Pengaruh proses pelindian roasted product ferronickel slag dengan variasi 6 dan 8 m konsentrasi agen pelindi naoh terhadap perolehan logam nikel = The effect of 6 and 8 m naoh concentration to the recovery of nickel from roasted product ferronickel slag by leaching process

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Abstrak

Penelitian ini dilakukan dalam dua tahap proses. Pada proses tahap pertama, sampel slag feronikel dicampur aditif Na2CO3, digiling, dikompaksi, dan dibakar sebagai proses benefisiasi sampel untuk melihat perubahan senyawa dan kadarnya yang kemudian dibandingkan dengan slag awal. Variabel yang digunakan adalah 80 % slag : 20 % aditif, digilling dalam ball mill selama 1 jam, dikompaksi dengan beban 3 ton, dan dibakar dalam temperatur 1100oC. Dalam kondisi ini, ditemukan perubahan kadar elemen pada karbon, oksigen, dan natrium. Pada proses tahap kedua, pelindian sampel slag feronikel hasil proses benefisiasi menggunakan natrium hidroksida dilakukan dan pengaruh variabel bebas, yaitu konsentrasi agen pelindi NaOH dan waktu pelindian. Lalu, variabel tetap meliputi kecepatan pengadukan, temperatur pelindian, dan rasio solid/liquid. Hasil dari proses tahap kedua diuji dengan karakterisasi XRD dan SEM-EDS untuk sampel residu, dan ICP-OES untuk sampel filtrat. Pada penelitian kali ini, kondisi optimal ditemukan pada konsentrasi NaOH 6 M, waktu pelindian 6 jam untuk mendapat % recovery Nikel tertinggi.

.....This study was investigated in two stages of the process. In the first stage of the process, ferronickel slag samples were mixed with additive Na2CO3, milled, compacted, and roasted as a beneficiation process for samples to see changes in their compounds and contents which are then compared to the initial slag. The variables used are 80% slag: 20% additives, grounded in a ball mill for 1 hour, compacted with a load of 3 tons, and roasted at 1100oC. Under these conditions, changes in elemental contents in carbon, oxygen, and sodium were found. In the second stage of the process, leaching of ferronickel slag samples from the beneficiation process using sodium hydroxide was held and effect of independent variables: concentration of NaOH as leaching agent and leaching time. Then, fixed variables include stirring speed, leaching temperature, and solid / liquid ratio. The results of the second stage of the process were tested by XRD and SEM-EDS for residual samples, and ICP-OES for filtrate samples. From this research, optimal condition was found at 6 M NaOH concentration and 6 hour leaching time to get the highest % recovery of Nickel.