Autonomous Liquid Dispenser

Gelli Checchinato, Gabriel (School: Colegio Ser)

Available water dispensers lack effective automation, which often leads to overflows when users do not stop the machines on time. Therefore, the goal of this project was to develop a mechanism that would make liquid dispensers completely autonomous, capable of correctly filling containers of different materials, shapes and sizes without human intervention. The Autonomous Liquid Dispenser would not only guarantee greater comfort and practicality but would also spare overflowed liquid as well as provide great assistance to the visually impaired, serving as an assistive technology. To develop the mechanism an initial prototype was built. Conducted tests pointed out some problems such as misalignment of the used lasers and liquid level detection error. A second prototype was created to improve the mechanism and solve the detected problems. The mechanism uses sensors and actuators connected to a control device. Thereby, the Autonomous Liquid Dispenser can identify containers' height and liquid's level. Based on this information, the flow is interrupted automatically when the liquid's level reaches the desired height, which can be adjusted by the user. Tests confirmed that both prototypes worked properly managing to successfully fill several containers of different sizes and materials. In addition, construction problems encountered in the first prototype were solved by replacing components in the final prototype allowing large-scale production and reducing costs. Therefore, this project has the potential to solve a problem and improve the operation of products. The Autonomous Liquid Dispenser proved to be functional, feasible and ready to be produced and deployed.

Awards Won:

Third Award of $1,000