Industrial 3D printing with polymers: current and future trends

Dr. Gustavo Gonzalez
Technology Analyst and researcher
AIRI – Italian Association for Industrial Research
ORCID ID: https://orcid.org/0000-0002-0501-9494

Abstract:

3D printing technology is one of the most thriving technologies today, gradually introducing new production methods and changing how products are designed and manufactured; indeed, it is considered one of the fundamental pillars of the so-called Industry 4.0, allowing fabricate parts in a few minutes, from digital models and without requiring complex and expensive equipment. Polymeric 3D printing allows the productions of solid three-dimensional plastic and thermoset parts from a digital file by placing (or depositing) materials such as plastics, composites, or biomaterials, typically through a layer-by-layer approach. Different structures can be created through this fabrication method, ranging from shape, size, rigidity, and color. Polymeric 3D printing technology has found applications in various fields: aerospace components, fashion and wearable products, sports accessories, custom prosthetics, architectural building structures, and nanometric devices. More and more businesses and industries are looking to use 3D printing for their operations and business strategies.
Through this presentation, the different industrial and business scenarios of 3D printing with polymers will be discussed. This presentation will be covering topics about the trends in the field in terms of printable materials, innovative 3D printers and equipment, and business strategies for 3D printing. Other topics are related to the uses of polymeric 3D printing to manufacture low-volume products and highly personalized parts, the possible changes in the manufacturing supply chain, on-demand manufacturing capabilities, decentralized 3D printing and the socioeconomic impact of this technology.