

Waste as a Resource: How Data and AI Cut Recycling Costs

Key Learnings

Solve For Input Quality, Not Input Quantity

When secondary material markets struggle, the assumption is often that supply is the bottleneck. In waste-to-energy, sourcing waste is not the problem. Knowing what is in it is. Without composition data, operators cannot optimise combustion, allocate CO2 costs, or prevent shutdowns from hidden contaminants. **In any process that relies on secondary materials, the limiting factor is rarely how much you can source. It is how well you understand what you are receiving.**

Expect Transparency To Cascade Once One Actor Gains Visibility

When a plant starts monitoring what each supplier delivers, it can charge for contaminants or off-spec material. Some suppliers then face unexpected costs and realise they also lack visibility into their own inputs. In practice, suppliers who were penalised began seeking the same analysis tools for their own operations. **Transparency at one point in the value chain creates commercial pressure that pulls visibility upstream. One investment in data can trigger adoption across multiple tiers.**

Anchor The Business Case To The Cost Of Not Knowing

Circular solutions often struggle to justify their price against established processes. The most effective argument is not what the technology delivers, but what ignorance currently costs. A single unplanned plant shutdown costs between 90,000 and 250,000 euros per day. Two shutdowns per year already cover the cost of the monitoring system. **Letting operators calculate their own losses creates stronger buy-in than presenting a vendor-built ROI. The business case lands when the customer quantifies the problem themselves.**

Recognise That Margins Determine Where Solutions Land First

Recycling facilities face the same input quality problems as energy-from-waste plants but operate on thinner margins. The same monitoring technology that pays for itself within two avoided shutdowns at an incineration plant may not clear the ROI threshold at a recycler. **Circular solutions tend to enter the market where margins are highest, not where the need is greatest. Expanding adoption to lower-margin segments requires either cost reduction or regulatory pressure that changes the economics.**

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<https://circularity.fm/episode/waste-as-a-resource-how-data-and-ai-cut-recycling-costs>

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