



Treatment of a forging industry graphite-rich wastewater and sludge characterization

Viviana Nedel Reckziegel^{a,*}, Renan Fernando Tresoldi Thiesen^a,
Eduardo Osório^b, Ivo André Homrich Schneider^a

^aLaboratory of Mineral and Environmental Technology, Department of Mining Engineering, Federal University of Rio Grande do Sul, Av. Bento Gonçalves, 9500, CEP: 91501-970, Porto Alegre, RS, Brazil, Tel. +55 51 33499388; email: viviana.reckziegel@gkndriveline.com (V.N. Reckziegel), Tel. +55 51 33087881; emails: renan.ftt@gmail.com (R.F.T. Thiesen), ivo.andre@ufrgs.br (I.A.H. Schneider)

^bLaboratory of Siderurgy, Department of Metallurgical Engineering, Federal University of Rio Grande do Sul, Av. Bento Gonçalves, 9500, CEP: 91501-970, Porto Alegre, RS, Brazil, email: 00098920@ufrgs.br

Received 27 October 2017; Accepted 26 March 2018

ABSTRACT

The objective of this work was to study wastewater treatment and characterize sludge generated at a forging industry using a water-based graphite lubricant. Initially, wastewater was treated by coagulation/flocculation with poly-aluminum chloride and a cationic flocculant. The treatment substantially reduced the pollutant load, exceeding the efficiency for most parameters assessed by 90%. The sludge generated in the wastewater treatment plant was characterized in terms of microstructure, particle size distribution, chemical and mineralogical composition, and by immediate analysis as a solid energetic material. The sludge is composed of mainly graphite particles and, after dehydration, resulted in a material with possibilities for safe discharge, recycling or reuse.

Keywords: Sludge; Water treatment; Graphite; Forging

* Corresponding author.

Presented at the 5th International Conference on Sustainable Solid Waste Management (ATHENS 2017), 21–24 June 2017, Athens, Greece.

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