

*DESIGN OF A CONVEYOR AS A RIVER WASTE COLLECTION MECHANISM
FOR A SOLAR-POWERED SHIP ROBOT*

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ABSTRACT

The accumulation of waste in Indonesia's major rivers and the limitations of manual cleaning methods were the main reasons for this research. The aim was to design and evaluate the performance of a conveyor mounted on a solar-powered ship robot. This experimental study designed a 70×42 cm conveyor made of PVC, PVC pipes, nylon mesh, a DC 370 motor (12V, 210 RPM, 4.8 kg/cm), and an IR7843 MOSFET. Testing was conducted at the Curahmalang River, Jember with 30 trials. The results showed that the conveyor transported leaf and twig waste with 93.5% effectiveness (excellent), mixed waste with 74.5% (medium), and plastic bottles alone with 39.1% (needs improvement). The low effectiveness for plastic bottles was caused by a weak retaining baffle. The DC 370 motor proved safe to use. In conclusion, the conveyor was successfully designed and works very well for organic waste, but the retaining baffle needs to be strengthened for plastic bottles.

Keywords: Conveyor, Ship Robot, River Waste.