Utility scale biogas plants, a real opportunity now for regional Qld

Qld Farm Energy Technology Forum 16/2/16

Presented by: Fiona Waterhouse - Utilitas Pty Ltd CEO
Agenda

• What’s driving the deployment of Utility Scale Biogas Plants?
• The Biogas Utility Business Model
• What we are doing differently
• Case studies of existing projects
• Utility scale biogas projects – supporting producer cost reductions and expansion opportunities
• Call-out for “Anchor Tenants” & “Off-takers”
What's driving this now?

- Demand expected to grow 75%
- Producers need more energy and produce more waste
- Likely to trigger new environmental requirements to expand facilities
- Preference to direct their own capital to expand production
Sustainable Disposal Options

- Digestate
  - Fertigation (liquid)
  - Animal Bedding (solid)
  - Soil Conditioner (solid)
  - Fibre-based Products (solid)
  - Growing Medium (solid)
- Vermiculture

Flexible fuel source
~60% methane

"Bio-Battery"

Solid waste disposal

Pre-treatment Co-digestion

Sustainable Disposal Options

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<th>Pre-treatment Co-digestion</th>
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<td>Solid waste disposal</td>
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<td>Liquid waste disposal</td>
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<td>Biogas Upgrade (Bio-methane, BioCNG, BioLNG)</td>
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The Biogas Utility Business Model

- Conducive to Co-operative Approaches
- Biogas Upgrade (Bio-methane, BioCNG, BioLNG)
Utilitas
Biogas
Energy
Developer

Est. 2010

• Advanced Anaerobic Digestion - biogas upgrade, digestate upgrade, pre-treatment

• Proprietary process designs for recovering value from organic waste and wastewater

• "European style" "tank based" digesters, fully engineered process plants, Tier 1 equipment suppliers, experienced local contractors

• Co-operative approach to project development
Owner: Client owned project.
Location: Queensland, Australia
Throughput: Treats approximately 250KL/day of pig manure (13,000SPU) other organic residuals
Capacity: 200kWe (electricity)/286kWt (thermal)

200kWe is enough to power approximately 235 Queensland homes (ref: www.energymadeeasy.gov.au)
Type: European style “anaerobic digester tanks”. Continuously Stirred Tank Reactors (CSTR)
Purpose: Displace grid electricity on-site to reduce the businesses exposure to increasing electricity costs
Firsts: First application of tank based anaerobic digesters in agriculture in Queensland; First co-digestion project in Queensland
Stage: Operational. Connected to Ergon Electricity Network since April 2015
Contract: Engineering, Procurement & Construction Management (EPCM)
1.2MWe-10MWT Detailed Design

**Owner**  Client owned project.

**Location**  NSW, Australia

**Throughput**  3ML/day abattoir waste, 1500hpd cattle

**Capacity**  1.2MWe (electricity)/10MWt (thermal)

**Type**  European style “anaerobic digester tanks”. Continuously Stirred Tank Reactors (CSTR) & High Rate Anaerobic (HRA)

**Purpose**  Displace coal in boiler, reduce site wide carbon emissions, reduce other site emissions

**Firsts**  First abattoir in Australia to treat all organic waste streams on-site (solid and liquid)
Globally significant biogas project in both scale and scope

**Stage**  Detailed Design

**Contract**  Engineering, Procurement & Construction Management (EPCM)
Utility Scale Biogas Regional Projects

Owner: Utilitas + Local Partners + Financiers - Special Purpose Vehicles (SPV)

Locations: Lockyer Valley, Ipswich, Bundaberg, Brisbane, Sunshine Coast, Wide Bay, FNQ, Gulf Northern Rivers NSW, WA

Scale: >1MWe Installed Capacity, >500kLpd Wastewater, >100tpd Solid Organic Waste

Step 1: Map Biogas “Hot Spots” – Major Waste/Wastewater sources; Electricity grid-constraints; Planning

Step 2: Scoping Studies and RFP for “Anchor Tenants” and “Off-takers”

Step 3: “Bankable Feasibility Studies” which includes: securing the site (buy or lease arrangements), having planning and environmental approvals, network connection arrangements and waste and energy contracts in place with the major counterparties.

Contracts: Design, Build, Own, Operate, Maintain (DBOOM)

Biogas-As-A-Service – land, waste, wastewater, energy, fertiliser contracts with reliable counterparties wanting access to sustainable disposal, energy and fertiliser options & energy hedge
Call-out

"Anchor tenants" >0.5ML/d 100t/d /1MWe - co-location
• Food processors looking to expand
• Electricity – Power Purchase Agreement (PPA)
• Fuel – biogas, biomethane, bioCNG, bioLNG
• Waste collection and disposal
• Logistics supplier backload opportunities
• Local fertiliser options

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