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## Interaction analysis of multi-arrangement in tidal current energy farm

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A focus on renewable energy has been increased as the global warming problem rises. The tidal current power, one of ocean energy resources is acknowledged to have a great potential due to its high energy density with continuous and predictable advantages. Tidal energy technologies can be applied effectively in areas having regular current distribution such as in the ocean with tides and also in rivers with current. To extract energy in a large scale farm, a large number of devices are to be installed for feasible commercial operation. Studies have been conducted throughout the world to find the interaction effect for multi arrayed tidal current devices. The total power production rate of a farm is affected by the turbine arrangement and its interaction. To maximize the power production in the tidal farm equipped with horizontal axis tidal turbines, it is important to understand the wake behavior and its range of influence to downstream. The related papers have been introduced by many researchers with CFD and experimental approaches together with limited experiments. However, the results are quite different from each other. These are due to various boundary and initial conditions with various design factors applied. Also the experiment results vary from each other. In this research, published papers relating to interference effects for multi array of tidal turbines are compared and evaluated. From the analysis, the reasonable velocity recovery rate with axial gaps considering the wake effect downstream is suggested.



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### Biography

Jo Chul Hee has completed his Master's degree at Stevens Institute of Technology, USA in 1985 and PhD in Ocean Engineering at Texas A&M University in 1991. After working for Intec Engineering, Houston, USA and Hyundai Heavy Industries, Korea from 1992 to 1997, he has joined Inha University in South Korea. His main research area is tidal current energy and he has been involved in many government advisory bodies and committees in ocean energy policy, development planning and research since 1998. He has published more than 200 journal and conference papers with more than 80 patents registered and pending in tidal current energy field. He is currently the Director of the Ocean Energy and Environmental Research Center and the Vice President for KSNRE (Korean Society for New and Renewable Energy) and the Executive Committee Member for AWTEC (Asian Wave and Tidal Energy Conference).

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