

Rapid Non-contact Energy Transfer for Additive Manufacturing Driven High Intensity Electromagnetic Fields

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Technology Summary

Polymer based additive manufacturing is accomplished by several technologies that rely on feeding polymer materials through a nozzle that is precisely located over a preheated polymer substrate. Parts are manufactured by the deposition of new layers of materials above the previously deposited layers. In response we have developed a non-contact heating technology that is can be used to quickly heat materials within the nozzle, locally heat specific locations of the build and/or uniformly heat the build out of the furnace. This approach will likely reduce the weight of the liquefier and increase the sensitivity and controllability of the flow both of which translate to increased build rates. Removal of the joule heating will significantly remove the position dependent heat source from the extruder which impacts part quality. Additionally this technology is used as a means to apply targeted heating of the polymer material through the build or locally to active manufacturing surface locations.

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