

ANALISIS UNSUR FE DAN SI DALAM *BOILER STEAM* DENGAN METODE SPEKTRIFOTOMETRI UV-VISIBLE

ABSTRAK

Telah dilakukan penelitian mengenai analisa kandungan Fe dan Si pada *boiler steam* di PLTU Pangkalan Susu Brandan dengan metode spektrofotometer UV-Vis. Penelitian ini dilakukan untuk mengetahui kandungan logam besi pada *feed water* dan kandungan silika pada *boiler water*, *saturated steam*, *superheat steam*, dan *condensate water*. Hasil penelitian konsentrasi kandungan logam besi berkisar antara 0,011-0,031 ppb dengan standar mutu dari perusahaan yaitu 2 ppb. Dari data tersebut, di dapatkan nilai korelasi r yaitu sebesar 0,996 dengan persamaan $Y = 18,907x + 0,0375$ dan panjang gelombang maksimum untuk pengukuran nilai Fe dengan metode spektrofotometer UV-Vis sebesar 510,4 nm. Data hasil penelitian silika dengan menggunakan metode spektrofotometer UV-Vis di bagian *boiler water* sebesar 116-243 ppb dengan standar mutu perusahaan < 900 ppb. Konsentrasi pada bagian *saturated steam* berkisar antara 0,7-3,1 ppb dengan standar mutu dari perusahaan <10 ppb. Konsentrasi *superheat steam* berkisar antara 0,8-2,81 ppb dengan standar mutu perusahaan < 20 ppb dan konsentrasi silika pada *condensate water* berkisar antara 0,8-3,31 ppb dengan standar mutu dari perusahaan < 10 ppb. Jadi keseluruhan data konsentrasi silika yang didapatkan, sudah sesuai dengan standar mutu yang telah ditetapkan oleh perusahaan.

Kata kunci : Besi, Silika, Boiler Steam, Feed Water, Spektrofotometer UV-Vis

ANALYSIS OF FE AND Si CONTENT IN STEAM BOILER BY UV-VISIBLE SPECTROPHOTOMETRY

METHOD

ABSTRAC

Research has been carried out on the analysis of Fe and Si content in the steam boiler at PLTU Pangkalan Susu Brandan with UV-Vis spectrophotometer method. This research was conducted to determine the content of ferrous metal in feed water and silica content in boiler water, saturated steam, superheat steam, and condensate water. The results of the study showed that the concentration of iron metal content ranged from 0.011-0.031 ppb with the company's quality standard of 2 ppb. From these data, the correlation value of r is 0.996 with the equation $Y = 18.907x + 0.0375$ and the maximum wavelength for measuring the value of Fe using the UV-Vis spectrophotometer method is 510.4 nm. The results of silica research using the UV-Vis spectrophotometer method in the boiler water section are 116-243 ppb with company quality standards < 900 ppb. The concentration in the saturated steam section ranges from 0.7 to 3.1 ppb with quality standards from the company < 10 ppb. The superheat steam concentration ranged from 0.8-2.81 ppb with the company's quality standard < 20 ppb and the silica concentration in the condensate water ranged from 0.8-3.31 ppb with the company's quality standard < 10 ppb. So the overall silica concentration data obtained is in accordance with the quality standards that have been set by the company.

Keyword : ferrous, Silica, Boiler Steam, Feed Water, Spectrophotometer UV-Vis