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3P30 - Production of crushed sand using underwater pulsed discharge

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Concrete consists of coarse aggregates, fine aggregates, and cement pastes. The coarse aggregates can be supplied from either crushed stone from mountains or recycled coarse aggregates from waste concrete. Recently, the fine aggregates can be supplied either from crushed sand which made from crushed stone or recycled fine aggregates from waste concrete. In previous days, the fine aggregate could be collected from river, but now become difficult due to regulations. Therefore, the demand for regenerated fine aggregate and crushed sand is expected to increase. Therefore, a new recycling and crushing technique is required, and it is considered that crushing technology using pulsed power can be used as one of them.

In this study, the coarse aggregate was crushed by underwater pulsed discharge to produce crushed sand, and the voltage condition with good treatment efficiency was optimized. Oven - dry density and water absorption ration of crushed sand were measured and evaluated as to whether it meets the industrial standards. Also, the particle size distribution and generation amount of fine particles were compared between underwater pulsed discharge method and the conventional jaw crusher method.

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