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(57) Abstract :

A bio-filtration device for improving indoor air quality in urban buildings, comprises of a cabinet 101 positioned near a window pane of an enclosure, the cabinet 101 housing a mesh 102 applied with a layer of algae for converting carbon dioxide into oxygen through photosynthesis, an electrochromic glass 103 configured on the frontal portion of the cabinet 101 and paired with a voltage regulator to adjust tint in response to sunlight intensity detected by an optoelectronic sensor, an RGB sensor operatively coupled with a microcontroller installed within the cabinet 101 for monitoring the colour of the algae layer and sending alerts to a user-interface in case of degradation, a sensing module for monitoring photosynthetic activity by detecting pH and CO₂ levels and notifying the user upon threshold deviations to change algae layer.

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