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BIOREACTORS

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ABSTRACT Considering the present push towards greener industrial and residential activities, composting is once again a hot topic amongst Ecological Engineers. Keeping in mind that uniform composting is necessary to insure decomposition and to keep the whole system at the same composting stage, it is essential to maintain a homogeneous temperature throughout the media. Therefore, in the quest to accomplish the latter, a design consisting of a heater core made of copper tubing was designed and tested. Through two four-inch holes made at the top and bottom of the barrel to enable air to flow through the system, allowing aerobic composting. Once composting gets underway and temperature rises, water flow through the copper piping would occur, distributing the core heat throughout the medium and permitting uniformity. The results obtained by inserting three thermocouples at different heights on a 200 litre plastic barrel fitted with the aforementioned apparatus and compared to a barrel ran at the same time without the device demonstrated that our system accomplishes its objectives. In conclusion, temperature variations were significantly lower when ran with the heat redistribution system, permitting uniform composting, accelerating the process and reducing the risks of pathogenic or other contaminants remaining active in the barrels.

Keywords: Engineering, Composting, Bioresource