Biorock anode experiment

Biorock® technique is the earliest methods to rehabilitate the damage of coral reef ecosystem. Its improvement is need to carry on since it is subject to some inhibitions in particular the dependence of expensively-imported Titanium (Ti) as the anode materials. The main purpose of this research was to find the best anode material as a possible substitution which can be economically and easily to apply in Indonesia. Therefore we compared Titanium (Ti) with two other potential anodes material (Magnesium-Mg, and Aluminum (Al). The laboratory study was carried out for two days period (48 hours) in the stagnant sea water aquaria. Four aquarium tanks were treated by different electric current treatment (1 Ampere, 2 Ampere, 3 Ampere, and 5 Ampere, respectively). The reduction of electrode weigh (anode and cathode) was measured. During the experiment, water quality (i.e. pH, and salinity) and mineral waters (calcium) were collected every 6 hour in 48 hours. The solid form of calcium carbonate was analyzed using XDS (X-ray Dispersion Spectrophotometer). The acccretion rates on cathode and anode decay were compared between anodes which were treated by different electrical current. Based on the study, three anodes (aluminum, magnesium and titanium) showed different respond. Titanium and Magnesium anode showed electric current affected accretion rate (P < 1), while for aluminum anode showed no differences on treatments.

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