

Additive Manufacturing Part 2 - collaboration of metal AM and MIM

Today we subsequently introduce our approach to collaborate with AM and our prospects.

Summary of metal AM

These days, various metal AM devices have been developed and they are in fierce competition to survive in the market. There are strengths and weaknesses derived from their manufacturing processes as summarised in the following table.

The table classifies representative AM methods by the densify phase

Comparison table of representative metal AM methods

		Method	Material feeding
Phase of solidification	During forming	Laser Electron beam (melting)	Powder fed Powder bed
	After forming	Debinding & sintering (Diffusion) = MIM process	Extrusion of metal powder and plastic binder mixture <ul style="list-style-type: none"> • Wired or bar material (Filament) • Pelletised material (Feedstock) Powder bed → Binder jetting

Coexistent of MIM with AM

The process, densifying step comes after the forming, requires debinding and sintering steps which are same and essential as in MIM process. Therefore, we could apply our MIM processing technology to some metal AM processing. With the fused deposition modelling (FDM) method, shown as bold letters in the table, it is commonly employed wire or bar form filament to form the green body. Recently, a metal AM device* has introduced in the market which employs pelletised MIM-feedstock directly. Therefore, it is allowed to say that the FDM method is the best way for MIM manufacturer to collaborate with AM manufacturing. Since we have knowledge and experience with our feedstock over our MIM production history, both our techniques of debinding and sintering step and of forming step should be effective also in metal AM devices. We believe this collaboration will lead our better service for customers, especially for the prototype production phase.

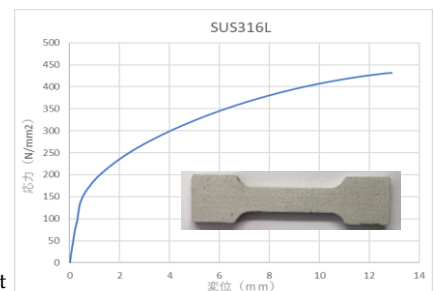
* ex) http://slab.jp/3dprinter_biz/

Our approach to the AM manufacture

We have studies with our original feedstock applied in FDM metal AM device and it is observed the mechanical properties. The graph shown in right is a result of a tensile test.

We confidently offer our feedstock for AM trial to whom has problems with metal AM manufacturing. Please do not hesitate to contact us.

▶ FDM formed tensile test result



Column



At Micro MIM Japan Holdings Inc. & Taisei Kogyo Co., Ltd. headquarters in Osaka, Japan, we have a BBQ evening twice a year.

This is organised by some of the young colleagues who work at the HQ. The event starts at 6PM when everyone finishes the work. Last time we brought a PC out and connected with the colleagues in Thailand and Germany. This was a good opportunity for everyone to say hi to each other and see how the colleagues in other locations are doing. Especially after the lockdown, people were happy to see each other even online. The downside of those who are not in Japan was that while the colleagues in Japan were enjoying beers and BBQ, we had to work!