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Powder Recovery Technology for Cold Spray Deposition

Cold spray deposition is being explored for its potential in sustainable and cost-effective manufacturing while maintaining favorable mechanical properties. However, the high cost of powder feedstock coupled with low material efficiency leads to undeposited powder often being discarded as waste. Here, a method for recovering unbonded powder is investigated through the incorporation of a cyclone dust collector within the spray environment to capture particles that rebound from the substrate during deposition. Following collection, the recovered powder undergoes post-processing treatment before being characterized to assess the effectiveness of the recovery approach. This work focuses on the recovery aspect of cold spray processing and aims to reduce the amount of waste generated during deposition. The implementation of powder recovery strategies in cold spray enables more sustainable manufacturing practices within the field of additive manufacturing.