Design and performance evaluation of fish-luring system using the air-cooled LED lamp for jigging and angling boat

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The fishing lamp is a fishing gear that gathers fish at night. But the cost of oil, which is used to light fishing lamp, has been risen significantly up to 30-40% of total fishing costs. Therefore it is very urgent to develop an energy economical fishing lamp in order to solve the business difficulties of fisheries. Under this background, this research aims at developing a fishing lamp for squid jigging and hairtail angling fishery using the LED, which has excellent energy efficiency and durability. The LED fishing lamp developed can be controlled to fix a fit direction of fish shoal deep because a fishing lamp can be adjustable up and down directions. One unit of fishing lamp has about an 80Watt capacity and the frame of fishing lamp is made of aluminium to emit generated heat of LED to outside. The LED lamp developed was highly durable, only 5.7% of emitting efficiency decreased for 18 months. The illuminance of a unit LED lamp was 2,070lux at 1m and 21lux at 10 m distance, and the intensity of LED lamp system emitted 2,580lux and 400lux at the respective distances. After development of this fishing lamp, 100 units are installed on operating fishing vessels. Experimental results show that energy consumption of squid jigging and hairtail angling was

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reduced by 40% and 87%, respectively. In conclusion, our methods showed elevated fishing power, compared with traditional fishing method: 37.7% for squid jiggling and 24.5% for hairtail angling.

Key words: LED, Fishing lamp, Squid jiggling, Hairtail angling