Verspreiding: Beperkt

Opinion on Ramboll's ISVAG Report

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In view of the plans of ISVAG to establish a new Waste-to-Energy plant, Prof. Dr. Karl Vrancken (VITO, UAntwerpen) participated in an expert panel session on 29-30 August 2016. At this meeting, Ramboll presented its analysis and advice concerning the new installation. The expert panel had the opportunity to ask questions and discuss Ramboll's analysis. This note reports the opinion of Prof. Vrancken about the Ramboll report and its conclusions. It is based on the information that was provided both in writing and orally by ISVAG and Ramboll between 1 August 2016 and 7 September 2016. Any element of the ISVAG-project that was not provided in the information exchange in the stated period, has not been considered in the present opinion.

The proposal considers the construction of a new waste-to-energy plant for the treatment of the residual fraction of municipal solid waste, as generated by the ISVAG partner communities. This fraction is the rest fraction of an intensive source separation approach, that has been implemented in the Flemish region over more than 25 years. The existing approach of source separation is considered to be a fixed framework condition, i.e. it is not foreseen that the collection system would be redesigned in such a way that major changes in the waste composition and quantity can be expected. This means that the treatment plant should be designed to treat a residual fraction of municipal solid waste from which all (easily) recyclable fractions have been removed. Minor adaptations to the source separation and collection system (e.g. increased separate collection of specific plastics types or a more intense collection of biodegradable waste) may cause a slight variation over time in the calorific value and the amount of waste collected.

Possible waste generation scenarios have been discussed in a previous study (Deloitte, 2016). Ramboll proposes to use the minimal scenario (scenario 4) as a basis for the design of the nominal capacity of the new installation. We agree with this approach, which combines a further reduction of the rest fraction both for Antwerp and the partner communities with a realistic evolution of the population growth. The amount of residual waste per capita is in line with the OVAM Draft Waste Management Plan (Ontwerp Uitvoeringsplan Huishoudelijk Afval en Gelijkaardig Bedrijfsafval, 2016) for the city of Antwerp (197 kg/inh.) and goes beyond the OVAM goals for the surrounding communities (105 kg/inh). The capacity planning thus takes into account further efforts at local level to stimulate recycling and minimise the amount of residual waste. The calorific value of the waste can be expected to remain in the range 9.0-10.0 MJ/kg.
Within the current Flemish policy context, focus for residual waste treatment is on minimising (global) impact on environment and human health, including optimisation of energy recovery and material recuperation. The OVAM Draft Waste Management Plan does not include any indications that this framework will change in the next decade.

Concerning the technology choice, Ramboll proposes to opt for a grate furnace with energy recuperation (electricity + heat). We agree with this choice, given that the following side conditions apply for this case:

- Existence (or expansion) of collection system with optimised separation at source
- Final treatment (recovery) of the residual fraction of municipal solid waste and bulky waste (grof vuil)
- Waste to be treated has great heterogeneity within each batch and over time

- Waste to be treated has an amount of inert materials between 15 and30%
- System needs to be reliable and flexible over the operational period of 20 years, considering possible variations in calorific value and tonnage
- Investment to be carried by public budget
- The selected location for the installation, in the centre of the waste collection region with good access by truck and on a main access road to Antwerp
- Optimisation of energy production in the form of electricity and heat

On basis of the aforementioned side conditions and our knowledge of the technological status of grate incineration and alternative thermal treatment technologies, we agree with Ramboll's choice for a grate incineration furnace.

The new installation will recover energy from the waste in the form of both electricity and heat. We consider it critical for the project that, besides electricity production, heat will be recovered and delivered to external users. This can be done in the form of distance heating networks for dwellings or useful heat for industrial users. The ongoing VITO-study on heat recovery scenarios will provide further insight in the economic and technical viability of this process. From an energy management and market perspective, it is not preferable to focus the energy recovery on only electricity or only heat.

The flue gas cleaning system needs to have a similar performance as the existing one and must be in line with the best available techniques (BAT) associated environmental performance levels as mentioned in the BREF Waste incineration (WI BREF). Key environmental issues in the context of this WI BREF review are (at least) NO_X, NH_3, Hg, PCDD/F. From this perspective, the new ISVAG installation should already foresee possible tightening of the BAT associated emission levels and consider this in the design of the flue gas cleaning system.

The incineration residues are collected and transferred to an external contractor for further treatment. The Ramboll report remains relatively short on this issue. From an optimised waste management perspective, considerable attention should be given to the recycling of metals and minerals from the bottom ash fraction. The recovery of ferrous and non-ferrous metals and the recovery of the mineral fraction into construction materials is BAT. New techniques are under development to increase the value of the recycled mineral fraction, and make it suitable for use in bonded applications (e.g. concrete). Given the produced volumes of bottom ash, it is not economically viable to set up an individual bottom ash treatment plant at the ISVAG site. However, in the selection of the contractor for bottom ash treatment, optimisation of the materials recovery should be the main criterion. The boiler ash, fly ash and flue gas cleaning residue should be collected and treated in line with the existing environmental legislation. This includes stabilisation and disposal under appropriate landfilling conditions.

Taking into account all the above considerations, we have the opinion that the report made by Ramboll presents a thorough and technically well-performed analysis and evaluation of the requested concept. The followed approach of external evaluation by an expert panel is considered very useful and shows that ISVAG is taking the decision process very seriously.