

COMPOBALL: NOVEL ON-LINE COMPOSTING MONITORING SYSTEM

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Transformation of organic wastes into a resource through composting has been proven as an effective method to reduce weight, volume and biodegradability, and to obtain a stabilized product -compost- useful as soil improver and/or growing media component. The quality of the compost obtained is related both with the raw materials and the control of the process. The effectiveness of the composting process is dependent upon the environmental conditions present within the composting system, i.e., oxygen, temperature, moisture, material disturbance, organic matter and the size and activity of microbial populations. Accurate control of composting is a main factor in optimizing the process, and different parameters can be monitored.

While the main biological and chemical parameters affecting the composting process are well known, the technological solutions available for monitoring and controlling the process are very limited. Two of these essential parameters, temperature and moisture in the core of the composting material, are barely measured along the process and in few points. Moreover, temperature is usually measured manually inserting a probe, and the moisture is measured by extracting samples that need to be analyzed in a laboratory.

The COMPO-BALL project is developing an on-line wireless system for the measurement of temperature and moisture at various points in the composting material. The proposed solution consists of a set of independent sensor nodes. The nodes will not require any external connections to feed or read the sensors and will be encapsulated in an inert material. The batteries will be rechargeable with an inductive method. All information is transmitted to one external node (pile-hub) and a standard wireless communication system sends information from this external node to the control computer.

Keywords: composting, temperature, moisture, parameter monitoring. Autonomous sensor system

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