Ezylift: The Design and Engineering of a Mechanical IRB/Boat Engine Transportation Device

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Each year, 100 million people visit one of Australia's 12,000 beaches. These beaches are patrolled by 314 affiliated surf lifesaving clubs and their principal rescue device is their inflatable rescue boat (IRB). IRBs are rubber boats with an outboard motor used for all forms of surf rescue, retrieval, and service in New Zealand, Australia, and Del Mar, California. Since the introduction of the IRB more than 200,000 lives across Australia have been saved. As an active surf lifesaver, I have been witness to a number of back and leg injuries in the daily activity of lifting a heavy 115lb outdoor motor onto an IRB. Ezylift has been designed to solve a safety issue common to all surf clubs when loading and unloading heavy engines onto a rescue boat (IRB). Innovative, yet simple engineering was used to solve this problem with parallel mechanical arms to maintain a level lifting platform coupled to a foot-operated hydraulic cylinder. The design removed risk of injury to the user by eliminating manual lifting and reduced a three-person task to a single person that can be completed in under one minute. To produce EzyLift, I undertook a robust design process by defining a design brief, ideation, ongoing evaluation, research, testing of materials, tools, techniques, prototypes and lifting lowering methods. I defined a set of criteria to help manage time, costs, risks and constraints. This resulted in the production of a quality product that met the design brief and has been tested successfully in surf lifesaving clubs.

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