

KAJIAN EKSPERIMENTAL TERHADAP NATRIUM SILIKAT BERBASIS NANOSILIKA DARI LUMPUR LAPINDO SEBAGAI INHIBITOR KOROSI PADA *DUCTILE CAST IRON*

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ABSTRAK

Telah dilakukan penelitian mengenai natrium silikat berbasis nanosilika dari lumpur Lapindo sebagai inhibitor korosi pada ductile cast iron. Pada penelitian ini dilakukan 3 metode sintesis natrium silikat, yaitu dengan melakukan ekstraksi senyawa nanosilika dari lumpur lapindo untuk kemudian disintesis menjadi natrium silikat, serta 2 metode lainnya dengan mereaksikan serbuk lumpur dengan 50 ml NaOH 7 M atau dengan NaOH 10 M pada temperatur 90°C. Diperoleh bahwa silika hasil ekstraksi telah berhasil berukuran nano, yaitu sebesar 95 nm dengan analisi perhitungan menggunakan persamaan scherrer dan 3,19 nm dari pengujian menggunakan SEM dan analisis software image-J. Selain itu inhibitor natrium silikat sintesis mampu menahan laju korosi hingga 0,115 mpy, dengan efisiensi natrium silikat tertinggi sebesar 95,35%. Berdasarkan pengujian korosi dengan media air garam (NaCl 3,5%) diperoleh bahwa hanya perlu 2 ml inhibitor natrium silikat hasil sintesis untuk mencapai efisiensi yang sama dengan 6 ml inhibitor natrium silikat komersial dan 8 ml inhibitor referensi (Aditya, 2014).

Kata Kunci : nanosilika, inhibitor, natrium silikat, korosi, efisiensi.

DESIGN OF MEASUREMENT SYSTEM OF SEDIMENTATION SLUDGE BASED ON ULTRASONIK WAVES AND ARDUINO MICROCONTROLLER

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ABSTRACT

In the industrial world, there are water tanks (reservoirs) that serves as supplay water for power generation. In the rainy season the water naturally shelters will suffer as a result of sedimentation silting mud settles and causes silting of reservoirs that would affect changes in reservoir capacity of the reservoir. Therefore, tools are needed that can measure the height of the sediment in the water reservoir. In the final project titled design sludge sedimentation measurement system at the shelter as a reservoir water level of cost efficiency efforts and time. With the design of sedimentation sludge measurement system using Arduino microcontroller as well as control data processing on HC SR04 ultrasonic sensor and a potentiometer 10k barrier. measuring instrument can measure the sedimentation of mud above the water surface to the top surface of the sediment. Measurement is done by displaying the measurement results of sedimentation, sediment mud gauge has two ultrasonic measuring devices namely HC SR04 and Potentiometer 10k, of these two devices have the accuracy that has been accounted for, such as HC SR04 ultrasonic accuracy error is 0.75% and the accuracy of the potentiometer 10k is 0.85%.

Keywords: *Sedimentation, Potentiometers, Ultrasonic and Microcontroller.*