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BOLETÍN DE VIGILANCIA TECNOLÓGICA.
ENERO-MARZO 2020. **CEIIA**

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NOTICIAS

04/03/2020

Equipmake and HiETA developing new motor with 20kW/kg power density using additive manufacturing

UK-based electrification company, Equipmake, has teamed up with additive manufacturing organization HiETA to develop a next-generation motor as part of a project grant-funded by Innovate UK. Codenamed AMPERE, the new motor will draw on Equipmake's expertise in electric motor design and HiETA's knowledge in thermal engineering and additive manufacturing.

https://www.greencarcongress.com/2020/03/20200304-ampere.html

09/03/2020

Honda R&D partners with Autodesk to use AM and generative design to reduce weight of crankshaft

Honda, like other automakers, has is focused on reducing the weight of its vehicle components, from body frames and engines down to the bolts. To achieve a reductive design, the structure and materials used in every part must be scrutinized. The latest target for Honda R&D is the crankshaft.

https://www.greencarcongress.com/2020/03/20200309-autodesk.html

17/03/2020

Porsche presents innovative 3D-printing technology for bucket seats

Porsche is revolutionising sporty seating: the company presents an innovative alternative to conventional bucket seat upholstery with the concept study “3D-printed bodyform full-bucket seat”. Here, the central section of the seat, in other words the seat and backrest cushions, is partly produced by a 3D-printer. Customers will be able to choose between three firmness levels (hard, medium, soft) for the comfort layer in the future. With this new technology, the sports car manufacturer is once again underlining its close ties to motor sports: the personalised sports seat follows the principles of driver-specific seat fitting customary in professional motor sports.

https://presse.porsche.de/prod/presse_pag/PressResources.nsf/Content?ReadForm&languageversionid=1069878

22/03/2020

Stratasys Responds to COVID-19 Pandemic by Ramping up Production of 3D-Printed Personal Protection Equipment

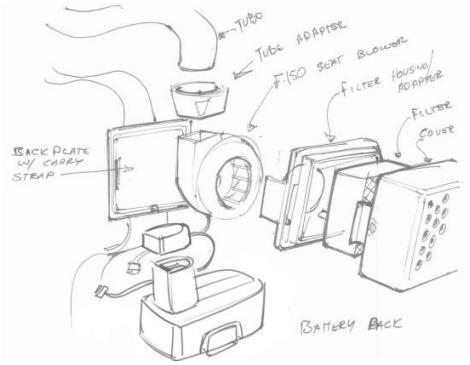
Stratasys Ltd. has announced a global mobilization of the company’s 3D printing resources and expertise to respond to the COVID-19 pandemic, spanning its Stratasys, GrabCAD, Stratasys Direct Manufacturing and partner network with donated printing capacity across all regions. The initial focus is on providing thousands of disposable face shields for use by medical personnel.

https://investors.stratasys.com/news-events/press-releases/detail/524/stratasys-responds-to-covid-19-pandemic-by-ramping-up

24/03/2020

FORD works with 3M, GE, UAW to speed production of respirators for healthcare workers, ventilators for coronavirus patients

Ford is working with 3M to manufacture at scale Powered Air-Purifying Respirators (PAPRs). Ford and 3M are collaborating on the new design leveraging parts from both companies to meet urgent demand for first responders and health care workers; Ford is exploring production of the new PAPR in a Ford facility in addition to 3M production



Ford and GE Healthcare are working together to expand production of a simplified version of GE Healthcare's existing ventilator design to support patients with respiratory failure or difficulty breathing

Ford, in cooperation with the UAW, will assemble more than 100,000 critically needed plastic face shields per week at a Ford manufacturing site to help medical professionals, factory workers and store clerks; Ford also will leverage its in-house 3D printing capability to produce components for use in personal protective equipment

https://media.ford.com/content/fordmedia/fna/us/en/news/2020/03/24/ford-3m-ge-uaw-respirators-ventilators.html

PUBLICACIONES CIENTÍFICAS

Enero/2020

Composite additive manufacturing of morphing aerospace structures

Urban Fasel, Dominic Keidel, Leo Baumann, Giovanni Cavolina, Martin Eichenhofer, Paolo Ermanni

Continuous carbon fibre composite additive manufacturing opens up new possibilities for automated, cost-effective manufacturing of highly-loaded structures. This is achieved by the high design freedom of the process, allowing to tailor the fibre placement and by thereby fully exploiting the anisotropy and strength of the composite material. On the other hand, compliant or so-called morphing mechanisms – exploiting the elastic properties of the material to achieve shape changes – show great potential in improving the flight performance of aerospace structures. Such structures exhibit complex internal topologies, making them prohibitively expensive to manufacture with conventional processes. Combining additive manufacturing of composites with the utilization of morphing mechanisms has the potential to concurrently reduce manufacturing cost whilst greatly improving the flight performance of aerospace structures. The applicability of composite additive manufacturing to morphing aerospace structures is discussed in this letter. For the first time, the complete composite primary- and morphing-structure of a fixed-wing drone was additively manufactured. The drone was successfully flight-tested, evaluating the potential of combining these two emerging technologies.

https://www.sciencedirect.com/science/article/abs/pii/S2213846319301853

Marzo/2020

Additive manufacturing of magnesium alloys

Rakeshkumar Karunakaran, Sam Ortgies, Ali Tamayol, Florin Bobaru, Michael P.Sealy

Magnesium alloys are a promising new class of degradable biomaterials that have a similar stiffness to bone, which minimizes the harmful effects of stress shielding. Use of biodegradable magnesium implants eliminates the need for a second surgery for repair or removal. There is a growing interest to capitalize on additive manufacturing's unique design capabilities to advance the frontiers of medicine. However, magnesium alloys are difficult to 3D print due to the high chemical reactivity that poses a combustion risk. Furthermore, the low vaporization temperature of magnesium and common biocompatible alloying elements further increases the difficulty to print fully dense structures that balance strength and corrosion requirements. The purpose of this study is to survey current techniques to 3D print magnesium constructs and provide guidance on best additive practices for these alloys.

https://www.sciencedirect.com/science/article/pii/S2452199X19300726

Marzo/2020

A review on weldability of additive manufactured titanium alloys

B.K. Nagesha, V. Dhinakaran, M. Varsha Shree, K.P. Manoj Kumar, T. Jagadeesha

The Additive manufacturing technologies familiarize many innovative and monetary gains when compared to conservative subtractive manufacturing methods in rapid prototyping (RP) and small production capacity. In other exceedingly industrialized fields including aerospace, automobile, and bio-medical industries, additive manufacturing has turned out to be a subject of high interest. Nowadays, Additive manufacturing (AM) of Titanium alloys has grown into an imperative field of study. The foremost prominence of Titanium alloys is excellent strength to weight ratio, high weathering resistance, and admirable characteristics involving high tensile strength and toughness with comparatively low electrical and thermal conductivity. The manufacturing of Titanium through AM technology is marginally expensive and durable as it enables to create freedom in design community to fabricate user defined and complex structures which is hard to produce through other conventional manufacturing methods. The Ti-6Al-4V alloy is popularly known as the “work horse” of titanium is comprehensively used in aerospace and biomedical industries. At present, several studies have focused on hybrid manufacturing and enhancing the mechanical properties of Ti-6Al-4V with additive manufacturing techniques. In this research work, a short review on additive manufacturing of Ti-6Al-4V alloys has been investigated to define its mechanical and metallurgical properties in both as-built and heat treated conditions.

https://www.sciencedirect.com/science/article/pii/S2214785320316898