

AM Research market data methodology

Printers and Materials

AM Research utilizes a full market modeling approach to generate the market data it provides to its customers each quarter. We interface with the AM market at regular intervals for both data inputs into the model as well as periodic discussions and quality checks to ensure that the model output is realistic and balanced from any given perspective.

The two core differentiators of AM Research data for the AM market could be summarized as the following:

- We generate the full scope of the market data – we do not strive to simply collect limited or inaccurate data points. Instead, we track competitor progress, collect inputs, and have our interconnected market models generate output data which we then verify for quality/accuracy to the best ability
- Our models have been developed over ten-plus years of specific focus on the additive manufacturing market. We have not studied unrelated technologies or markets over our history -only additive manufacturing. As a result of this lengthy development, our models have become the most detailed and historically relevant in the industry

Hardware Methodology

The basis of our models at a fundamental level relate to tracking the sale, installation, and use of printers, what we call 'hardware.' For each relevant AM technology (i.e. powder bed fusion, binder jetting, etc), we create competitor profiles for the leaders and innovators driving each of these segments which track their product portfolio, technical capabilities of the systems, and ultimately system sales and installations. This data profile is created so that sales and resulting installations are categorized by end user market and region. In most instances, we collect core data from these competitors directly through relationships we have built over many years in the industry, though this is also augmented by review of publicly reported information, as well as our ongoing interview and publication program as well.

Because the AM market features well over one hundred competitors we capture the collective activity of a group of smaller, less influential competitors on a slightly broader basis in an 'other vendors' category for each print technology sector. We receive and collect inputs for some vendors in this category regularly, some irregularly over time, and others are based on our triangulation efforts where we compare the technologies and printers of a vendor against close regional or similarly structured competitors to make well-researched assumptions on the scale and nature of their businesses. This activity is then rolled up to ensure that all the activity in a given technology segment is accounted for, even if not all of it is broken out in specific detail for every single competitor worldwide.

The result is a sales tracking database, but more importantly a machine installation database in detail, for each relevant powder-based AM technology segment.

Materials (Powder) Methodology

We then utilize the installation database for these competitors (and groups of other competitors) and apply a material utilization and consumption database to model the shipments and opportunities for powder materials.

This is supported by our one decade-plus study of specific AM end-use markets and applications, where we have published dozens of detailed research reports on opportunities for AM in various markets such as aerospace, automotive, orthopedics, dentistry, and many others. The detailed understanding of use case, application, value proposition, and competitive structuring of these markets helps us apply realistic per-printer utilization metrics to the installed base data to model the consumption of materials across markets, technologies, and more. We base the utilization modeling on volumetric output of printed 'content' per machine hour and machine print time per time period.

This utilization forecast is based on end user research for how printers are being utilized within each industry in the real world, rather than based on theoretical throughputs of various machines, as these two can differ somewhat significantly. We also account for powder re-use and recycling capabilities, and other technical factors relevant for each individual print technology in these models.

The resulting powder consumption and shipment forecasts are then split out by type based on the application mix in various industries based on our research, and powder pricing per kilogram estimates for each material are applied for revenue numbers.

Print Services Methodology

Our print services market methodology is intended to prescribe the dollar value of outsourced production services in various markets and regions. This model is based on periodic review of more than one hundred providers worldwide and an analysis of their businesses -what markets and applications are served, what printer technologies they may utilize, and much more. Competitors are classified based on their primary business model, and a breakout of their customer base and activity is performed to estimate business levels and mix.

This baseline meta-analysis is then updated each period based on quarterly review of print services market trends and competitor activity, publicly reported data, interviews, and other research conducted by AM Research through its publication and consulting efforts each year.

We can also back-engineer the generated services market data against our other databases for printer installations and utilization in the services market, to ensure a realistic and accurate output at a detailed level.