Metal Powder Development for Additive Manufacturing

Adoption of powder-based, metal additive manufacturing (AM) is rapidly increasing. This growth is causing a similar growth in the need for materials for AM, with an expected CAGR of 31% for metal materials through 2022*.

This growing market can be challenging to penetrate. Each AM process – laser powder bed fusion (L-PBF), electron beam powder bed fusion (EB-PBF), laser directed energy deposition (L-DED), and binder jetting – has its own powder requirements, standards for powder quality are still in development, custom process parameters often need to be developed for new powders, and parts are often certified for a set powder manufacture.

EWI works with powder manufacturers to assist them with the challenges of penetrating this growing market.

**A COMPREHENSIVE APPROACH**

EWI offers a complete suite of validation services for powder makers and their clients who use 3D metal printing in production. Key to these is a set of testing and measurement technologies available in the EWI labs to quantify powder characteristics:

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<th>Important Properties</th>
<th>Method of Measuring</th>
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<td>Density of Particles</td>
<td>Helium Pycnometer/Hall Flow</td>
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<td>Flowability</td>
<td>Revolution Powder Analyzer</td>
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<td>Particle Size Distribution</td>
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<td>Particle Morphology</td>
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<td>Chemical Composition</td>
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<td>Thermal Characteristics</td>
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*Powder characterization* testing can provide confidence in the consistency of a powder product, quantify variability within batches from a supplier, define the

impact of recycling on powder properties and create a starting point for future development of powders.

Additional powder development services include:

- AM application identification and process selection
- Plasma spherodization (using the TekSphero-15) to improve flowability, increase density, and reduce powder impurity
- Printing and testing of sample parts to prove feasibility
- Process parameters evaluation and modification to improve build results
- Process parameters development and testing to enable the use of a new powder product

THE EWI ADVANTAGE

EWI empowers manufacturers to overcome complex manufacturing challenges and integrate new processes to bring products to market more quickly and efficiently. Our specialists offer comprehensive engineering services to help companies identify, develop, and implement the best options for their specific applications. With unmatched expertise, state-of-the-art lab facilities, and technology resources, we offer customized solutions that deliver game-changing results.

GET STARTED

To find out how EWI can help you develop, qualify, and enhance the quality of your metal powders for AM, please contact John Conway at jconway@ewi.org or 716.710.5513.