

THE DISASTER OF THE GOETTINGEN-DEIDERODE MBP / MBT PLANT

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SUMMARY: During the accident of the Deiderode MBP/T in January 2006, large parts of the plant were destroyed and the material damage amounted to approx. 10,000,000 Euros. Besides the material damage, the breakdown cost and is continuing to cost up to seven-digit sums in Euro up to this point (beginning of April 2007). To find out the cause of damage and to ascertain who will pay the costs, the operator of the MBP/T, the "Abfallzweckverband Südniedersachsen" ("AS" for short), has arranged for independent proceedings for the taking of evidence at the Göttingen Regional Court ("Landgericht Göttingen"). Until now, this process advances very slowly, so that the cause of the accident has not finally been cleared up by the expert witnesses. The author Wolfgang H. Stachowitz, who, in this case, acts as an expert for the Gothaer insurance company of the AS, excludes an explosion as the cause. It appears as if the cause can be found in the interaction of several small deviations from the normal operation and normal design respectively. In April 2006, the author Wolfgang H. Stachowitz has submitted a corresponding interim report to his customer.

1. INTRODUCTION

On Saturday, 21st of January 2006, at approx. 5.30 h, an accident occurred in the South-Lower Saxony mechanical-biological waste pre-treatment plant (MBP/T) of the Abfallzweckverband Südniedersachsen in Deiderode near Göttingen, involving heavy damage.

The MBT consists of a mechanical part where predominantly the shredding, screening and classification of household and household-type waste takes place and of a biological part where the organic components of the waste are fermented. Via two CHP units, the obtained gas should be converted into electricity. At the time of the accident, the MBT was in the phase of so-called partial start-ups, carried out by the main contractor, AMB Vertriebs GmbH from Bremen, Germany.

In order to find out the cause of damage and those responsible, AS filed through its legal representative, the Gaßner, Groth, Siederer & Coll. solicitor's office, Berlin, an application for an order of independent proceedings for the taking of evidence in accordance with para. 485 of the Civil Process Order (§ 485 German ZPO) on January 31st, 2006, at the Göttingen Regional Court (Landgericht Göttingen) which, at the time of publication, was not completed. The respondents are all companies and engineering offices involved in the construction and planning. The findings applied for are directed both to the deficiency and damage assessment on the buildings and civil works, ground works, and to damage and damage assessments on the operational buildings and facilities.

The first experts of the insurance companies involved (among those the author, Wolfgang H. Stachowitz) visited the plant already on Monday 23rd and Tuesday, 24th January 2006, to get an

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overview of the damage.

The author, Wolfgang H. Stachowitz, managed to be at the location of loss within a relatively short period of time, as on January 23rd and 24th, he carried out safety-related checks and inspections for the biogas plant in Jühnde, which is situated at approx. 10 km from the Deiderode location of loss.

2. DESCRIPTION OF THE PLANT

The South Lower Saxony MBT is designed for an input of approx. 130,000 t of waste per annum, whereof approx. 86,000 t of waste are rich in organic substances (AMB, 2005).

Subsequent to mechanical processing, consisting mainly of shredding, screening, classification and metal separation, the fine fraction enriched with organic substances is mixed with process water and supplied into a pulper. Subsequently, floating matters and sediments are removed from the thus obtained substrate which, via blending tanks, is then supplied to fermentation. Furthermore, three fermenters made of enamelled steel were installed on the plant, each with a volume of 4,500 m³. The fully fermented substrate is after treated in a wet oxidation with subsequent dehydration and drying (AMB, 2005).



Figure 1. The three fermenters during the construction phase (Abfallzweckverband Südniedersachsen, 2005).

The plant was designed for the production of 6,000,000 m³ biogas per annum, which should be converted into electricity with two motors à 625 kW_{el}. The exhaust heat of the motors is intended

for the heating of the fermenters and for the drying.

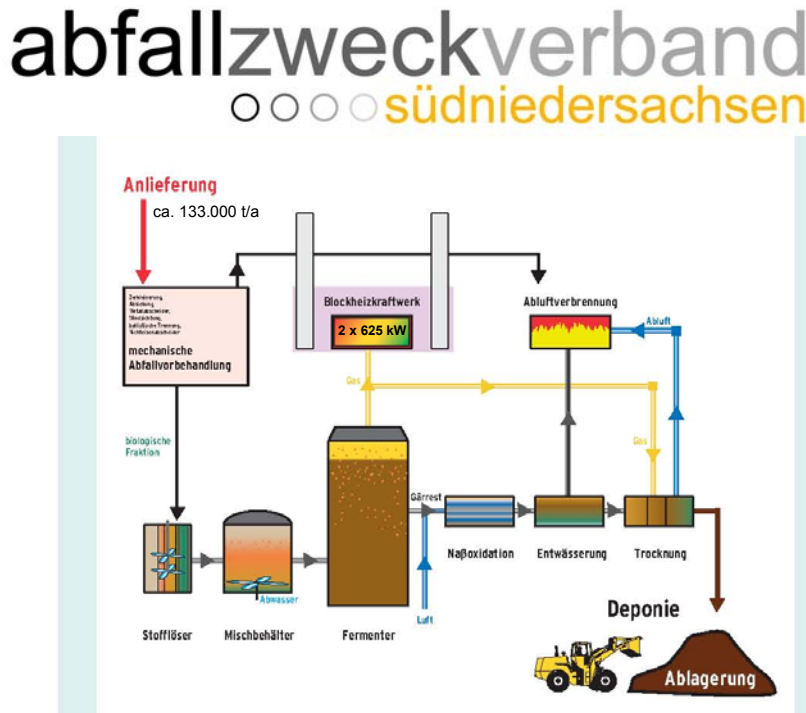


Figure 2. Diagram of the MBT process at the MBT plant South Lower Saxony (Abfallzweckverband Südniedersachsen, 2006).

3. DAMAGES

At the time of the accident, the MBT was in the phase of partial start-ups, carried out by the companies involved in the construction, under the responsibility of the main contractor. The first fermenter was filled with 4,500 m³ of substrate (waste to a small extent and inoculation substrates from biogas and sewage gas plants) and already produced rich biogas, meaning biogas with methane concentrations far above the upper explosive limit (UEL) of methane-air mixtures. The second fermenter was filled with 2,500 m³ of rainwater for a leak test, and the third one was empty, because it had failed the leak tests. During the accident, the contents of the fermenters poured over the entire grounds of the MBT. Parts of the MBT were affected or destroyed by rubble and the emptied contents of the fermenter.

Fortunately, nobody was injured, as the accident happened on an early Saturday morning. If the disaster had occurred during the day, people would certainly have been injured, as many employees would have been present on the grounds of the plant and also near the damaged part to carry out assembly works or start-ups.

The damage is thus limited to the direct damage on the plant and to indirect damages as caused by the breakdown of the plant.

3.1 Material damage

During the accident, two of the three fermenters were completely destroyed. The third fermenter was pulled out of its anchor in the foundation and moved over 10 m. Most probably, it did not

collapse because it was empty.

The CHPs were crushed and "buried" by the rubble of the first and the second fermenter.



Figure 3. Aerial photo of the MBP-/ MBT-plant after the accident, showing the drawn layouts of the parts of the plant

Rubble and / or the outflow fermenter contents destroyed the blending tanks, the machine house, the wet oxidation, the waste gas cleaning and the biological sulphur removal. One laboratory container was flushed away. In addition, damages to the halls, on the infrastructure and on the machines of the MBT could be ascertained.

The material damage will amount to approx. 10 million of Euros.

3.2 Further damages

As a result of the breakdown of the MBT caused by the accident, the Abfallzweckverband Südniedersachsen was not able to meet its obligations, namely the treatment and disposal of waste. Since the accident, parts of the waste are stored intermediately, and other parts are treated by other waste management companies. The latter was enabled only by a Europe-wide call for bids.

In addition, further financial damages occur through the clearance of the plant and the financing which can no longer be fulfilled, etc.

The damage to the environment was estimated to be low, as the emerging substances were mainly water and, to a small extent, biologically easily degradable matters.

4. INDEPENDENT PROCEEDINGS FOR THE TAKING OF EVIDENCE

4.1 Sequence

The German Civil Process Order (ZPO) offers independent proceedings for the taking of evidence for the acceleration and simplification of legal matters, also aiming to release the courts, to secure evidence of certain circumstances in the short-term, and to determine the cause of the latter and remedy possibilities including the possible costs, in a qualified and legally acceptable manner. For this purpose, the instructed experts are not chosen by the parties or even by only one party, but publicly appointed and remunerated by the court. The appointed experts serve as "evidence" in the lawsuit (visual evidence), their ascertainments and assessments are considered to be facts by the law.

In practice, independent proceedings for the taking of evidence are usually initiated in the event of damages and a loss, on application, to enable fast securing of the facts and minimise downtimes. Both the future plaintiff and the future defendant have the right to recommend experts for the public appointment to the court. In order to avoid complications, only those experts are usually appointed who are accepted by both parties.

In the case of the accident at the Südniedersachsen MBT plant, several experts were appointed in mid-February by the Göttingen Regional Court because of the complexity and extent of the damage. One expert acts as the chairperson who will co-ordinate the judicial expert activities.

4.2 Delays

On account of the complex correlations and the difficulty to find an agreement about the payment of the expert witnesses, the independent proceedings for the taking of evidence take a very long time. This delay leads to a further increase in the consequential damage for the operator AS, as the MBT could not be cleared. The waste thus needs to be disposed of elsewhere over a longer period of time than envisaged. Therefore, the entertained idea of a new building at the present site cannot yet be scheduled.

Examples for delays:

- * Aerial photos for the determination of the field of rubble were only taken in autumn 2006
- * Data securing and searching of stored data respectively of the instrumentation and control systems was only implemented at the beginning of March 2007.

5. CAUSES OF THE ACCIDENT

In connection with the accident, the media and some "experts" brought up the term "explosion" again and again. On closer consideration of the damage symptoms however, it becomes clearly visible to everybody that, in all probability, deflagration or even an explosion can be excluded. But now as before, the alleged explosion is discussed as the cause, especially by ignorant, but also by well-informed circles which, with such an explanation, could pursue own interests.

6. CONCLUSIONS

The cause of the MBT plant Deiderode accident is not finally cleared. Currently, an explosion as the cause can be excluded with the utmost probability.

The total loss caused by the accident amounts to more than 10 million of Euros.

The proceedings for the preservation of evidence advance slowly. This results in further costs for

all parties involved.

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