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Separation of non-ferrous metals from ASR by corona electrostatic separation

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Automotive shredder residue (ASR), the residual fraction of approximate 25% obtained after dismantling and shredding from waste car, consists of polymers (plastics and rubber), metals (ferrous and non-ferrous), wood, glass and fluff (textile and fiber). ASR cannot be effectively separated due to its heterogeneous materials and coated or laminated complexes and then largely deposited in land-fill sites as waste. Thus reducing a pollutant release before disposal, techniques that can improve the liberation of coated (or laminated) complexes and the recovery of valuable metals from the shredder residue are needed. ASR may be separated by a series of physical processing operations such as comminution, air, magnetic and electrostatic separations. The work deals with the characterization of the shredder residue coming from an industrial plant in korea and focuses on estimating the optimal conditions of corona electrostatic separation for improving the separation efficiency of valuable non-ferrous metals such as aluminum, copper and etc. From the results of test, the maximum separation achievable for non-ferrous metals using a corona electrostatic separation has been shown to be recovery of 92.5% at a grade of 75.8%. The recommended values of the process variables, particle size, electrode potential, drum speed, splitter position and relative humidity are -6mm, 50 kV, 35rpm, 20° and less 40%, respectively.

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