Bumping & Reversing Wave Energy Generating System (BRES): Energy Generating System with Often Wasted Wave by Applying Principle of Interference and Rip Current

Lee, Chan

We often cast the energy from wave coming parallel with monotonous coasts or the small wave from many apparatuses because of the low wave height. However, this study designed an energy generating system that can generate energy even with a small wave by heightening the wave height with no additional energy, by applying the wave interference and the principle of rip current to the existing system. Based on the design, a minimized version was produced. The 1st and 2nd slits which have 1 pit and 2 pits each were manufactured and were set in front of the basic cast. Behind the slits, geographic components such as slope, topological bar, and rip current gate were added. Based on this structure, when a wave parallel with the system (coast) meets the 1st slit (levee), a diffraction wave forms behind the 1st slit and the wave makes a constructive interference wave in the center of the basic cast. While the generator generates energy with the interference wave, the waves (except the interference wave) go over the topological bar and piles. When the wave fully piles, the rip current gate below the generator opens. Consecutively, the rip current occurs. Thus, the rip wave hits the bottom of bumping wave and goes out through the gate. Finally, the wave height and amount of energy increases by bumping wave and reversing wave. By adding each component, the efficiency of each was checked. Also, the system was optimized by modulating the slits' width and distance to various wave conditions. In conclusion, this system generates energy with even a small wave. So, if this system is commercialized, it can generate energy anywhere energy can’t be produced because the wave height is not tall enough like East Sea in Korea or there is no other appropriate energy source such as Antarctica

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