

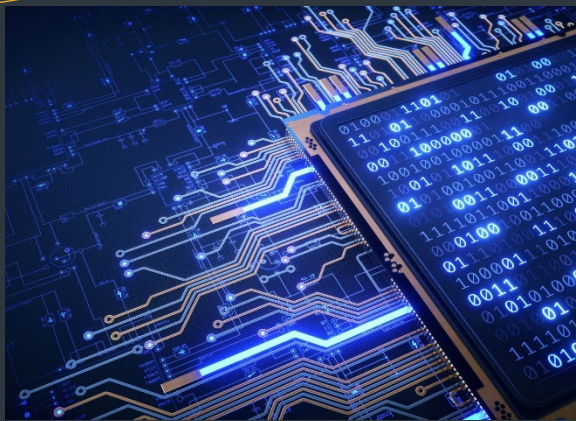
Whole Cycle Tuesday

Takeaway

AI can help compost operators detect problems earlier, improve process consistency, and reduce time spent managing data. The best results come from combining these tools with reliable information and experienced human judgment.

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*"Nature does not hurry,
yet everything is
accomplished."*

— Lao Tzu

How Can AI Support Compost Operations?

Artificial intelligence is beginning to influence composting by helping facilities collect better information, recognize problems earlier, and make more consistent decisions. The goal is not to replace experienced operators, but to provide them with better tools for managing a complex biological process.

One promising application is process monitoring. Sensors can continuously measure temperature, moisture, oxygen, pH, and aeration, while AI identifies developing patterns. This may help operators detect anaerobic conditions, excessive moisture, or declining biological activity before they cause odors, slow decomposition, or poor-quality compost.

AI can also assist with feedstock recipes. By reviewing the characteristics of incoming materials and the results of previous blends, a system could recommend adjustments to carbon sources, amendments, moisture, and mixing ratios. Better recipes can improve porosity, maintain biological activity, reduce odors, and create a more consistent finished product.

Equipment management and site logistics offer additional opportunities. AI can analyze truck schedules, loader activity, fuel consumption, screening operations, and maintenance records. Facilities could use this information to reduce unnecessary material handling, anticipate equipment problems, coordinate incoming loads, and identify operational bottlenecks.

AI may also improve contamination control and administrative efficiency. Camera systems can help identify plastic, metal, glass, and other contaminants, while software can organize temperature logs, laboratory results, load records, inventory, and regulatory reports. This gives managers more time to focus on the operation instead of compiling information.

AI is most effective when paired with experienced people and reliable data. Technology may recognize a changing trend, but operators still understand the feedstocks, weather, equipment, and conditions on the site. AI does not change the biology of composting; it can help operators understand and manage that biology more efficiently and effectively.

