

VT

PATENTES

IMPRESIÓN 3D

15



OBJETIVOS
DE DESARROLLO
SOSTENIBLE



Vigilancia
Tecnológica
3º 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

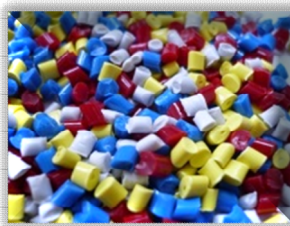
como inventor del año en 2014 en la categoría de inventores no europeos.

Cuando trataba de buscar un sistema para mejorar el proceso de realización de prototipos de pequeñas piezas de plástico que utilizaba para probar 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 tercer 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 |
|----------------|------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WO2023137495 | (SAKU-N) SAKUU CORP | Printing method for additive manufacturing (AM) process, involves moving powder, depositing binder to powder at binder jetting station, removing portion of powder, after depositing binder, and depositing removed portion of powder in collection container |
| WO2023137496 | (SAKU-N) SAKUU CORP | Method for performing additive manufacturing process on continuous substrate or powder bed in inkjet printing system, involves moving carrier frames with segments having layers mounted to stacking station to stack layers on one another |
| EP4238742 | (GOOR) GOODRICH CORP | Method for additively manufacturing structural component of aircraft, involves moving extruded fiber-matrix body relative to workpiece to friction-stir for additively manufacturing layer of workpiece from extruded fiber-matrix body |
| FR3133557 | (BLAC-N) BLACHERE ILLUMINATION SAS | Method for manufacturing E.G. two-dimensional decorative object from layer of extruded bead of polymer-based composition, involves passing polymer-based composition through extrusion die from supply inlet of composition to extrusion head |
| US2023294175 | HAMILTON SUNDSTRAND CORP [US] | Method of building additively on a billet substrate |
| EP4241906 | (SIEI) SIEMENS AG | Nickel-based alloy used for producing component for engine construction, comprises chromium, tantalum, cobalt, aluminum, tungsten, molybdenum, hafnium, and boron |
| WO2023126391 | (LUSC-N) LUXEMBOURG INST SCI & TECHNOLOGY | Filament used for manufacturing end product by additive manufacturing process or by a winding technique, comprises fibers embedded in reactive thermoplastic resin comprising (meth)acrylic polymer, (meth)acrylic monomer and organic peroxides |
| EP4223437 | (INCU-N) INCUS GMBH | Additive manufacture of metallic or ceramic component involves applying supporting layer to surface of printing pad having recesses such that green portion is built up in layers on support layer, removing green portion from printing device |
| KR20230132264 | (UYPO) POSTECH ACAD-IND FOUND (UYPO) POSTECH RES & BUSINESS DEV FOUND (UYPU) UNIV PUSAN NAT IND COOP FOUND | Producing adipose model through environmental control involves creating bath suspension using first bioink, three-dimensional (3D)-printing second bioink in bath suspension to produce adipose model and culturing bath suspension |

| Nº PUBLICACIÓN | SOLICITANTE Y PAÍS DE ORIGEN | CONTENIDO TÉCNICO |
|----------------|-------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| JP2023114158 | (KOBM) KOBE SEIKO SHO KK (KOBM) KOBE STEEL LTD | Control information generation device for generating control information for controlling welding device, comprises welding device for forming layer shape, coordinate information acquisition unit, movement amount calculation unit, path updating unit, and control information output unit |
| JP2023107607 | (HITA) HITACHI LTD | Resin material used for additive manufacturing together with base resin for manufacturing laminate-molded article, comprises adjustment resin comprising two polymerized units for adjusting bonding direction of adjacent polymerized units |
| WO2023141296 | (ENTG) ENTEGRIS INC | Glass handler holder used in robotic arm of automated glass-handling applications to manipulate hot glass items I.E. bottles, comprises connector having tab, body to connector and extending toward base and base includes insert opening |
| 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 |
| US2023243168 | (BRAN-N) BRANCH TECHNOLOGY INC (CULV-I) CULVER M (LEWA-I) LEWANDOWSKI M | Method for retrofitting existing exterior of E.G. residential building, involves constructing custom retrofit panel system including set of panels, and forming panel frame by additive manufacturing, where frame defines interstitial spaces |
| KR102572556 | (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 |
| JP7347715 | (HITK) PROTERIAL LTD | Method for evaluating dimensional quality of laminate-molded product, involves measuring deformation amount of sample before and after cut off from base plate by measuring dimensions of cut sample, and evaluating dimensional quality of laminate-molded product based on deformation amount of sample |
| US2023271251 | (XERO) XEROX CORP | Operating metal drop ejecting apparatus, involves operating extruder to apply layer of silicate slurry to surface, and operating ejector head to eject melted metal drops onto layer of silicate slurry |
| US11693158 | (UYFL) UNIV FLORIDA (OKPO-I) OKPOWE O (PALA-I) PALA N (WANG-I) WANG C | Fabricating gradient refractive index lens involves preparing sol gel precursor comprising first material, preparing resin sludge comprising second material and polymer material, where second material being different from first material |

| Nº PUBLICACIÓN | SOLICITANTE Y PAÍS DE ORIGEN | CONTENIDO TÉCNICO |
|----------------|--------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| US2023264793 | (DRAG) DRAEGER SAFETY AG & CO KGAA | Pressure reduction device E.G. breathing regulator, for adjusting gas pressure in diving applications used by firefighters, has gas supply line providing fluid communication from high pressure gas source to gas inlet of inner chamber for supplying and delivering quantities of gas |
| DE102022201217 | (BOSC) BOSCH GMBH ROBERT (BOSC) BOSCH LLC ROBERT | Method for producing waveguide antenna, involves applying layer of metal nanoparticle-containing suspension to edge of housing material layer to gap, and sintering suspension containing metal nanoparticles |
| WO2023126187 | (SGNF) SIGNIFY HOLDING BV | Manufacturing three dimensional (3D) item by providing shell component comprising shell material, providing core component comprising conductive wires and flexible mantle, feeding shell component into nozzle of 3D printer, and layer-wise depositing of 3D printable shell material and core component |
| WO2023146533 | (HEWP) HEWLETT-PACKARD DEV CO LP (UYTU) UNIV NANYANG TECHNOLOGICAL | Method for generating site-specific alloyed section of three-dimensional product during three-dimensional printing, involves patterning layers of metal-based build material with binder to form intermediate structure, and heat-treating intermediate structure |

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| Nº PUBLICACIÓN | SOLICITANTE Y PAIS DE ORGEN | CONTENIDO TÉCNICO |
|----------------|--------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WO2023123482 | (ELRO) ELKEM SILICONES SHANGHAI CO LTD | Additive manufacturing of silicone elastomer article used in medical material, comprises E.G. charging first and second parts of silicone composition, and dispensing second part of composition into first part of silicone composition |
| WO2023156815 | (GHAZ-I) GHAZITABAR A (IMAN-I) IMANIAN M E (NADE-I) NADERI M | Three-dimensional printing system for fabricating aerographene adsorbent, comprises inkjet printhead comprising nozzles configured to spurt out graphene ink composition in jets onto substrate, and cooling mechanism configured to freeze graphene ink composition on substrate |
| WO2023126830 | (TAST) TATA STEEL LTD | Synthesis of dense, spherical copper powders for E.G. friction components, involves reducing copper-containing starting materials in presence of solvent, washing, surface processing and drying |
| EP4220707 | (ULBR) UNIV VRIJE BRUSSEL | Self-healing composite material used for forming one-dimensional, two-dimensional or three-dimensional structure, comprises Diels-Alder polymer comprising reaction product of composition comprising polymaleimide and polyfuran monomeric unit having preset functionality, conductive filler and filler |
| WO2023163241 | (GRAP-N) GRAPHY INC | Photocurable composition used for transparent orthodontic device, comprises photocurable oligomer, reactive monomer, photoinitiator, and nanoclay which enhances mechanical properties of output printed by three-dimensional printing due to interaction of reactive monomers and electrical attraction |
| WO2023176650 | (HITK) PROTERIAL LTD | Nickel-chromium alloy component used for manufactured product, comprises chromium, molybdenum, and nickel, and is laminate-shaped component having face centered cubic structure and body-centered cubic structure |
| JP7306601 | (JFES) JFE STEEL CORP | Laminate-molded article for automobile materials, comprises steel matrix comprising carbon, silicon, manganese, phosphorus, sulfur, nitrogen, oxygen and aluminum, and ceramic particles, and has preset porosity of pores |
| WO2023133624 | (THRE-N) 3DBIOFIBR INC | Production of core-sheath polymer strand for E.G. protective clothing, involves inserting nucleation element through pre-strand composition comprising polymer at least partially into another pre-strand composition, and withdrawing nucleation element from pre-strand composition |

| Nº PUBLICACIÓN | SOLICITANTE Y PAIS DE ORGEN | CONTENIDO TÉCNICO |
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| WO2023154627 | (REGC) UNIV CALIFORNIA | Printing doped conducting polymer used as conductive traces, involves printing doped conducting polymer from nozzle onto substrate within coagulation bath which includes concentration of material providing dopant of doped conducting polymer |
| WO2023140387 | (HITK) PROTERIAL LTD | Tungsten carbide-based cemented carbide used for forming cemented carbide component E.G. cutting tool, comprises cobalt, copper, titanium, zirconium and/or chromium, tungsten, boron, and carbon |
| WO2023136285 | (MITV) MITSUBISHI MATERIALS CORP | Aluminum powder product used for forming laminate-molded article, comprises powder particle component made of aluminum or its alloy, and barrier layer, and has preset oxygen content, and does not include aluminum hydroxide phase after treating with pure water at preset condition |
| WO2023123326 | (ELRO) ELKEM SILICONES SHANGHAI CO LTD | Producing three-dimensional printed article, preferably three-dimensional elastomer silicone article, comprises exposing photocurable silicone composition to actinic radiation, and repeating previous steps on former cured cross section |

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Dispositivos



| Nº PUBLICACIÓN | SOLICITANTE Y PAÍS DE ORIGEN | CONTENIDO TÉCNICO |
|----------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WO2023145933 | (KURS) KURARAY CO LTD | Method for manufacturing resin sheet, involves applying pressure to sheet-like resin molded article formed by three dimensional (3D) printer using three dimensional printer while heating sheet-like resin molded article to deform sheet-like resin molded article to obtain compressed sheet |
| US2023264419 | (TWOS-N) 2679667 ONTARIO INC | Fused deposition modeling multi-head multicolor three-dimensional printer for computer numerical control milling services in industrial application, has actuation arm connected to core exchange mechanism, and cutting mechanism for cutting filament |
| US2023234290 | (PRCA) PALO ALTO RES CENT INC | Apparatus for supporting build portion produced in three-dimensional additive printing manufacturing process, has pin array including support plate, and locking component for engaging elongated pins to lock elongated pins against movement in vertical direction relative to support plate |
| US2023226763 | (FERM-N) FERMI RES ALLIANCE LLC | System for improving build platform of three-dimensional printer, has build platform configured for additive manufacturing machine to produce additively manufactured object on base film, where additively manufactured object bonds to base film |
| 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 |
| WO2023158653 | (DESK-N) DESKTOP METAL INC | Drum for storing and processing build material powder used in binder jetting additive manufacturing, has gas inlet that receives inflow of inert gas, and gas outlet that exhausts used gas from interior of drum |
| NL1044237 | VEDA GROUP B V [NL] | 3D Manufacturing system, extruder system and filament guiding system therfor |

| Nº PUBLICACIÓN | SOLICITANTE Y PAÍS DE ORIGEN | CONTENIDO TÉCNICO |
|----------------|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WO2023140831 | (HEWP) HEWLETT-PACKARD DEV CO LP | Three-dimensional printing kit for forming multicolored three-dimensional printed product, comprises build material, colored fusing agent including E.G. solvent, water miscible solvent and visible light absorber, and colored fusing agent including E.G. solvent, visible light absorber and colored dye |
| US2023226764 | (SAKU-N) SAKUU CORP | Apparatus for providing conditioning to powder deposited on substrate, in three dimensional printing apparatus, has conditioning apparatus that applies conditioning agent to powder on substrate, and conditioning agent that is comprised of material which increases cohesiveness of powder |
| WO2023129660 | (STTS) EVOLVE ADDITIVE SOLUTIONS INC | Support composition useful for additive manufacturing method, comprises soluble support polymer and finely divided particulate |
| WO2023137493 | (SAKU-N) SAKUU CORP | Carrier plate used in clamping flexible substrate in carrier plate assembly during manufacture of multilayer structure, has first and second clamping mechanisms that are configured to move from open positions to closed positions |
| DE102022101946 | (EXON-N) EXONE GMBH | Print head cleaning device for three-dimensional printer, has print head cleaning device for providing carrier, wiping element for providing nozzles adapted to dispense liquid detergent, where wiping element and nozzles are wetted partially by liquid cleaning agent that is dispensed from nozzles |
| US2023234082 | (AERO-N) AERO PUMP GMBH | Method for producing nozzle body for different liquids, involves partially processing nozzle body blank produced by injection molding process or three-dimensional printing process by laser processing |
| WO2023137487 | (SAKU-N) SAKUU CORP | Removing non-patterned powder from substrate, involves applying laser beam having beam parameters to powder for period of time sufficient to remove powder so that upper surface of substrate is free of powder |
| FR3132046 | (MFTE-N) MFTECH | Filament winding machine for winding fibrous sheet comprises at least one continuous fiber on body, machine comprises winding means comprising winding head associated with fiber storage means and final guide member comprises movement system |
| EP4205950 | (BIOM-N) BIOMET 3I LLC | Printing cartridge for delivering print material, has control valve device configured to transition where outlet opening received in trough device is in fluid communication with cavity of material cartridge such that print material is output into trough in open configuration |

| Nº PUBLICACIÓN | SOLICITANTE Y PAÍS DE ORIGEN | CONTENIDO TÉCNICO |
|----------------|---------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WO2023137491 | (SAKU-N) SAKUU CORP | Method for calendering powder layer formed on substrate used for three-dimensional printing, involves placing substrate on plate, placing plate over layer to sandwich substrate and layer between plates to form multilayered structure and calendering multilayered structure between calendering rollers |
| WO2023137494 | (SAKU-N) SAKUU CORP | Method for bonding non-cured layer to cured layer in additive manufacturing system, involves moving flexible compliant pressure conveyance media into contact with substrate on second side of substrate opposite to first side mounted with non-cured layer |
| WO2023166669 | (FUKI) FUJI CORP | Shaping method for production of molded article, involves setting number of flattening operations performed by roller during formation of upper flattened layer larger than the number of flattening operations performed by roller during formation of lower flattened layer |
| WO2023156686 | (ITTE-N) INT TECHNOLOGY 3D PRINTERS SLU | Smart three-dimensional (3D) printing and additive manufacturing construction system for reproducing previously designed 3D models in computer aided design (CAD) model, has programmable logic controller which comprises program to detect existing defects in print cord and detect defective surfaces |
| 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 |
| WO2023129489 | (VELO-N) VELO3D INC | Device for determining level of particulate material in container of three-dimensional printing system, has hollow element which allows traversal of particulate material to be arranged in container and holes facilitate ingress or egress of particulate material |
| WO2023122645 | (ESSE-N) ESSENTIUM IPCO LLC | Method of printing two independent objects, involves printing first object with first print head on print bed in printer and second object with second print head in printer |
| WO2023129063 | (FIGE-N) FIGESFIZIK & GEOMETRIDE BILGISAYAR SIMUL | Powder spreading carriage used in three-dimensional metal printer, has E.G. compression plate fixing blade to carriage body, and plate connector fixing compression plate by compressing compression plate towards carriage body |

| Nº PUBLICACIÓN | SOLICITANTE Y PAÍS DE ORIGEN | CONTENIDO TÉCNICO |
|-----------------------|-------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ES1300140 | (LOPE-I) LADO LOPEZ D | Modular three-dimensional (3D) manufacturing machine used in 3D manufacturing industry, has Z-axis precision guides which are located on pillars which are mounted on X-axis skids that are moved along X-axis precision linear guides, and X-axis precision linear guides which are fixed to main base |
| WO2023149874 | (HEWP) HEWLETT-PACKARD DEV CO LP | Additive manufacturing system I.E. three-dimensional inkjet printing device, has build material deposition device to deposit layer of powder build material, where fusing agent deposits fusing agents on portion of layer |
| WO2023137490 | (SAKU-N) SAKUU CORP | Apparatus for removing powder from substrate, has edge vacuum nozzles and central vacuum nozzle that are configured to move with blade to remove powder from both edges and central region of first portion |
| 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 |
| DE102023100195 | (XERO) XEROX CORP | Metal gob ejector for use in E.G. magnetohydrodynamic printer, has graphite applicator for applying graphite to surface to form graphite interface between support structure surface and portion of metal object formed from molten metal droplets |
| WO2023158667 | (DESK-N) DESKTOP METAL INC | System for binder jet additive manufacturing from build material powder, has gas management system that maintains conditioned environment within first volume during process of additive manufacturing from build material powder |

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Productos



| Nº PUBLICACIÓN | SOLICITANTE Y PAÍS DE ORIGEN | CONTENIDO TÉCNICO |
|----------------|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FR3132449 | (SAFR-N) SAFRAN ADDITIVE MFG CAMPUS | Intermediate assembly used in additive manufacture, comprises workpiece containing overhanging portion and support structure containing fusible porous connecting portion, sole extending from connecting portion and column for carrying sole |
| WO2023064527 | (METH-N) METHODIST HOSPITAL SYSTEM | Device useful for treating subject, comprises continuous hydrogel matrix, first chamber in hydrogel matrix, and second chamber in hydrogel matrix, where first and second chambers are perfusable |
| KR20230078304 | (LINC-N) LINC SOLUTION CO LTD | Material drying function featured fused filament fabrication-type printer, has build platform provided with inner side of main housing, and nozzle discharging liquid filament onto build platform, and air dryer module for generating dry air |
| WO2023117745 | (SAND-N) SANDVIK MACHINING SOLUTIONS AB | Preparing diamond composite used for E.G. cutting tools, involves placing diamond green body comprising diamond particles and organic binder onto graphite crucible, and subjecting green body to debinding step and infiltration step |
| JP7306600 | (JFES) JFE STEEL CORP | Laminate-molded article for automotive materials, comprises carbon, silicon, manganese, phosphorus, sulfur, aluminum, nitrogen, oxygen and iron, and has specific value ratio between high-angle grain boundary length to grain boundary length at specific misorientation angle |
| WO2023139022 | (SGNF) SIGNIFY HOLDING BV | Production of three dimensional article for lighting device, involves feeding printable material comprising printable shell material comprising thermoplastic material and core material comprising metal into nozzle of three-dimensional printer, and layer-wise depositing printable material |
| WO2023151977 | (SGNF) SIGNIFY HOLDING BV | Method for producing three-dimensional (3D) item by unit of 3D printable material, involves three-dimensional printing filament comprising 3D printable material and core material with first thermoplastic material, and first ribbon structure comprising set of two first rounds wound around first core |

| Nº PUBLICACIÓN | SOLICITANTE Y PAÍS DE ORIGEN | CONTENIDO TÉCNICO |
|----------------|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EP4243009 | (ROHR) ROHR INC | Additively manufactured noise attenuation panel for structure within aircraft structure, has blended transitions that includes first blended transition located at interface between first disk and first interior surface of first unit cell |
| WO2023165737 | (CRYA) CRYOSTAR SAS | Closed impeller manufacturing method for E.G. compressor, involves forming raw impeller part by additive manufacturing, and removing material in two areas of inner surface by post-processing to obtain intermediate impeller |
| EP4230817 | (FANT-N) FANTINELLI SRL | Three-dimensional printed building element for use in masonry structure used in building site, has connecting elements inserted in duct, and ducts comprising two internal abutments provided in upper and lower portions, respectively |
| EP4223156 | (WEED-N) WEEDWORKS GMBH | Smoke filtration device for making self- and machine-rolled conically shaped cigarettes, comprises frusto-conical tubular body with proximal end, distal end and internal smoke filtering passage and smoke filtering passage is configured as open-cell porous structure having effective porosity |
| WO2023155015 | (UYAL) UNIV ALBERTA | Passive fluid actuation method for use in E.G. medical device, involves distending jacketed elastomeric tube such that portion of tube along length expands from one diameter to another diameter |
| WO2023156055 | (FABK) META PLATFORMS TECHNOLOGIES LLC | Method for producing microlens, involves printing template structure printed on base structure, and printing smoothing layer printed on top of template structure, where template structure is built up from droplets of printing ink |
| US2023263556 | (JOHJ) DEPUY SYNTHES PROD INC | Helical distractor for 3D distraction of bone used in, such as orthopedic surgery, has distractor body with open tubular shape, and fixed footplate attached to first end of body, first key groove is set in body edges, respectively, and first end cap is set at second end |

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Procesamiento de Datos



| Nº PUBLICACIÓN | SOLICITANTE Y PAIS DE ORIGEN | CONTENIDO TÉCNICO |
|---------------------|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| JP2023117885 | (KOBM) KOBE SEIKO SHO KK (KOBM) KOBE STEEL LTD | Learning device for use in defect determination apparatus of welding control device in welding device, has learning unit that learns relationship between welding conditions, dimensions related to narrow portion, positional relationship, and defect size to generate estimation model |
| WO2023171151 | (KOBM) KOBE SEIKO SHO KK (KOBM) KOBE STEEL LTD | Learning device for obtaining temperature history of laminate E.G. manufacturing parts by laminating and molding using three dimensional (3D) printer , has learning unit that is configured for mechanically learning and generating prediction model in association with prescribed time |
| WO2023128833 | (GILM-I) GILMANOV K N (GORY-I) GORYACHKIN A B (OLES-I) OLESHNYA V V (PERE-I) PERES A V | A 3D scanning tool and a 3D scanning method |
| WO2023146547 | (HEWP) HEWLETT-PACKARD DEV CO LP | Method for generating assistance structure model for generating assistance structures together with objects, involves determining geometry and spatial arrangement of object model within virtual build volume and generating assistance structure model within virtual build volume |
| US2023243672 | (STTS) STRATASYS INC | Induction sensing method for identifying center of tip surface of nozzle of print head of three-dimensional (3D) printer, involves generating curve representing inductive field, and identifying maximum amplitude of curve to identify center of tip surface |
| WO2023168735 | (SHEN-N) SHENZHEN SNAPMAKER TECHNOLOGIES CO LTD | Method for calibrating double-nozzle three-dimensional printer involves calculating coordinate deviation of nozzle relative to another nozzle, and compensating coordinate values of former nozzle according to coordinate deviation |
| WO2023140859 | (HEWP) HEWLETT-PACKARD DEV CO LP | Three-dimensional printing process monitoring method, involves determining set of reference values for parameter for set of stages in phase based on measured values obtained for phases |
| WO2023126915 | (STTS) STRATASYS LTD | Three-dimensional (3D) printing method for labeled object, involves printing labeled 3D object based on labeled container mesh obtained by replacing tessellated container mesh overlapping area with label mesh |

| Nº PUBLICACIÓN | SOLICITANTE Y PAIS DE ORIGEN | CONTENIDO TÉCNICO |
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| FR3131546 | (TECH-N) TECHNOLOGIES AVANCEES & MEMBRANES IND SA | Method for manufacture of porous monolithic inorganic support for tangential filtration membrane, involves moving successfully extrusion head movably mounted in space above fixed horizontal plate with nominal height according to predefined numerical trajectory |
| US2023271385 | (MARK-N) MARKFORGED INC | Apparatus for correcting deviation errors when performing extrusion of printing material during three-dimensional printing, has processor for controlling extruder mechanism in accordance with corrected extrusion control command |
| US2023229825 | (STTS) STRATASYS INC | Method for polymerizing superficial features in three-dimensional-printed portions, involves populating print image with exposure energy in image area corresponding to interior model volume, and storing print image in print file for portion |
| US2023222454 | (STRO-N) STRONG FORCE VCN PORTFOLIO 2019 LLC | Robotic fleet management platform for managing of value chain network entities in ships, has processors that collectively generate approximate response to query based on summary data stored on dynamic ledger |
| US2023234294 | (KYND-N) KYNDRYL INC | Method for selecting three-dimensional printing technology and location for three-dimensional printing of sensor as portion of three-dimensional object by computer system, involves transmitting print file with optimal technology and optimal location to printer for printing object added to print file |
| US2023211560 | (IBMC) INT BUSINESS MACHINES CORP | Method for three-dimensional printing, involves deriving user behavior model of user based on analysis of data, and defining parameters of tangible component of object utilized by user when performing activity based on predicted adjustments |
| US2023185276 | (IBMC) INT BUSINESS MACHINES CORP | Method for applying E.G. three-dimensional printing design, for material addition throughout three-dimensional work envelope under automated control in marketplace, involves receiving product specification data set including information indicative of design of physical product |
| US2023234138 | (FREE-N) FREEFORM FUTURE CORP | 3D printing system such as lasing module, monitor performance or progress of lasing tasks, comprises processors, and non-transitory computer-readable media storing instructions, determining unit to be manufactured using build module of 3D printing system, determining, multiple layers of unit |

| Nº PUBLICACIÓN | SOLICITANTE Y PAIS DE ORIGEN | CONTENIDO TÉCNICO |
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| US2023098602 | (STRO-N) STRONG FORCE VCN PORTFOLIO 2019 LLC | Method for configuring robot fleets with additive manufacturing capabilities, involves provisioning additive manufacturing system based on respective provisioning configuration and set of additive manufacturing system provisioning rules that are accessible to intelligence layer |
| US2023182398 | (FABR-N) FABRIC8LABS INC | Manufacturing electrochemical-additive involves providing electrochemical additive manufacturing system, comprises system controller, deposition power supply, deposition control circuits, an electrode array, deposition electrode, and electrolyte solution, and communicatively coupling |



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