European Journal of
Applied Engineering and Scientific Research

Abstract

Design for AM – the key to the industrialization of additive manufacturing

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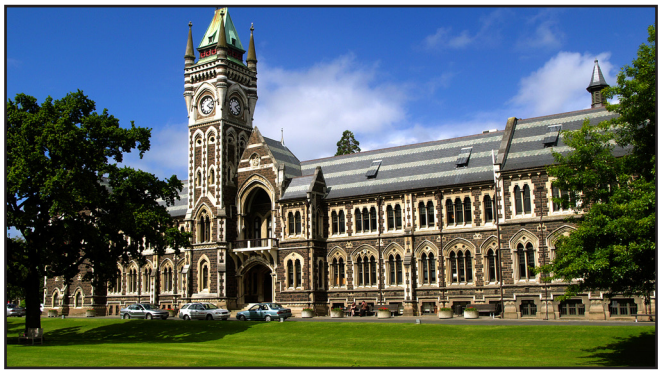
Abstract:

Many industries approach additive manufacturing (AM) as a drop-in replacement for conventional manufacturing technologies. This approach, however, does not fully utilize the unique possibilities that additive processes offer. For over thirty years, AM has been extensively used as a rapid prototyping technology. When using the technologies for manufacturing, however, it should be noted that AM does not remove all manufacturing restrictions. It, instead, replaces them with a different set of design considerations that designers must take into account if they wish to successfully use the technologies to add value to their products. Otherwise AM can easily become a slow and uneconomical way of manufacturing products or parts. It is also of great importance to understand that, despite much of the marketing hype over the past few decades, AM is not an "easy" technology that can make absolutely anything. It requires a good understanding of the different technologies and how to design for them. In fact, printing parts in metal, for example, can be downright hard, and the use of AM to manufacture metal parts should only be considered if the process truly adds value to the product.

This talk attempts to impart some practical guidance on the thought process required to design parts that gain the maximum benefit from what AM can offer.

Biography:

Professor Olaf Diegel is an educator and a practitioner of additive manufacturing and product development with an excellent track record of developing innovative solutions to engineering problems. In his role as professor of additive manufacturing, in the faculty of engineering at the University of Auckland, in New Zealand, he is heavily involved in all aspects of additive manufacturing (AM). He is also one of the principal authors of the annual Wohlers Report, considered by many to be the bible of AM. His current main area of research expertise is in design for AM. In his consulting practice he develops a wide range of products for companies around the world. Over the past three decades he has developed over 100 commercialized new products including innovative new theatre lighting products, security and marine products and several home health monitoring products and, for this work, has received numerous product development awards.



Publication of speakers:

- Design for additive manufacturing process for a lightweight hydraulic manifold, Jul 2020
- Adoption and Diffusion of Disruptive Technologies: The Case of Additive Manufacturing in Medical Technology Industry in Australia, Apr 2020
- Introduction to Additive Manufacturing May 2019
- Metal AM Guidelines, May 2019
- Diegel, Douglas Dunn, Fidencio Neri, Eric Haugen, Eric Rynes, Alex Reynolds, Jemma Nelson, Audra Johnson, Mark Frerker, Michael Buckley, Rajinder Kaul, Wouter Meuleman, John A.Stamatoyannopoulos Nature. 2020; 583(7818): 729–736. Published online 2020 Jul 29.
- Diegel, Douglass Dunn, Mark Frerker, Michael Buckley, Rajinder Kaul, Ying Zheng, Jonathan Himmelfarb, Hannele Ruohola-Baker, Shreeram Akilesh
- EBioMedicine. 2019 Mar; 41: 427–442. Published online 2019 Mar 1.

Webinar on Materials Technology and Research, September 22, 2020; Osaka, Japan

Citation: Design for AM – the key to the industrialization of additive manufacturing; Materials Technology 2020; September 22, 2020