Agrivert is the market leader in the design, build and operation of sewage sludge processing facilities. We have over 20 years’ experience of providing sludge processing plants for the water industry and thus an extensive knowledge of sewage sludge dewatering, handling, storage, blending, polymer preparation, treatment and odour control.

All of our solutions are designed from the end product backwards and we are always keen to operate the plants we build. This ensures optimal design and is a significant market differentiator from standard engineering solutions.

**Differentiation through design**
Agrivert designs, builds, finances and operates sewage sludge treatment facilities, providing a wide range of engineering services and recycling solutions to the water industry. We have designed numerous dewatering, cake reception, sludge storage and liming facilities in the last two decades utilising our expert in-house design team. Agrivert have also delivered five of the most efficient Anaerobic Digestion facilities in the UK.

**Our design concepts are proven and effective**
We offer a complete package of sludge treatment solutions, including a range of silo feed systems, conveyors, centrifuges, thermal hydrolysis and anaerobic digestion systems which can be provided as upgrades or new installations. We also offer O&M support with turnkey projects and can deliver fully manned and managed, supervision only or ad-hoc intervention as required.

The breadth of our knowledge allows us to deliver an efficient integrated approach that can also include biosolid recycling services, allowing us to provide complete treatment and recycling contracts.

Our expert, in-house design and engineering team successfully integrate combinations of the highest quality equipment to produce robust and reliable processes with headroom capacity allowing for volume spikes and future growth.

**In the last 10 years we have delivered over 25 major infrastructure projects within the waste and water sectors.**

We have extensive experience in recycling organics to land; at the last count we had recycled a total of 9 million tonnes, making us one of the UK’s most experienced operators in this specialist field.
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DESIGNING, BUILDING AND OPERATING MARKET LEADING SEWAGE SLUDGE PROCESSING FACILITIES AND BIOSOLIDS RECYCLING
Bioresource supply (STC or STW)
Agrivert’s facility is located on the same site as the Sewage Sludge Treatment Centre (STC). It can receive indigenous Primary and Secondary sludges as well as liquid and cake imports.
Untreated Primary/Secondary sludge is dewatered at smaller satellite Sewage Treatment Works (STWs) in the locality of the STC. With Agrivert storage systems at these satellite sites, dewatered cake can be stored without odour, on site labour and plant is reduced and maximum payloads (28.5t) are achieved for onward transport.

Polymer preparation, dosing and storage
To successfully dewater sewage sludge, polymer must be added. Purchasing powdered polymer in bulk, instead of liquid or bags, significantly reduces costs. Agrivert’s polymer systems are designed to allow extended stirred maturation and include multiple injection points, ensuring optimal mixing, maturation and flocculation.

Sludge Dewatering, Thickening and Dilution
Power, polymer consumption and the target dry solids output are all considered prior to delivering a bespoke dewatering solution. Centrifuges, Belt Presses and Hydraulic Filter Presses are all available. Sludge is diluted for any THP process by pre-mixed Progressive Cavity Pumps to ensure optimisation of feed solids.

Sludge cake reception, conveying & cake storage
Bulk loads of up to 28.5t of dewatered cake are rapidly discharged into sealed cake reception bunkers in an odour controlled building, with no need for manual intervention or mobile plant. Sludge is conveyed from bunkers, via sealed screw conveyors, into storage silos. Sealed conveying systems ensure cleanliness, odour control and reliable handling. Storage silo capacities can range from 60-700t. Moving floors and screw conveyors meter the cake out of the silos in to the next part of the process. Vehicle loading is also carried out in an enclosed, odour controlled building.

Thermal Hydrolysis Plant (THP)
The Thermal Hydrolysis Plant uses steam and recycled energy from the CHP engines, to rupture sludge cells, ensuring maximum biological availability for Mesophilic Anaerobic Digestion. Using THP to prepare the sludge before digestion results in rapid and complete energy recovery. Excellent destruction of solids in the following AD process (often in excess of 50%) brings added downstream economic benefits for all outlet types.
Anaerobic Digestion

Mesophilic Anaerobic Digestion creates an environment in which cultures of micro-organisms are able to physically digest the organic matter. Large quantities of biogas, rich in biomethane, are produced and used to create renewable energy. This process efficiently destroys solids, significantly reducing the volume, and dramatically reducing the odour signature of the final dewatered biosolids.

Combined Heat and Power (CHP) electricity generators

Combined Heat and Power engines are used to combust the biomethane harvested from the AD process and drive an electrical generator to produce renewable energy. Heat produced by the engine is captured and used to provide heat for the THP and AD process. Cooling operations can also be employed when using a Combined Cycle Heat and Power unit (CCHP). The renewable power produced by the CHPs often qualifies for an energy subsidy and can also be supplied directly to the STC at a much reduced cost to retail power.

Gas to grid injection

Direct injection of biomethane into the National Grid can be undertaken instead of, or in conjunction with, CHP gas combustion. This represents a highly efficient use of biogas and is often reinforced with subsidised payment mechanisms. Biogas scrubbing removes the carbon dioxide leaving a methane-rich gas for entry to the grid.

Biosolids recycling in agricultural markets

Due to sludge destruction in the AD process, a 6% liquid is produced by the digesters. Dewatering is undertaken to increase the dry solids to c. 25-45%, producing a nutrient-rich organic fertiliser known as Biosolids. Bulk transport vehicles remove the Biosolids from storage silos and deliver to agricultural land where the product is spread onto the fields. In a strictly controlled and compliant operation, Agrivert’s Biosolids achieve the maximum benefit for minimum cost, supporting a circular economy for the planet’s depleting phosphate reserves and reversing long term depletion of organic matter in arable soils.

Biosolids recovery

In markets where a strong agricultural demand does not exist, energy recovery represents the best outlet for Biosolids. Utilising proven fluidised bed combustion plants, the dewatered Biosolids are further dried to an autothermic state and then combusted. Flue gas scrubbing ensures environmental compliance and exhaust heat is used to drive a steam turbine generating renewable energy. The residual ash can be further processed to recover Phosphate, enabling maximum utilisation of the Bioresource.