

ECO Brise: Comfort and Energy Efficiency for Ambiances

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The objective of this project is to build an automatic and self-sufficient brise-soleil named as "ECO Brise" to serve as a variable screen to control the amount of sunlight through the windows in buildings. This project's idea came from the observation of students and teachers in the classrooms. The great amount of sunlight generated heat and glare, hindering the student's productivity in classrooms and outshining the teacher in the whiteboard's use. This project's proposed brise-soleil is to turn it self-sufficient, it shall absorb the sun's energy for its operation through photovoltaic cells to power its flaps drive motor and control device. Photovoltaic cells are installed on top of the device's flaps that shall behave similar as if it were a sun follower, combining the optimization of electric power generation with the shading of the windows needed to increase comfort for indoor environment. The automatic operation logic used is processed by a microcontrolled arduino system, it shall make the flaps move according to the sensors system: the higher the incidence, the greater the brise-soleil's occlusion in order to increase comfort in the indoor environment. Therefore, a brise-soleil prototype was built with materials available in the campus electronics laboratories and maintenance sector. The flaps are made of PVC blades mounted on a metal support structure and a DC motor is used to steer the set of flaps.