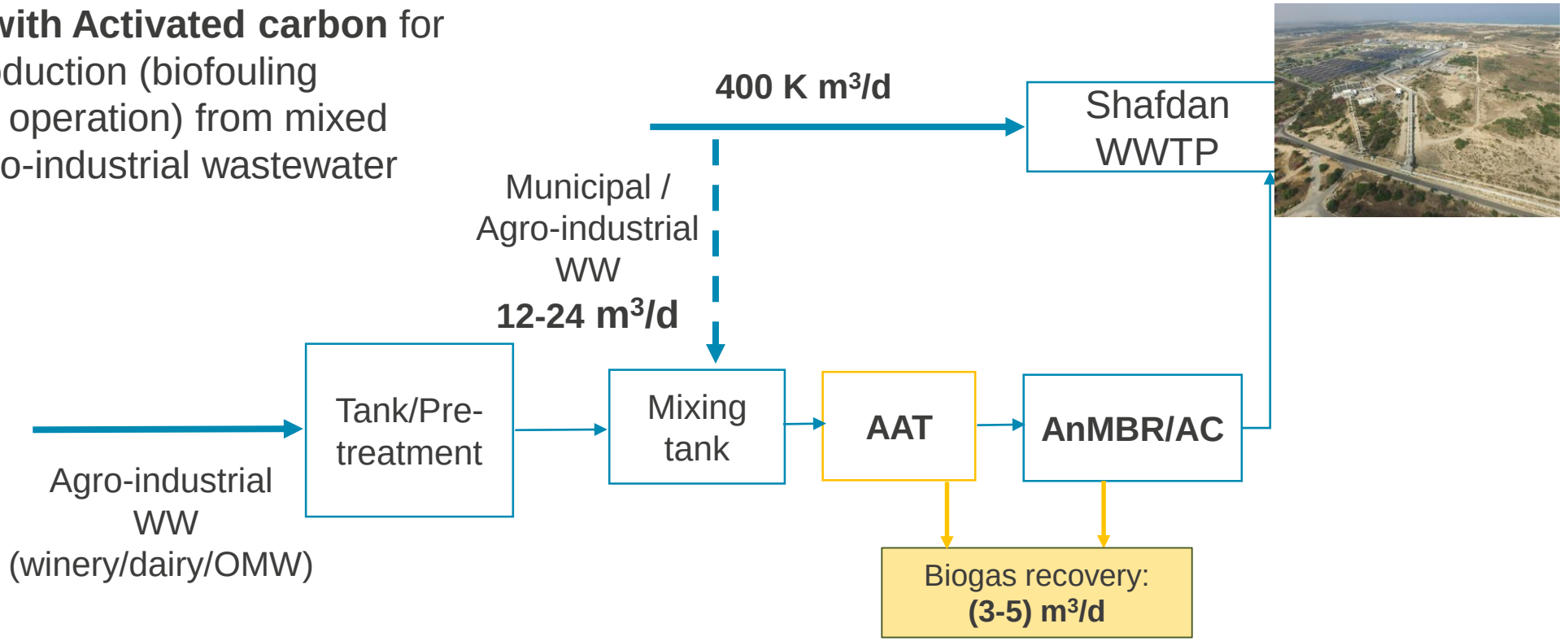
ENERGY - Task 1.3.4

Combining anaerobic biofilm treatment with membrane filtration and activated carbon in **Shafdan**

Partners:

OBJECTIVE:

Testing the **efficiency of AnMBR based on AAT combined with Activated carbon** for higher biogas production (biofouling reduction/optimal operation) from mixed domestic and agro-industrial wastewater



Methane Yield: 0.18-0.22 m^3 CH_4/kg oDM

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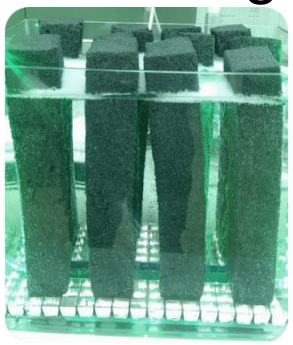
Innovation: The use of immobilized biomass in PAC fixed foam instead of granular biomass offers a promising approach for fouling reduction which is unexplored yet within AnMBR technologies.



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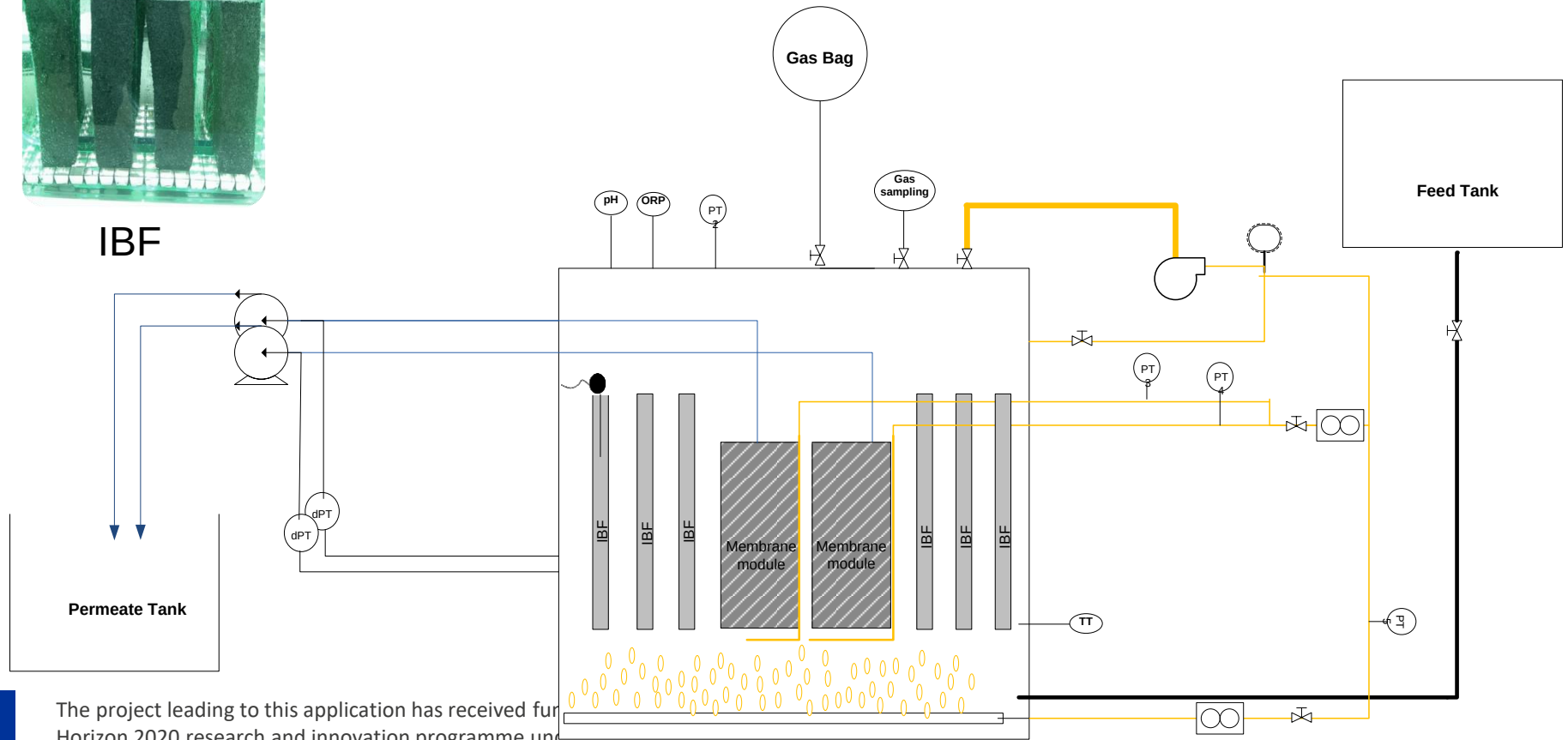

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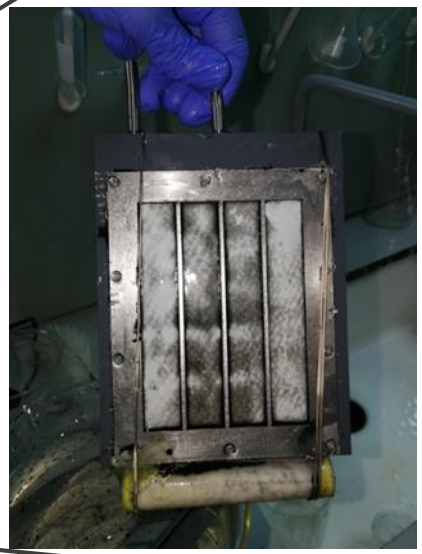

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MATERIAL - Task 1.4.5

Recovery of high-value products from olive mill wastewater in Karmiel

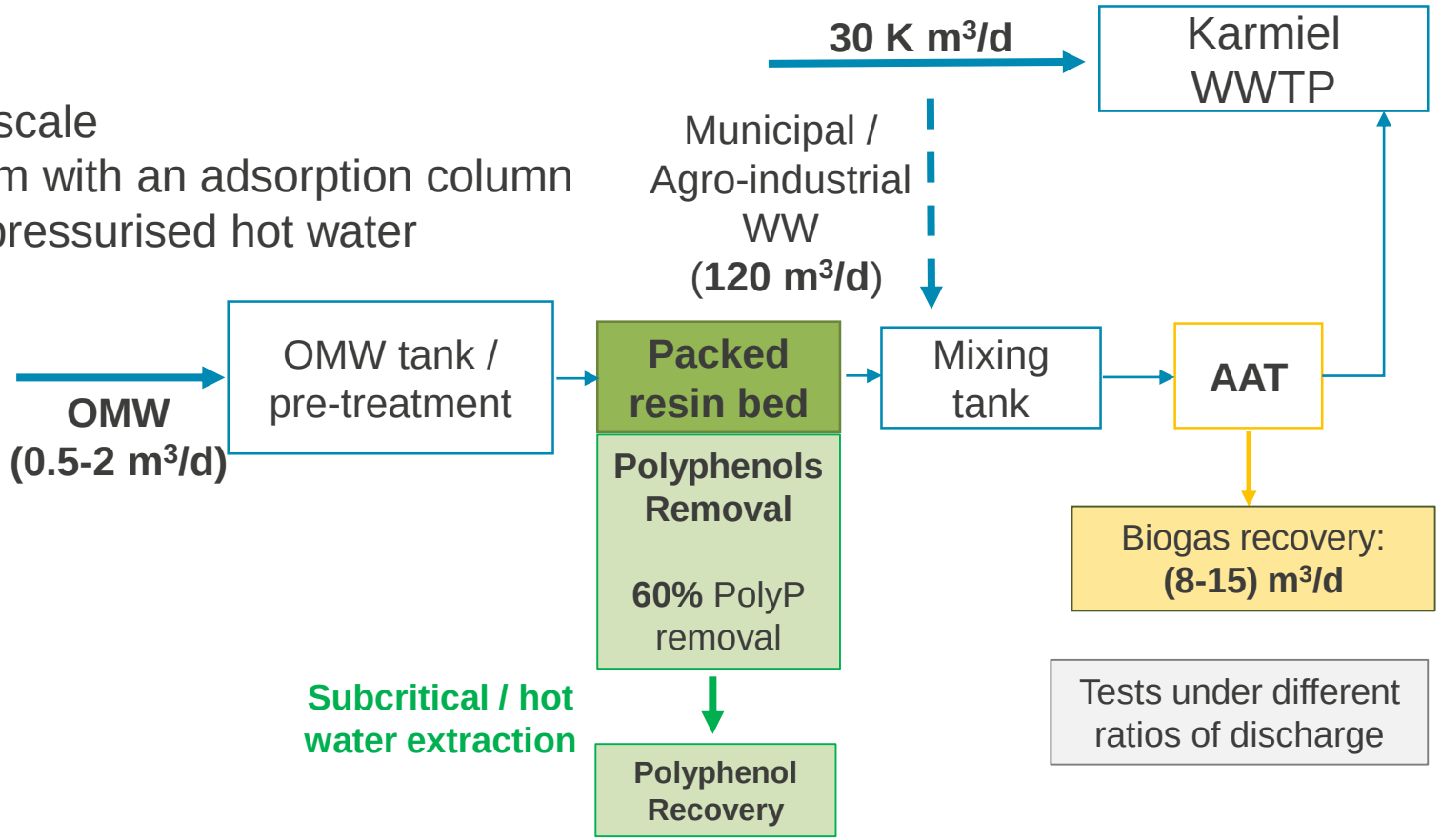
Partners:

OBJECTIVES:

Recovery of polyphenols from olive mill wastewater

Content of study:

- Pre-trials in lab-scale
- Pilot plant system with an adsorption column
- Extraction with pressurised hot water



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Thank you

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WATER SMART INDUSTRIAL SYMBIOSIS

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