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MAINGAP

Fabricación Aditiva

BOLETÍN DE VIGILANCIA TECNOLÓGICA.

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Universidade do Minho

NOTICIAS

22/10/2021

Innovative design of titanium alloy with supreme properties by 3D printing

A research led by scientists from City University of Hong Kong (CityU) has successfully developed a super-strong, highly ductile and super-light titanium-based alloy using additive manufacturing, commonly known as 3D printing. Their findings open up a new pathway to design alloys with unprecedented structures and properties for various structural applications.



<https://www.cityu.edu.hk/research/stories/2021/10/22/innovative-design-titanium-alloy-supreme-properties-3d-printing>

9/12/2021

Fleet Space to develop new entirely additively manufactured Alpha satellite

Fleet Space Technologies, Beverley, Australia, has announced its plans to develop a new 'constellation' of additively manufactured small satellites, named Alpha, with the first satellites ready for launch in twelve months. The new constellation will sit alongside the existing Centauri constellation.



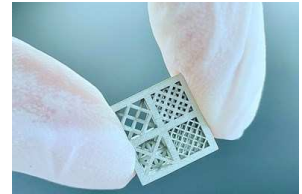
<https://www.metal-am.com/fleet-space-develops-new-entirely-additively-manufactured-alpha-satellite/>



10/12/2021

Incus Project to Test 3D Printing Spare Parts in Space

Project goal is to assess the feasibility of processing scrap metals available on the moon's surface to produce a high-quality final product via a zero-waste process.



<https://www.additivemanufacturing.media/news/incus-project-to-test-3d-printing-spare-parts-in-space>



PUBLICACIONES CIENTÍFICAS

Noviembre/2021

A comprehensive review of emerging additive manufacturing (3D printing technology): Methods, materials, applications, challenges, trends and future potential

Praveena B.A., Lokesh N., Abdulrajak Buradi, Santhosh N., Praveena B. L., Vignesh R.

Additive manufacturing is a fabrication technique that is transforming the industrial and manufacture industries. Due to its numerous advantages, additive manufacturing has become a popular trend in manufacturing processes. It is defined as the method of fabricating parts via layer-by-layer deposition of quantifiable. The main benefits of 3D printing or additive manufacturing (AM) are design liberty, bulk customization, unwanted minimization, and the capacity to build complicated assemblies, as well as rapid prototyping. A comprehensive review of emerging additive manufacturing technology in 3D printing, materials, methods, applications, challenges and future potential their evolution in popular applications was carried out. Overall, this study provides an summary of 3D printing, as well as a study of its advantages and disadvantages, to serve as a baseline for prospect investigation and improvement. This review will assist readers in comprehending the various features of additive manufacturing and identifying new areas for upcoming investigation.

<https://www.sciencedirect.com/science/article/pii/S2214785321070632>

Diciembre/2021

Additive manufacturing of steel for digital spare parts – A perspective on carbon emissions for decentral production

Mario Rupp, Manuel Bucka, René Klinka, Markus Merkela, David K.Harrison

Digitization is one of the megatrends of our time. New production and supply chain methods are introduced in the industry, which fundamentally change the previous workflows. An area in which digitization can bring about major changes in the spare parts business. One approach to develop the spare parts business regarding technology and sustainability is the digital spare parts concept. The concept follows the goal to produce



decentral in the required quantity and at the required location. The research focuses on the calculation of carbon emissions to compare the subtractive and additive production of metal parts and their transport ways. A literature review analyses existing studies and quantifies the main carbon emission drivers of the production of metal spare parts production. With the help of the DHL Carbon Calculator, the transport emissions are identified. Depending on the urgency of the spare part, transport varies between ship, train, truck or airplane on different distances. A data set of 27,000 scenarios is analysed. It is shown, that the transport routes are not the major driver for carbon emissions along the whole process chain. Analysis showed, that the buy-to-fly ratio and the energy mix are the key drivers for carbon emissions.

<https://www.sciencedirect.com/science/article/pii/S2666789421000611>

December/2021

A state-of-the-art review on implementation of digital twin in additive manufacturing to monitor and control parts quality

Rakesh Kumar Phanden, S.V.Aditya, Aaryan Sheokand, Kapil Kumar Goyal, Pardeep Gahlot, Adam Jacso

Both, Additive Manufacturing (AM) and Digital Twin (DT) are emerging technologies. DT is helping AM in process simulation, monitoring and controlling as well as to develop insights on process parameters relation to achieve high parts quality. Therefore, the implementation of DT technology in AM is highly desirable and fruitful. In the current state, DT application on AM has been explored by various researchers for education, manufacturing, maintenance and quality area from the theoretical and practical viewpoints. This paper presents the state-of-the-art literature review on the implementation of DT in AM to monitor and control the parts quality from theoretical and practical viewpoints. Based on the literature, a representation scheme has been extracted to implement DT in AM successfully, and various future research directions are given.

<https://www.sciencedirect.com/science/article/pii/S2214785321079360>

