ECO Brise: Comfort and Energy Efficiency for Ambiences

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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.

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