

Made possible



WASTE TO ENERGY

Waste Energy & Recycling Claims Catastrophes

The Waste to Energy industry has experienced a rapid expansion over the past decade that promises to continue as global energy needs increase. In this report we consider the typical problems faced by Waste Energy & Recycling projects, recent claims that have arisen and the reasons why these claims can cost so much.

Summary of the Typical Problems

Waste Composition

- The household waste that is sent to these facilities varies considerably and is not easy to predict.
- Mechanical Biological Treatment (MBT) Facilities use technology from Europe, where Waste to Energy has been used more widely. There is a different waste composition in Europe due to higher levels of recycling and means making adaptations to designs.

Design life

- MBT facilities are often required to have a design life of up to 25 years. The waste that households produces will vary considerably over this time period. What will the composition of the waste be in 25 years' time, and will the designs being produced today be able to cope with it?

Sensitivity of Anaerobic Digestion (AD) technology

- When AD technology is used, it uses micro-organisms to break down the waste and produce gas. Those micro-organisms are sensitive to temperature and light. If it gets too hot or cold, they will die. It means that AD technology can be very high maintenance, which makes it less reliable.

It smells

- Odour is the most common cause of public complaint about waste treatment facilities. There are limits on the levels of odour that a facility is permitted to produce.
- The underlying science behind odour control is not precise and is dependant, in part, on the composition of the waste.

Research and development in nature

- Projects are often research and development in nature but this is not reflected in the construction contracts in which typically the Insured will take on the full design responsibility and will also guarantee to meet a specified output.

Claim Catastrophes

Mechanical Biological Treatment Facilities

Waste Project A - £300M

The largest waste contract in Europe using MBT facilities & AD technology.

- **Problems with "sheep":** Sheep are accumulations of material that cause the waste to energy process to become blocked. Long stringy material (such as ribbon, rope, tape, shredded nappies etc) which combine together to form large masses that can weigh up to 100kg. They were caused by the inadequate design of the mechanical pre-treatment stage which did not adequately remove the stringy material from the sand traps.
- **Problems with the gas lances:** Rather than using a sandtrap, the slurry is mixed by pumping gas into it. The slurry is contained in "digester tanks", which include long gas lances. The gas lances weren't adequately supported, which caused them to buckle and for gas to escape into the atmosphere.
- **Problems with odour control:** Biofilter was designed to trap smelly air in a chamber full of an organic media (lava rock) which is coated in bacteria. The bacteria "eat" the odour. However, this only works if the smelly air stays in the chamber long enough for the bacteria to "eat" the odour. The design of the biofilter meant that the smelly air was able to by-pass the bacteria and so smelly air was released into the atmosphere.

Waste Project B - £60M

The construction & design of a MBT facility to treat domestic waste which included a CTM.

Problem with design of Facility: Much of the plant required remedial works due to the type of waste that was being supplied. There was a significantly higher proportion of plastic and a correspondingly lower proportion of organic material for which the MBT was intended.

Problem with Compost Turning Machine (CTM): Cross-beam failed resulting in CTM dropping to the floor resulting in the facility shutting for several months.

Composting Facility - £9m

There was substantial cracking to the concrete structure of a composting facility. Rectification involved demolition and rebuilding part of the structure causing significant delays.



Biomass Plants

Biomass Power Plants - £22m

The construction & design of 3 biomass power plants intended to produce energy from burning wood.

None successfully commissioned due to serious problems:

- Quality of the wood supplied (waste wood contains impurities such as nails/glue).
- Design and the operation of the plant - particular problems were encountered with the design of the ceramic tiles which lined the furnaces.

The plants had little residual value and the losses have been almost total and poor contractual certainty has resulted in the unenforceability of the Insured's terms of business resulting in increased liabilities.

Biomass waste energy plants - £16m

Waste wood to energy plants in the UK failed to reach practical completion or to pass commissioning because the technology (largely from continental Europe) did not work on the scale required.

Technology is new and untested and a number of the assumptions that underpin the design do not stand up in the UK setting. For example the waste composition, which underpinned the design required for the plant to operate at the capacity specified in the contract, was not able to be realised.

Biomass Energy - Raw Waste - £5m

A Biomass boiler required fuel in the form of raw waste. However the design was inadequate and did not comply with the Waste Incineration Directive (WID), which limited the amount of nitrous oxide and ammonia from the plant and imposed requirements relating to the disposal of ash.

The subcontractor who designed and supplied boiler went into liquidation and extensive remedial works were required in order to comply with contractual obligations & WID, delaying handover by over a year.

Why do the claims cost so much?

High liquidated damages (LD)

- E.g £107k per week.
- There is commercial pressure to increase caps on LDs in contracts. In one claim the banks threatened to terminate the contract and appoint a third party contractor to complete the works (which would have cost much more) if the Insured did not agree to increase its LD cap.

Sub-contracts have smaller liability caps

- Liability cap for subcontracts is often half the amount than in main contract.

Sub-contractors have insufficient insurance

- Subcontractor are more likely to have a smaller insurance programme.

Additional Tax & Environmental Directives

- Waste, Odour & Landfill directives can impose conditions on the level of waste, odour or other material that is omitted and how material is stored. The environmental agency has the power to require remedial works to be carried out.
- In one claim additional landfill tax of £100k per week was imposed until waste inputs reached a certain level.

Poor contractual certainty

- In one claim the terms of the contract were unclear leaving the Insured open to a higher limit of liability.