

RFT 8757152 LA3839C - CFT - UCD Two-Stage Anaerobic Digestion System (TSAD)

Q1	Could you please confirm the required number of anaerobic digestion units/reactors?
A1	<i>The scope requires two (2) integrated bioreactor units/fermenters operating as a modular Two-Stage Anaerobic Digestion (TSAD) system.</i>
Q2	<i>What are the required total and working volumes for each reactor?</i>
A2	<i>Total Combined Working Volume: 110 litres. Stage 1 Fermenter: 30 litres working capacity. Stage 2 Fermenter: 80 litres working capacity</i>
Q3	<i>Which types of feedstock/materials are expected to be processed (e.g. agricultural waste, food-processing by-products, marine biomass, slurry, high-solids substrates)?</i>
A3	<i>The system will process natural land and sea resources, including agri-food processing by-products, food waste with solid particulates, agricultural slurry (e.g., pig slurry at 4–5% total solids), and waste streams containing up to 10% dry matter/total solids (TS).</i>
Q4	<i>What operating temperature range is required? Should the system support both mesophilic and thermophilic digestion?</i>
A4	<i>The system requires a heating and cooling duty to maintain operating fermentation temperatures between 25 °C and 60 °C, supporting both mesophilic and thermophilic operation.</i>
Q5	<i>What is the expected operating pressure of the digesters? Are the vessels required to operate under pressure or essentially atmospheric conditions?</i>
A5	<i>Vessels require no pressure equipment while operation, However, there shouldn't be any leaks from the reactors.</i>
Q6	<i>6. Is automatic pH control required, or only pH monitoring? Please also confirm the required process measurements, for example: pH temperature ORP pressure liquid level biomass/turbidity biogas flow CH₄ / CO₂ / H₂S composition</i>

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A6	<i>Automatic pH control is required via dedicated acid and alkali dosing pumps. Required Measurements: pH, temperature, oxidation-reduction potential (ORP), pressure, biogas flow rate, and real-time gas composition (CH₄, CO₂, H₂).</i>
Q7	<i>Is an integrated biogas collection and measurement system required? If yes, should gas composition analysis also be included in the scope?</i>
A7	<i>Yes. The system requires an integrated real-time biogas flow rate and gas analysis system (measuring CH₄: 0–100%, CO₂: 0–100%, and H₂: 0–100%), a gas treatment unit with moisture traps and H₂S removal filters, and a 3 m³ biogas collection bag.</i>
Q8	<i>Is automatic feeding and discharge required? If yes, could you indicate the expected feed characteristics, flow rates and whether solids-containing material must be pumped?</i>
A8	<i>Yes. Automatic pump dosing for feeding and discharging across batch, fed batch, or continuous modes is required. The system includes four (4) automated self-priming feed pumps delivering a precise dose of ≥4 kg/day, designed to handle solids mixture up to 10% TS (macerated) from storage to stage 2 digestate discharge.</i>
Q9	<i>9. Please confirm the required agitation system and whether variable-speed agitation is required.</i>
A9	<i>Yes. Top-mounted agitation systems are required for both Stage 1 and Stage 2 fermenters, featuring adjustable variable-speed rotation ranging from 5 to 250 RPM.</i>
Q10	<i>Is CIP or automatic cleaning required for the reactors and associated piping?</i>
A10	<i>Each reactor requires a single port on top to pass water or chemical cleaning solutions. An efficient Clean-in-Place (CIP) system designed for minimal water usage is listed as a desirable system requirement.</i>

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Q11	<i>Are any parts of the system required to comply with ATEX requirements due to methane/biogas production? If yes, please specify the required ATEX zone classification.</i>
A11	<i>All utility connections provided should be ATEX certified. Real-time laboratory alarms for methane leaks, H₂S leaks, O₂ depletion, and fire are required.</i>
Q12	<i>Please confirm the preferred materials of construction for the vessels and product-contact parts, e.g. AISI 316L stainless steel.</i>
A12	<i>Bioreactors: Stainless steel. Storage / Feed / Digestate Tanks: UV-stabilised polyethylene or steel. Biogas Bag: Multi-layer PVC-coated polyester or thermoplastic polyurethane (TPU).</i>
Q13	<i>What level of PLC/SCADA automation is expected? Is data logging, recipe management, historical trending and remote access required?</i>
A13	<i>A PLC-based control system with a touchscreen HMI is required. Features include real-time adjustment and visualization of pH/ORP/temperature/pressure/gas quality parameters, automated pump dosing/heating/mixer controls, and remote control/read-out via LAN using TeamViewer or equivalent application</i>
Q14	<i>Should the system allow data export and/or communication with external systems through protocols such as OPC UA?</i>
A14	<i>The system must include live data logging from all sensors and gas measurement devices with capability to export data files in CSV format. Remote read-out and control via LAN are required</i>
Q15	<i>Could you please confirm the utilities available at the installation site, including: electrical supply cooling water/chilled water compressed air water supply drainage ventilation/exhaust</i>
A15	<i>Electrical Supply: Standard 3-Phase electrical power connection is available at UCD. Utility Connections Required from Tenderer: Electric power, water supply, gas safety, dedicated pneumatic control cabinets (if pneumatics are used), and nitrogen gas connection for headspace purging ports</i>
Q16	<i>Regarding the required inspection and validation after installation, should the supplier provide formal SAT/IQ/OQ documentation, or only execute and document the listed verification tests?</i>
A16	<i>Formal FAT & SAT reports, engineering run validation, itemized HAZOP list, system safety manual, as-built drawings (P&ID, LE&I, electrical/pneumatic), and sensor calibration certificates.</i>

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Q17	<i>Does UCD require PED/CE certification for the pressure equipment and associated technical documentation?</i>
A17	<i>The system should comply with relevant safety and emissions regulations, including CE compliance and local environmental authority compliance.</i>
Q18	<i>Should installation, commissioning and operator training be included in the tender price? If yes, please indicate the expected number of training days/users.</i>
A18	<i>Yes. Onsite installation, commissioning, calibration, and training are mandatory inclusions in the proposal. Required training provisions include: Onsite Operational Training: Minimum 2 days for at least 4 laboratory staff at UCD Lyons Farm. Remote Software Training (Construction Phase): Minimum 2 days for at least 4 laboratory staff. Remote Software Training (FAT Phase): Minimum 2 days for at least 2 personnel covering mechanical, operational, and process control</i>
Q19	<i>Is there a required delivery and commissioning deadline for the complete system?</i>
A19	<i>Tentative delivery date is November/December. Commissioning deadline: December/January.</i>

