

From dream to design, to demo

Scale up



Pilot plant
32m²



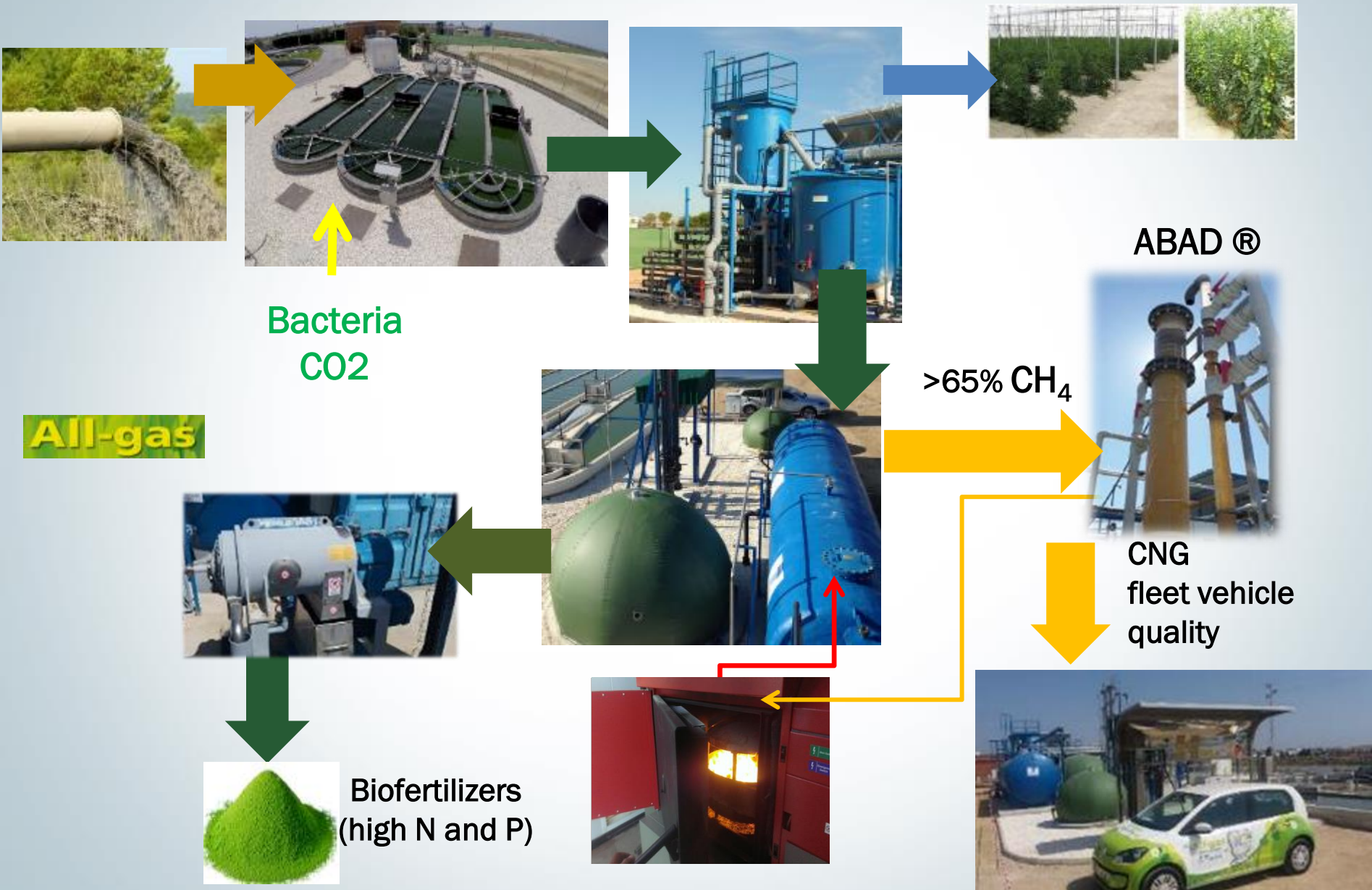
Prototype
500m²

Pre-Demo
3.000m²

DEMO
> 5.000m²



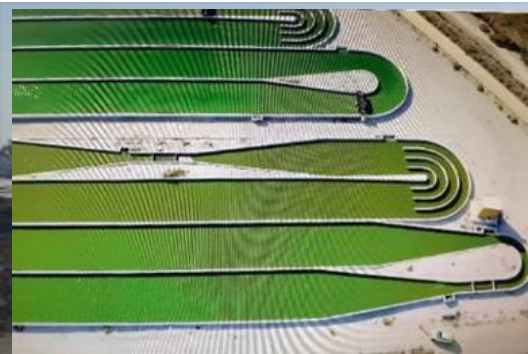
Simple Flowdiagram: Wastewater to BioFuel



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Chiclana site: Cultivation area

4 X 5200m² : Energy Optimization



ALGAE DIGESTION AND METHANE UPGRADING: DEMO PLANT



| | Biogas | Biomethane |
|--|-----------|------------|
| CH ₄ [%-vol] | 65.9 ±2.3 | >87 |
| CO ₂ [%-vol] | 33.8 ±1.4 | <5 |
| N ₂ [%-vol] | 2.4 ±1.5 | <8 |
| O ₂ [%-vol] | 0.5 ±0.5 | 0 |
| H ₂ S + COS [mg S/Nm ³] | 915 ±449 | <5 |
| Siloxanes [mg Si/Nm ³] | 5 | <0.3 |
| Water content (ppm) | - | <15 |



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Potential 1 HECTARE

5000 PE

Simultaneous

N, P, COD & TSS removal
Below directive 91/271/EC



40-60 Ton/
yr biomass

1000
m³/d WW

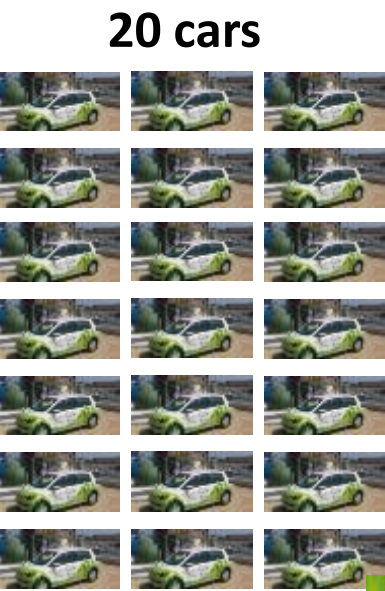
950 m³/d
Reuse



13,000 kg
CH₄/yr

- 0,3kWh/m³

Energy saving
109.500
kWh/yr



50-60% VS
bio-CH₄
325.000 km

>100 Ton/ yr

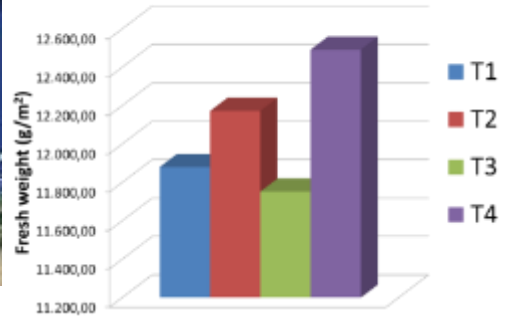




Formulations evaluated:

- T1: Conventional mineral fertilisation.
- T2: Microalgae hydrolysated (8%).
- T3: Microalgae hydrolysated (4%).
- T4: Microalgae hydrolysated (8%) enriched with calcium.

Yield per treatment



| Treatment | Formulation | Yield vs Mineral fertilisation (%) |
|-----------|--|------------------------------------|
| T1 | T1 (Mineral fertilisation) | 0 |
| T2 | Microalgae hydrolysated (8%) | 2,45 |
| T3 | Microalgae hydrolysated (4%) | -1,08 |
| T4 | Microalgae hydrolysated (8%) + calcium | 5,14 |





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