

VT

PATENTES

IMPRESIÓN 3D

14



Vigilancia
Tecnológica
2º trimestre 2023

NIPO: 116-19-050-9

En este Boletín de Vigilancia Tecnológica se recogen, de manera trimestral, los avances acontecidos en el campo de la tecnología de Impresión 3D que se materializa en forma de solicitudes de patente en todo el mundo.

Aunque en los años 80 comenzaron a desarrollarse los primeros equipos y materiales sobre la tecnología de impresión 3D también denominada fabricación aditiva, no fue hasta 1986 cuando aparece en el mercado la primera impresora 3D comercial, patentada por Charles W. Hull, premiado por la Oficina Europea de Patentes

como inventor del año en 2014 en la categoría de inventores no europeos.

Cuando trataba de buscar un sistema para mejorar el proceso de realización de prototipos de pequeñas piezas de plástico que utilizaba para testar nuevos diseños de productos, desarrolló una máquina de impresión 3D que conseguía realizar en pocos minutos procesos que por aquel entonces llevaban semanas.

Contenido



PROCESOS



MATERIALES



DISPOSITIVOS



PRODUCTOS



PROCESAMIENTO
DE DATOS

Desde entonces, la tecnología no ha parado de evolucionar, especialmente en los últimos años, alcanzándose a partir de 2017 un verdadero auge, cuando se incorpora la automatización utilizando software de inteligencia artificial que permite industrializar la fabricación aditiva y multiplicar la capacidad de los sistemas.

En los últimos años de evolución de la impresión 3D hemos visto pasar del desarrollo conjunto de nuevas tecnologías y materiales innovadores aplicados principalmente a la creación de prototipos y diseños personalizados, a la consecución de productos casi impensables hace tan solo una década. Gracias a esta increíble tecnología hemos visto imprimir, órganos, coches e incluso edificios.

Desde la Oficina Española de Patentes y Marcas, y en cumplimiento de su doble objetivo de proteger y fomentar la innovación tecnológica en nuestro país, así como de divulgar la información técnica que contienen las patentes a través de sus servicios de Información Tecnológica, se realiza este nuevo Boletín de Vigilancia Tecnológica, que se suma a los dieciséis *Boletines VT* que venimos publicando desde el año 2000 con periodicidad

trimestral. Nuestro objetivo es dar a conocer las nuevas solicitudes de patentes que se publican a nivel mundial relacionadas con la tecnología de impresión 3D.

En este Boletín, se incluye una selección de las solicitudes de patentes publicadas a nivel mundial durante el segundo trimestre de 2023, distribuidas en cinco apartados: procesos, materiales, dispositivos, productos y procesamiento de datos.

Para cada patente se incluye su número de publicación, con un enlace que permite la consulta del documento completo, el solicitante, el país de origen y su título.

Esperamos que la información aportada en este Boletín de Vigilancia Tecnológica, sirva para identificar tendencias tecnológicas y sus actores, así como para contribuir a la utilización del conocimiento contenido en los documentos de patente como punto de partida para emprender nuevas actividades de investigación y desarrollo. Para suscribirse a este Boletín basta con cumplimentar este [formulario de suscripción](#).

Procesos



Nº PUBLICACIÓN	SOLICITANTE Y PAÍS DE ORIGEN	CONTENIDO TÉCNICO
WO2023114029	(VELO-N) VELO3D INC	Device for separating powder, comprises first separating unit coupled to second separating unit at least in part by channel configured to facilitate pressure equilibration and flow of powder
DE102021213897	(SIEI) SIEMENS ENERGY GLOBAL GMBH & CO KG	Method for testing non-destructive material, for components produced additively from powder bed, involves providing two dimensional model sections, and examining two dimensional model sections by automatic image analysis for structural differences between data model and measurement data
WO2023075745	(HEWP) HEWLETT-PACKARD DEV CO LP	Method for creating sacrificial portions to be printed in three-dimensional printer, involves generating updated object model data including additional object to be printed in proximity to object, when determination is affirmative, and preventing deformation of object during curing process
WO2023075760	(HEWP) HEWLETT-PACKARD DEV CO LP	Build material processing system useful in 3-dimensional printer, comprises build volume interface to receive container including build volume comprising powdered build material layers, build material removing device and controller
WO2023069090	(HEWP) HEWLETT-PACKARD DEV CO LP	Three-dimensional printer of three-dimensional printing system for generating three-dimensional objects, comprises process chamber defining process volume, and carriage to reciprocate laterally within process volume
WO2023078693	(PANE-N) OFF PANERAI AG	Method for manufacturing watch or jewelry component, involves depositing first metallic powder by forming first predetermined pattern, and second metallic powder different from first metallic powder by forming second predetermined pattern
WO2023101682	(HEWP) HEWLETT-PACKARD DEV CO LP	Reduction in surface roughness of cured three-dimensional printed product for E.G. footwear, involves applying liquid solvent comprising alcohol to cured three-dimensional printed product, and heating product at temperature below melting point of product using localized heat source

Nº PUBLICACIÓN	SOLICITANTE Y PAÍS DE ORIGEN	CONTENIDO TÉCNICO
WO2018156143	(HEWP) HEWLETT-PACKARD DEV CO LP (HEWP) HEWLETT-PACKARD DEV CO	Three-dimensional printing method for forming three-dimensional solid portions, involves heating patterned green portion to activate binder fluid and to create cured green portion which is heated to create polymer-free gray portion
JP2023083047	(KOBM) KOBE SEIKO SHO KK (KOBM) KOBE STEEL LTD	Additive manufacturing method of three-dimensional molded product, involves irradiating laser beam with second beam intensity higher than first beam intensity to melt and solidify metal powder in irradiated region in irradiated area
US2023150169	(RICO) RICOH KK (HAGI-I) HAGIWARA H (KAMO-I) KAMODA K	Producing three-dimensional shaped object, involves forming layer from secondary particles, which comprises binder resin and primary particles containing ceramic material, and applying liquid that dissolves binder resin on formed layer
WO2023048749	(HEWP) HEWLETT-PACKARD DEV CO LP	Additive manufacturing system used to produce three-dimensional object, has solidification system selectively solidifying layer of build material, and controller lowering bed by amount in preparation for receiving build material
WO2023059855	(UNMI) UNIV MICHIGAN	Method for laser powder bed fusion scan sequence to maintain uniform temperature distribution of area of interest, involves determining temperature evolution by using finite difference method expressed as linear state space model, and actuating laser in response to determined optimal sequence

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Nº PUBLICACIÓN	SOLICITANTE Y PAÍS DE ORIGEN	CONTENIDO TÉCNICO
US2023150192	(REGC) UNIV CALIFORNIA (MAST-N) MASTER BUILDERS CONSTR CHEM (UYMU-N) UNIV MUNICH TECH	Thermoresponsive suspension composition for use in additive manufacturing, comprises aqueous suspension of thermosetting resin, crosslinking agent configured to react with thermosetting resin, where thermosetting resin and crosslinking agent react at or above trigger temperature
WO2023083908	(BADI) BASF SE	Ceramic feedstock used to manufacture ceramic filament for three-dimensional printing process and in fused deposition process, comprises ceramic material, binder comprising component, and optionally ceramic material and binder
KR20230060627	(KIMA) KOREA INST MACHINERY & MATERIALS	Magnetic polymer three-dimensional printing device for magnetic polar arrangement, has magnetic field generating unit that is provided with magnetic field generator installed at side of nozzle spaced apart from nozzle
KR20230075089	(UYCU) UNIV CHUNG ANG IND ACAD COOP FOUND	Manufacturing composite material comprises E.G. preparing foam structure using composite resin containing hexanediol diacrylate and graphene, preparing composite by filling structure with mixture and curing composite
US2019388843	(MAGN-N) MAGNA IMPERIO SYSTEMS CORP	Ion exchange membrane used in ion-exchange device for an ion-exchange water treatment system, comprises multiple three dimensional printed spacers adhered to a surface of the ion exchange membrane
WO2023055374	(HEWP) HEWLETT-PACKARD DEV CO LP	Three-dimensional powder bed material used for making three-dimensional printed article comprises elastomeric build material, and polyol stiffening additive
US11629230	(FABK) META PLATFORMS TECHNOLOGIES LLC	Generating modulus gradient in polymeric material involves subjecting initial precursor resin mixture to polymerization or crosslinking stimulus, where initial precursor resin mixture comprises monofunctional, bifunctional, monomers comprises different polymerizable or crosslinkable moieties
US11629230	(FABK) META PLATFORMS TECHNOLOGIES LLC	Generating modulus gradient in polymeric material involves subjecting initial precursor resin mixture to polymerization or crosslinking stimulus, where initial precursor resin mixture comprises monofunctional, bifunctional, monomers comprises different polymerizable or crosslinkable moieties

Nº PUBLICACIÓN	SOLICITANTE Y PAÍS DE ORIGEN	CONTENIDO TÉCNICO
US2023094289	(CONW) CONTINENTAL AUTOMOTIVE SYSTEMS US INC	Three-dimensional (3D) printed circuit board (PCB) composite structure for retaining encapsulant protective of electronic component mounted to PCB, has 3D printed composite structure printed on PCB at locations of grooves in surface of PCB
WO2023089075	(QUEE) TRINITY DUBLIN COLLEGE	Tissue regeneration scaffold for repairing hard tissue such as bone or cartilage in mammal, has first printed layers that are arranged such that openings are aligned to define 3-D pores that extend partially through first section
US2021206961	(EOSE) EOS ELECTRO OPTICAL SYSTEMS (EOSE) EOS NORTH AMERICA INC	Improved material useful in additive manufacture of three-dimensional object, comprises biodegrading additive incorporated in material which facilitates breakdown of material, when material is placed in environment for disposal
FR3128959	(AQOR) ARKEMA FRANCE	Thermoplastic polymer powder composition used for manufacture of article, comprises polymer powder having preset average volume diameter, span and ratio of bulk density of powder and density of material measured on powder after melting
EP4173801	(SIEI) SIEMENS HEALTHCARE GMBH (CUBI-N) CUBICURE GMBH	Metal-filled resin formulation used in three-dimensional printing for forming additively manufactured component, comprises photopolymerizable matrix component comprising monomers, oligomers and prepolymers, metallic filler having preset density, and photoinitiator
KR20230086479	(ODSO-N) ODS CO LTD	Composition comprises photocurable compound, incompletely cured indicator and antioxidant, where incompletely cured indicator has both photopolymerization initiation function and incomplete curing indicator function
WO2023094979	(UBAM) UNIV BOLOGNA ALMA MATER STUDIORUM	Photo-crosslinkable composition used in three-dimensional stereo-lithography process, comprises unsaturated photo-crosslinkable polyester having polyol unit, carboxylic unit and unsaturated functionalizing unit as constituent units, photo-crosslinking monomer and photopolymerization initiator
DE102021213329	(SIEI) SIEMENS ENERGY GLOBAL GMBH & CO KG	Nickel-cobalt superalloy useful for producing powder and component, preferably turbine component, comprises carbon, chromium, tungsten, titanium, aluminum, tantalum, yttrium, nickel, hafnium, cobalt, zircon, boron and silicon
WO2023072570	(BASE) BASELL POLYOLEFINE GMBH (UYFR) UNIV FREIBURG ALBERT-LUDWIGS	Polyolefin composition used to make shaped article comprises heterophasic polymer composition comprising propylene polymer and copolymer of ethylene and alpha-olefin, and polyethylene composition comprising polyethylene

Nº PUBLICACIÓN	SOLICITANTE Y PAÍS DE ORIGEN	CONTENIDO TÉCNICO
EP4174206	(QUES-N) QUESTEK INNOVATIONS LLC	Alloy useful for additive manufacturing, comprises chromium, nickel, carbon, titanium, vanadium, tungsten, molybdenum, copper, manganese, nitrogen, oxygen, niobium, silicon, and iron and incidental elements and impurities
EP4166259	(SAND-N) SANDVIK MACHINING SOLUTIONS AB	Metal powder used for additive manufacturing E.G. binder jetting for producing article I.E. martensitic steel, comprises nickel, chromium, molybdenum, titanium, silicon, manganese, aluminum, cobalt, nitrogen and/or carbon, and balance being iron and usual impurities
EP4154842	(PROT-N) PRO3DURE MEDICAL GMBH	Three-dimensional printing resin used for forming polymer for producing molded product with separation effect E.G. dental model with separation effect, comprises monomer or oligomer comprising at least one acrylate or methacrylate subunit, initiator, and saturated fatty acid or carboxylic acid ester
WO2023064985	(UYQU) UNIV QUEENSLAND	Additive composition for producing alloys and printed parts, comprises titanium, aluminum, vanadium, and beta-stabilizing element

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Dispositivos



Nº PUBLICACIÓN	SOLICITANTE Y PAIS DE ORIGEN	CONTENIDO TÉCNICO
WO2023119288	(GILO-I) GILOH E	Shape-changing printing bed system for use during additive manufacturing, has control system controlling change in size and shape of elastic sheet by controlling change in direction and extent of force applied by manipulator unit
WO2023114051	(VELO-N) VELO3D INC	Device for directed traversal in environment contaminated by debris of three-dimensional printing, has layers that are overlapped in direction different from that of long axis, where layers are arranged along long axis
KR20230065397	(KIMA) KOREA INST MACHINERY & MATERIALS	Extrusion-type three-dimensional printer for use in high-rise building, has nozzle portion that is arranged on side of extrusion unit, and formed with hole through which material is moved to outer side, and flattening unit contacted with moved material
WO2023075760	(HEWP) HEWLETT-PACKARD DEV CO LP	Build material processing system useful in 3-dimensional printer, comprises build volume interface to receive container including build volume comprising powdered build material layers, build material removing device and controller
WO2023069090	(HEWP) HEWLETT-PACKARD DEV CO LP	Three-dimensional printer of three-dimensional printing system for generating three-dimensional objects, comprises process chamber defining process volume, and carriage to reciprocate laterally within process volume
EP4180478	(CVST) COVESTRO DEUT AG	Producing additive useful for three-dimensional target object, preferably molding, comprises using a printing material and a support material, and using solvent to remove copolycarbonate as supporting material
US2023142287	(HEWP) HEWLETT-PACKARD DEV CO LP	Method for forming lattice anchor for three-dimensional object with build material within powder bed to form layer of three-dimensional object by three-dimensional printing system used in powder bed fusion process, involves forming lattice anchor at depth within powder bed to secure lattice anchor

Nº PUBLICACIÓN	SOLICITANTE Y PAIS DE ORIGEN	CONTENIDO TÉCNICO
WO2023080888	(HEWP) HEWLETT-PACKARD DEV CO LP	Post processing system, has cooling system for cooling polymer object, heating device for raising temperature of polymer object, and controller for determining parameters for heating and cooling and performing operation of cooling system
DE102021127824	(APIU-N) APIUM ADDITIVE TECHNOLOGIES GMBH	Device for processing surface of extrusion strand extruded by three-dimensional printer for use in fused filament fabrication, has mold provided with mold-shaped body that is connected with extrusion strand to edit surface of extrusion strand
US2023173758	(ESSE-N) ESSENTIUM INC (ESSE-N) ESSENTIUM IPCO LLC	Catalytic converter system for build chamber volume of three-dimensional printer, has heater for heating catalyst substrate of catalytic converter to reduction efficiency temperature, and controllers connected with blower assembly
WO2023101682	(HEWP) HEWLETT-PACKARD DEV CO LP	Reduction in surface roughness of cured three-dimensional printed product for E.G. footwear, involves applying liquid solvent comprising alcohol to cured three-dimensional printed product, and heating product at temperature below melting point of product using localized heat source
US2023173751	(PRIS-N) PRISAM LLC	Apparatus for additive manufacturing of lattice geometry structures using nonplanar toolpathings by using fused granulate fabrication, has extruder provided with extruder nozzle extending from free end, and cooling nozzle extending from free end of set of articulated arms
JP2023046281	(MIKI) MIMAKI ENG CO LTD	Shaping apparatus for molding shaped article, has flattening unit that is held in guide element movably in main scanning direction outside a carriage, and is connected to carriage so as to be moved together with carriage in main scanning operation
KR20230091524	(KETR) KOREA ELECTRONICS TECHNOLOGY INST	Support sink application method for three dimensional (3D) printing heat dissipation analysis, involves performing heat dissipation simulation with support sink added to 3D model, and performing support sink adjustment operation based on simulation result by support sink application system
WO2023069053	(TUSA-N) TUSAS TURK HAVACILIK VE UZAY SANAYII AS	System used to produce powder E.G. powder bed additive, has control unit to change feeding rates of primary and secondary materials by feeding unit to approximate composition content data of powder and waste gas from composition meter

Nº PUBLICACIÓN	SOLICITANTE Y PAIS DE ORIGEN	CONTENIDO TÉCNICO
WO2023069090	(HEWP) HEWLETT-PACKARD DEV CO LP	Three-dimensional printer of three-dimensional printing system for generating three-dimensional objects, comprises process chamber defining process volume, and carriage to reciprocate laterally within process volume
WO2023075762	(HEWP) HEWLETT-PACKARD DEV CO LP	Heat exchanger E.G. singleflow heat exchanger used to transfer heat from heat source such as processor to substance E.G. fluid, has spiral structure that is to mix fluid to pass through three-dimensional lattice structure
JP2023083047	(KOBM) KOBE SEIKO SHO KK (KOBM) KOBE STEEL LTD	Additive manufacturing method of three-dimensional molded product, involves irradiating laser beam with second beam intensity higher than first beam intensity to melt and solidify metal powder in irradiated region in irradiated area
US2023173585	(XERO) XEROX CORP	Apparatus for ejecting melted metal drops to form objects, has controller for selectively connecting coil of electrical conducting wire to source of electrical power to generate magnetic field through which ejected metal drops pass to slow velocity of ejected melted metal drops
US2018111192	(HUNT-N) HUNTINGTON INGALLS INC	Nondestructive inspection system for evaluation of additive manufacturing (AM) build portion, has induction data analyzer which processes impedance data to obtain AM build portion impedance characteristic
WO2023048749	(HEWP) HEWLETT-PACKARD DEV CO LP	Additive manufacturing system used to produce three-dimensional object, has solidification system selectively solidifying layer of build material, and controller lowering bed by amount in preparation for receiving build material
WO2023117968	(BOND-N) BOND HIGH PERFORMANCE 3D TECHNOLOGY BV	Extrusion based additive manufacturing apparatus for manufacturing objects inside build room, has printhead and/or base coupled to three-dimensional positioning system to allow to deposit tracks of modeling material to build object
EP4173802	(ZORT-N) ZORTRAX SA	Recurrent mounting system for platform and resin vat for UV LCD three-dimensional printer, has hook that is pivotable with respect to clamp when lock is unlocked and position of hook relative to platform is adjustable by adjusting screws
WO2023086861	(ESSE-N) ESSENIUM IPCO LLC	Three-dimensional (3D) printer head has main sensor and main sensor trigger that are mounted to main feed assembly, where sub sensor and sub sensor trigger that are mounted to sub feed assembly

Nº PUBLICACIÓN	SOLICITANTE Y PAIS DE ORIGEN	CONTENIDO TÉCNICO
US2023150200	(FORM-N) FORMLABS INC	Curing system for additive fabrication system, has liquid crystal cell that is configured to receive light from light source, and main polarizer that is mounted between light source and liquid crystal cell
HU2100389	(DUPL-N) DUPLEX 3D GMBH	Apparatus for manufacturing three-dimensional object, has build base unit arranged in in-use state between first build volume and second build volume to enable building of object preform on starting build side by first build head
WO2023084930	(JVCK-N) JVCKENWOOD CORP	Stereolithography device used in manufacture of object E.G. finished product, has irradiation control unit that irradiates photo-curable resin layer with light corresponding to cross-sectional shape of three-dimensional printed object at predetermined height position to form cured layer
KR20230064665	(INBI-N) INBISZ CO (INVI-N) INVIZ CO LTD	Customized rehabilitation aid manufacturing device for companion animals using three-dimensional printing technology comprises E.G. scanner is provided on one side of holding device to scan body of companion animal located on support device
EP4197743	(ATMA-N) ATMAT SP ZOO	Bottom-up three-dimensional printer for object in platform, has control system for controlling actuators and mounted on frame or chassis in housing, and platform fixed in platform head that is mounted in suspension mechanism
US2018222125	(THDE) 3D SYSTEMS INC	Three dimensional printing system for forming three dimensional article of manufacture, has first light engine that is configured to receive off signal, and deactivate first light source in response to off signal
FR3129317	(GALE-N) GALEA 3D PRINTING (GALE-N) GALEA IND	Additive manufacturing method involves transferring individual layers by successively applying each transfer support to additive portion during manufacture to deposit individual layer supported by transfer support
US2023135458	(USGO) LAWRENCE LIVERMORE NAT SECURITY LLC	Volumetric additive manufacturing system for forming structure from a volume of resin using microwave signals, comprises electronic controller; build volume is formed by volume of resin; microwave signal generating subsystem responsive to information generated by beam forming algorithm and antenna
WO2023068965	(URAL-N) URALAVIASPETSTEKHNOLOGIYA CO LTD	Table for three-dimensional printing, has film winding unit containing reel with spindle that is driven by stepper motor with gearbox and lever that adjusts diameter of rotating shaft of bobbin

Nº PUBLICACIÓN	SOLICITANTE Y PAIS DE ORIGEN	CONTENIDO TÉCNICO
FR3128397	(MICL) CIE GEN ETAB MICHELIN & CIE	Three-dimensional printing machine for manufacturing components of very different shapes by depositing malleable printing material in successive layers, has secondary observation window that is transparent over portion of visible light spectrum and placed opposite main observation window
WO2023062662	(UPBI-N) UPBIOCARE SRL	Thermoplastic filament feeder for three-dimensional printer, has gripping body comprising gripping body rotatable around respective rotation axis oriented parallel to main movement direction, where gripping body are counter-rotating
WO2023052232	(COGI-N) COGIT COMPOSITES	Printing block I.E. print head, for three-dimensional printer for depositing plastic from powder, has toothed wheel mechanism arranged in duct and driving viscous material from storage chamber to push material back toward removal unit

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Productos



Nº PUBLICACIÓN	SOLICITANTE Y PAÍS DE ORIGEN	CONTENIDO TÉCNICO
WO2023091146	(IPLA-N) IP LAW FIRM GUY LEVI LLC (NANO-N) NANO DIMENSION TECHNOLOGIES LTD	Method for fabricating radio-frequency and millimeter wave circuits, involves providing ink jet printing system, providing dielectric ink composition and conductive ink composition, and obtaining file representative of layer
DE102021130125	(ISCH) SCHAEFFLER TECHNOLOGIES AG & CO KG (UYEL) UNIV ERLANGEN-NUERNBERG	Method for producing tape tensioning rollers, involves additively producing different base housing of belt tensioning rollers based on uniform basic roller shape
WO2023085239	(NEBT) NABTESCO CORP (TORN) TORAY ENG CO LTD (CMET-N) CMET INC	Manufacture of three-dimensional molded article, involves filling outer mold with thermosetting resin composition containing thermally expandable microcapsules and curable resin, heating resin composition to preset temperature
WO2023083412	(MOTU) MTU AERO ENGINES AG	Rotor shaft for electric motor of aircraft engine, has rotor device that radially encloses distribution portion, and is non-positively connected to baseplate of flange
KR20230066900	(JEON-I) JEONG I S	Preparing dental and total medical resins for three dimensional printing resin, by performing surface modification by irradiating E.G. 2,2-bis(4-(2-hydroxy-3-methacryloxypropoxy)phenyl) propane, and triethylene glycol dimethate acrylate, preparing and aging liquid mixtures in room temperature
US2022118514	(GENE) GENERAL ELECTRIC CO	Structure for performing additive manufacturing of turbine rotor blade for a combustion turbine engine, has support ligament coupled to mask and exterior surface of main portion at location adjacent to opening to support portion of mask
WO2023075797	(HEWP) HEWLETT-PACKARD DEV CO LP	Flexible structure for providing cushioning and support, has spring of spring unit comprising primary end and secondary end, and end of one spring adjoins end of spring of adjacent spring unit
US2020223534	(TEXT) BELL HELICOPTER TEXTRON INC (TEXT) TEXTRON INNOVATIONS INC	Removable airflow oscillation device of removable airflow oscillation system, has casing that is configured to be inserted into externally-accessible device slot on exterior of vehicle and protrusion is extended from first side of casing
JP7285908	(MOON-N) MOON CREATIVE LAB INC	Core/sheath structure for manufacturing floc products, has sheath that covers outer peripheral surface and comprises second thermoplastic polymer and selected from group consisting of fibers and dispersed in second thermoplastic polymer

Nº PUBLICACIÓN	SOLICITANTE Y PAÍS DE ORIGEN	CONTENIDO TÉCNICO
FR3129924	(EADS) AIRBUS DEFENCE & SPACE SAS	Cryostat for space component, has intermediate screens and outer screen arranged around each other to delimit closed volume, and internal connecting elements fixed between successive metal screens that are spaced from each other
DE102021131519	(BAYM) BAYERISCHE MOTOREN WERKE AG	Brake lining backing plate for brake pad of vehicle disc brake, has damping cavity that is enclosed by two outer walls and outer peripheral wall, and is provided with granular damping material that is partially filled
KR20230076108	(DENT-N) DENTIS CO LTD	Orthodontic sheet used in dental orthodontic appliance, comprises sheet layers and intermediate sheet layer comprising bead portion formed of harder material and binding portion for binding layers by filling material formed between sheet layers
US2023157837	(LEFE-I) LEFEBVRE S	Self-seating spinal cage used in spinal cage implant and, more particularly, to spinal fusion cage having built-in anchorages, comprise plate member that bisects porous scaffolding, and plate member and spaced support members define unitary structural body
EP4183682	(EADS) AIRBUS HELICOPTERS DEUT GMBH	Human and non-human cargo attachment device for use with rotorcraft to permit transport of E.G. human outside of rotorcraft in military mission, has lateral attachments whose associated inner webs form tube-shaped inner region
KR20230071806	(KUWO-N) KUWOTECH CO LTD	Method for manufacturing personalized dental bone surface implant, involves designing bone surface implant such that abutment is integrally provided and contacts bone surface of edentulous portion of patient
ES1298332	(UYMA-N) UNIV MADRID POLITECNICA	Modular piece for construction, has single prismatic body of plastic material manufactured with three dimensional printing, where prismatic body includes upper base, lower base opposite upper base, and two lateral faces opposite each other
WO2023049229	(MINU) UNIV MINNESOTA	Three-dimensionally printing LED display involves extrusion printing first conductive layer, spray printing active layer using spray printing nozzle, and extrusion-printing second conductive layers
EP4163059	(VOLV) VOLVO TRUCK CORP	Heavy-duty vehicle maintenance tool, has cylindrical wall enclosing inner cavity and connecting open and closed ends, where end comprises annular portion with annular end surface at right angles to central axis

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Procesamiento de Datos



Nº PUBLICACIÓN	SOLICITANTE Y PAÍS DE ORIGEN	CONTENIDO TÉCNICO
EP4201647	(BOND-N) BOND HIGH PERFORMANCE 3D TECHNOLOGY BV	Extrusion based additive manufacturing apparatus for manufacturing objects inside build room, has printhead and/or base coupled to three-dimensional positioning system to allow to deposit tracks of modeling material to build object
WO2023113770	(HEWP) HEWLETT-PACKARD DEV CO LP	Method for predicting powder degradation for three-dimensional (3D) print, involves predicting amount of powder degradation in build volume based on predicted amount of degradation of build volume
WO2023086908	(UYYO) UNIV BRIGHAM YOUNG	Method of forming object, involves vaporizing volatile fluid by applying energy beam to form trench that defines boundary of three-dimensional (3D) object powder layer of object, and adding binder to 3D object powder layer
WO2023085288	(MITO) MITSUBISHI HEAVY IND CO LTD (MIBI) MITSUBISHI POWER LTD	Three-dimensional data generation method for screws for three-dimensional laminate shaping, involves generating fourth screw data by extracting portion having desired length from overlapping portion of first screw data and second screw portion data in third screw data
WO2023081404	(REGC) UNIV CALIFORNIA	Method for producing three-dimensional object, involves illuminating radiation-reactive material with patterned radiation, and removing remaining portion of radiation-reactive material to provide three-dimensional object
EP4194125	(EOSE) EOS GMBH ELECTRO OPTICAL SYSTEMS	Method for generating control data for device for additive manufacturing of component, involves mechanically connecting support structure elements to surface of component and support structure respectively
US2018222125	(THDE) 3D SYSTEMS INC	Three dimensional printing system for forming three dimensional article of manufacture, has first light engine that is configured to receive off signal, and deactivate first light source in response to off signal
WO2023059313	(HEWP) HEWLETT-PACKARD DEV CO LP	System for determining average size of holes for region of three-dimensional printed object based on luminance measurement, has memory communicatively coupled to processor and storing executable instructions
KR20230084854	(SEUN-I) SEUNG W Y	Method for manufacturing personalized orthosis using three-dimensional printing technology, involves receiving body size information of user measured by three dimensional scanner in manufacturing device

Nº PUBLICACIÓN	SOLICITANTE Y PAÍS DE ORIGEN	CONTENIDO TÉCNICO
US2023166452	(IBM) INT BUSINESS MACHINES CORP	Method for repairing defective component of three-dimensional printer such as self-repairing three-dimensional printers, involves performing set of print jobs and repair actions in accordance with determined order of priority
KR20230063065	(ROKI-N) ROKIT HEALTHCARE INC	Three-dimensional printing control device, has processor for setting width of output line according to viscosity or surface tension characteristics of output material according to height of dispenser needle from which material is discharged
US2023136182	(NEWJ) NEW JERSEY INST TECHNOLOGY	Preparing three-dimensional scaffold or device involves printing first layer of thermally curable polymeric ink on heated support, printing second layer of the ink on first layer, and setting time period to pause between printing first and second layer and each subsequent layer of ink
US2023110164	(KYND-N) KYNDRYL INC	System for facilitating three-dimensional printing of objects, has processing circuit for creating print plan to be used to print object in three-dimensions, where print plan includes instructions to print portions of object
US11673321	(EOSN-N) EOS NORTH AMERICA INC	Making article for footwear, involves obtaining data from measurement of pressures across an area of subject foot, corresponding data to two-dimensional pressure map of model of article for footwear and identifying pressure-point locations of subject foot on model
FR3129650	(COMP) SAINT-GOBAIN GLASS FRANCE	Method for manufacturing glazing of driving assistance system installed in bay of motor vehicle, involves obtaining base by three-dimensional printing, and depositing flocking comprising black fibers on closure location by spraying fibers
WO2023066772	(COBO-N) COBOD INT AS (UYSY-N) UNIV SYDDANSK	Collision avoidance of three dimensional robotic concrete printer, involves developing three dimensional collision model of concrete structure in parallel to application and/or manipulation process
US2018111192	(HUNT-N) HUNTINGTON INGALLS INC	Nondestructive inspection system for evaluation of additive manufacturing (AM) build portion, has induction data analyzer which processes impedance data to obtain AM build portion impedance characteristic



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