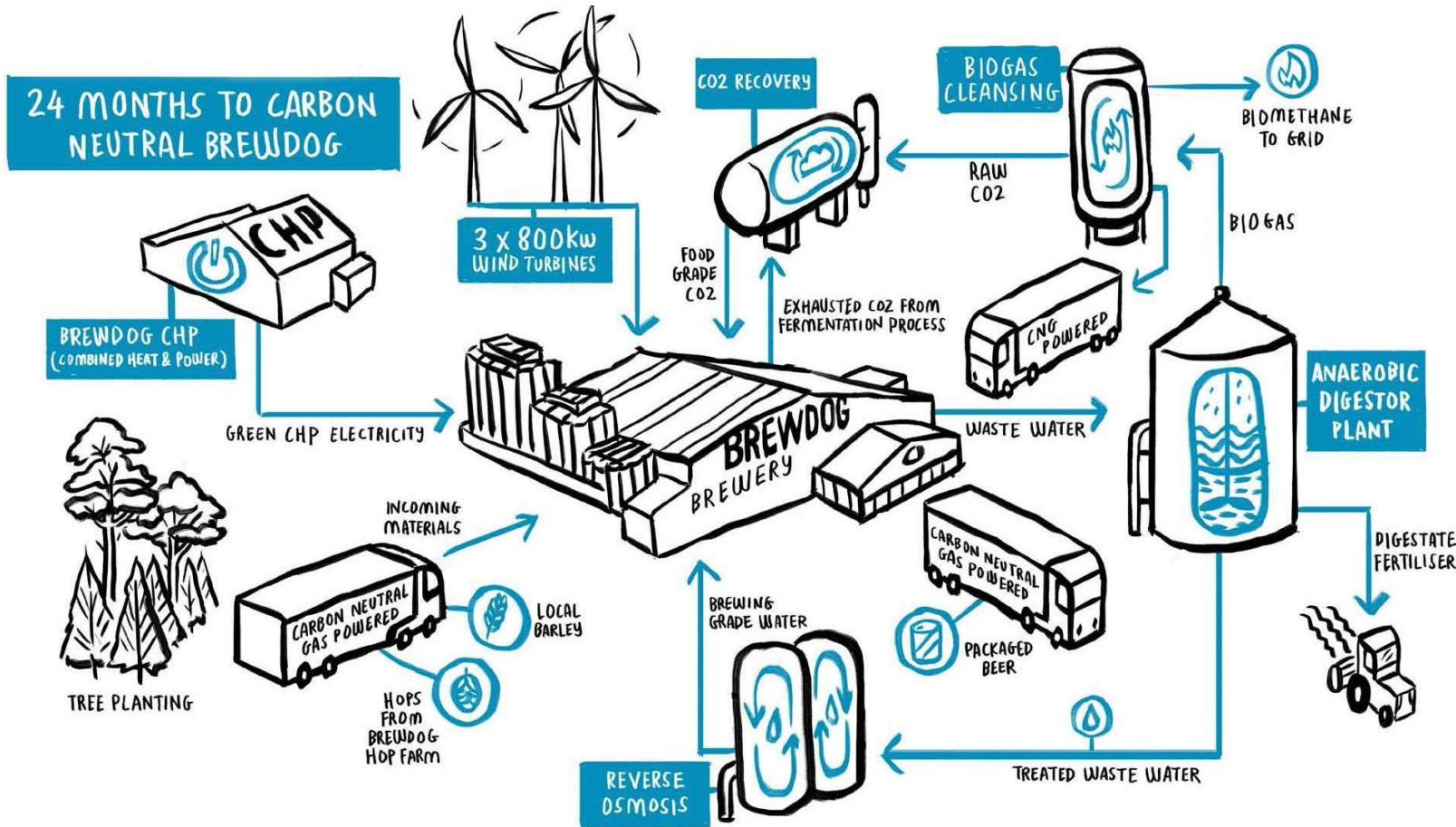




Zero Carbon Beer



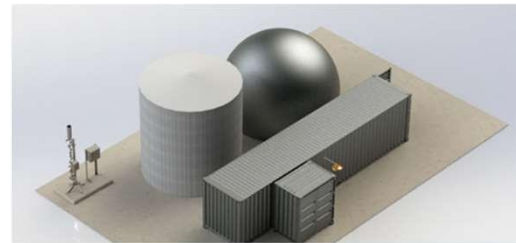
Food Sector Biogas Options



Multi-site emissions reduction potential

- **By-products** - aerobic solutions replaced by bio-energy
- **Energy** - fossil fuel replacement with on-site heat / power
- **Emissions** - significant emissions reduction potential
- **Clean Fuel** - BioCNG offers diesel replacement for HGVs.

Transition from larger to smaller / modular solutions



HEPWORTH

CRAFT BEER AT ITS BEST

SME Transition with Modular Systems

On-site biogas plus CO2 capture from craft brewery



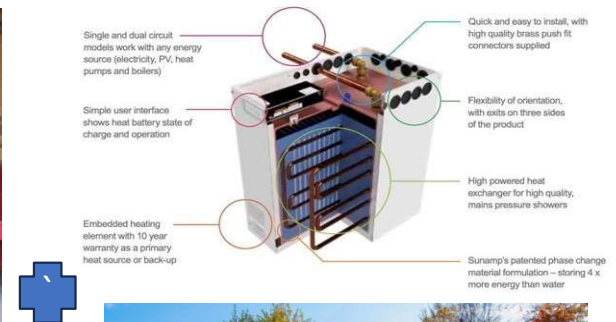
Biomass – Similar Opportunity?



Lower emissions for onsite industrial heat - BUT

- **Feedstock** - local or imported and chips or pellets
- **Demand** - local availability - recent price variability
- **Combine** - with CHP, heat pumps, battery plus biogas

Smaller, modular, integrated multi system solutions?



FARM OF THE FUTURE: JOURNEY TO NET ZERO

On-farm Low and Zero Carbon Renewable Energy



Rural Heating

Heat pumps - Air / ground / water source heat pumps to supply heating (and potentially cooling) for housing, plus farm buildings, polytunnels or processing.

Farm Vehicles

Pre 2030 - replace red diesel with clean fuels for non-road vehicles - zero emissions ICE power for cultivation / harvest operations.

Diesel Replacement

HGV's & large farm vehicles need low/zero carbon fuels, Inc. farm produced (off-grid) biomethane or biofuels and in time - hydrogen.

Nutrient Recycling

Digestates and composts used to recycle carbon and nutrients from farm and other bio-residues back to land.

Energy Storage

On-site power storage for excess renewables / cheap electricity in batteries (Inc. vehicle batteries - V2G), - also heat storage batteries.



SCAN ME

Rural Heating

Solar thermal - to supplement housing & farm (space/process) heat requirements, plus thermal storage.

Biomass Heat

Biomass energy (Inc. straw / wood) for space heating/cooling or requirements like grain drying or primary processing.

Anaerobic Digestion

Farm residues, crops & local food waste to supply natural fertiliser and biogas or biomethane (upgraded on or off grid), for heat and vehicle fuel.

Hydrogen Supply

Potential for on-site hydrogen production from excess renewables (wind / solar) for vehicle or other rural uses.

Novel Systems

vertical and advanced protected cropping systems combined with zero carbon energy - also suited to urban farming.