Solar Bimetallic Actuator

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The project presents the results obtained after designing, implementation and testing a solar actuator with bimetallic strip. The investigations undertaken have led to a heliothermal actuator provided with a system for keeping and evacuation the warm air from inside. My concerns were directed towards achieving a heliotemic actuator with bimetallic strips whose reaction times can be adjust through a system that controls the temperature inside the precinct in which it is placed the bimetal spiral. These bimetallic elements, undergone a heating phenomenon, bend due to different expansion of materials. As can be seen, the ventilation system, with which is provided the actuator, leads to a significant increase in its performance, by increasing the displacement of the bimetalic strip and, most importantly, by reducing almost three times the time for returning to its initial position, if needed. Keeping the thermal energy for heating the bimetal spiral, facilitated by placing a glass cover on the top of concentrator and an obturation system for the natural or mechanical ventilation used to cool the bimetallic spiral, will improve the response time of the actuator. In the case of the solar actuators with thermo-bimetal, many applications are justified by advantages such as: constructive simplicity, reaction times relatively reduced, autonomy, low price, reliability. The existence of the advantages mentioned previously explains the use of the actuator with thermobimetal presented above in various fields such as: space applications, photovoltaic panels orientation, ventilation systems, thermal protection, etc.