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Optimizing Non-Ferrous Metal Value from MSWI Bottom Ashes

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ABSTRACT

The bottom ashes resulted annually from the incineration of municipal solid waste in Europe contain about 400,000 tonnes of metallic aluminium and 200,000 tonnes of heavy non-ferrous metals, such as copper and zinc. Efficient recovery of this non-ferrous metal resource requires state-of-the-art separation technologies and a continuous feedback of laboratory analyses of the metal products and the depleted bottom ash to the operators of the bottom ash treatment plants. A methodology is presented for the optimization of the production of non-ferrous metal value from Municipal Solid Waste Incinerator bottom ash. Results for an incineration plant in the Netherlands show that efficient recycling can have a significant impact on value recovery as well as on non-ferrous metal recycling rates, producing up to 8% more revenue and 25% more metals from the ash.

KEYWORDS

Urban Mining, Solid Waste, MSWI Bottom Ash, Non-Ferrous Metals

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References

- [1] EU Statistics, " Structural Indicators: Municipal Waste," 2007. <http://Europe.eu.int>.
- [2] L. Muchova and P. C. Rem, " Hydrogen from Bottom Ash," In: A. Kungolos, K. Aravossis, A. Karagiannidis and P. Samaras, Eds., *Proceedings of the International Conference on Environmental Management Engineering, Planning, GRAFIMA, Thessaloniki, 2007*, pp. 1895- 1900.
- [3] Y. Hu and M. C. Bakker, " Recovery and Distribution of Incinerated Aluminium Packaging Waste," Submitted to *Waste Management*, 2010.
- [4] Public Consultation of the European Union, 2006.
- [5] L. Muchova, " Wet Physical Separation of MSWI Bottom Ash," TU Delft PhD Thesis, 2010.
- [6] W. de Vries, P. Rem and P. Berkhout, " ADR: A New Method for Dry Classification," *Proceedings of the ISWA International Conference, Lisbon, 12-15 October 2009*, p. 103.
- [7] J. M. Chimenos, M. Segarra, M. A. Fernandez and F. Espiell, " Characterization of the Bottom Ash in Municipal Solid Waste Incinerator," *Journal of Hazardous Materials*, Vol. 64, No. 3, 1999, pp. 211-222. doi:10.1016/S0304-3894(98)00246-5
- [8] G. Schmelzer, S. Wolf and H. Hoberg, " New Wet Treatment for Components of Incineration Slag," *Aufberceitungs-Technik*, Vol. 37, No. 4, 1996, pp. 149-157.
- [9] L. Muchova, E. J. Bakker and P. C. Rem, " Precious Metals in Municipal Solid Waste Incineration Bottom Ash," *Water Air Soil Pollution*, Vol. 9, No. 1-2, 2009, pp. 107- 116. doi:10.1007/s11267-008-9191-9
- [10] P. C. Rem, C. de Vries, L. A. van Kooy and P. Bevilacqua, M. A. Reuter, " The Amsterdam Pilot on

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[11] BREF Waste Incineration, " Integrated Pollution Prevention and Control: Reference document on the