



A Study on Various Implications on Reusing in Manufacturing

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Abstract

Material recycling is the sustainable use of a substance, sustainable production, additive production, powder reuse, knowledge management, reuse of water, etc. Is the process of picking up old items and finding new ones? ... Sometimes items can be reused by others. Clothes can be donated frequently and given a second life. Recycling is better than recycling because it saves energy coming from disposing and recycling materials. This significantly reduces waste and pollution because it reduces the need for raw materials and saves both forest and water supply. When we do not recycle, reuse and reduce, we are destroying natural habitats. As it is, our planet cannot cope with the current rate of destruction. If we fail to reuse what we already have, we end up in a sticky situation of running out of resources. By reducing our waste, we are conserving our resources. Resources such as aluminum, petroleum and wood are all used to make new products such as cans, plastic bags and paper packaging. Less energy is used to recycle materials as opposed to creating new ones.

Introduction

Reuse is the use of an object for its original purpose (regular reuse) Or another function (creative reuse or reuse) Is the act or practice of execution It should be distinguished from recycling Raw materials for the production of products Is the breakdown of the materials used to make it. Why is it important that we reuse old items or replace them with something else? Reuse has many environmental benefits. It helps to save energy, Controls pollution, protects natural resources and reduces greenhouse gas emissions. Recycling, recovery and recycling of waste for use in new materials. The basic stages of recycling are collecting waste materials, processing them into new products and purchasing those materials, which can then be recycled. Recycling is essential for cleaning up the environment and keeping our community clean. We reduce the impact we have on Mother Nature by reusing recycled materials to produce new products. Also, it doesn't hurt that you can make a little extra money by recycling the right kind of stuff. Mechanical forces include pressure, shear and tensile stress. A characteristic that describes how an object reacts when it is subjected to the force of an attempt to stretch, compress, bend, groove, scratch, or break it. The mechanical properties of an object are usually tested under a given load. The mechanical properties of an object reflect the relationship between its reflection or a malfunctioning load or force. The main mechanical properties are strength, hardness, pipe and rigidity. Physical characteristics are measurable things. They density melting point conductivity, expansion coefficient various properties when reacts mechanical properties strength durability wear resistance Includes Sustainable Production (SM) is a system that identifies, measures, evaluates and manages Such as production, planning and control Production and process with complications Design issues. Reducing environmental impact Flow of environmental waste with purpose, so that self-sustainable production is about creating Minimize negative environmental impacts, Energy and natural resources, staff, protect communities and consumers Products that use a process. Sustainable production Will be much less expensive. Of your equipment and processes By improving performance, you can reduce energy consumption, Reduce production time, reduce waste and reduce material Useable - These are all for you and your customers Providing substantial cost savings. Addition production (AM) is the process of combining materials to add materials from computer aided design (CAD) sample data, as opposed to the usual minus production methods. ... This tool less production method can produce full density metal parts with high precision in a short period of time. The history of additional production began in Japan. Stereo lithography was first invented, followed by tens of thousands of other techniques known as 3D printing. The issue of significant current interest to the AM world is whether there is a limit to the number of Around an AM process Rotable metal powders, which affects both the quality and cost-effectiveness of the components built. In the process of selective laser melting, it is common to reuse the powder in successive cycles of the path because it is more durable and less expensive. However, it is not clear whether reusing the material will have an impact on the process. Purpose Perspectives on the Knowledge Management Process, Is to share ideas, experience and information; To ensure that these are available in the right place at the right time to implement informed decisions; Improve performance by reducing the need for further knowledge rediscovery. Knowledge Management Definition: structure, Capturing the impact of a group's collective knowledge, Application and analysis. In

the business world, Knowledge is the definition of knowledge management Site-based maintenance or organization Specific knowledge related will be kept.

Sustainable Manufacturing

Sustainable production is about conserving energy and natural resources Negative environmental impacts The reduction will be produced by economically good processes Is the production of goods. Fixed production employee Improves community and product security.Sustainable production Will be much less expensive. Of your equipment and processes By improving performance, you can reduce energy consumption, Reduce production time, reduce waste and reduce material Useable - These are all for you and your customers Providing substantial cost savings.Sustainability is about Ours without compromising the ability to meet the own needs of future generations Meeting own needs. In addition to natural resources, we have social And economic resources are needed. Consistency is not the only thing about the environment. Knowledge of sustainability and its indicators are important in describing, understanding and applying sustainable production. These topics are explained in this section. Different models to implement product sustainability by improving product sustainability Have been created. Recently, structures for sustainable production, production and distribution chains have been introduced and modeling and optimization tools have been developed [1].Not only is it important to explore new approaches to the introduction of new technologies that support sustainable production, but also to identify and reuse some of the knowledge that makes this work possible. Mechanical functions that demonstrate low energy consumption [2]. The rehabilitation process begins, with customers returning their expired products to the feed via reverse logistics and re-processing by the re-manufacturers. The life cycle of A closed one from the cradle to the grave By reproducing the ring material Can be redesigned. From this point of view, reproduction can save a large amount of raw materials and energy and generated the disposal of end-of-life products and promote sustainable growth. Furthermore, compared to Material Recycling, Recycling Distribution Chain with regular supply chain In terms of its nutrition compared Unique. Instead of raw materials, recycled feed includes end-to-end products withdrawn customers then collected and transportedthe recycling facility for recycling [3].More toxic chemicals are being produced, and the cost of disposal is increasing.To achieve a stable system, discard Smartphones need to be reused Or to be recycled. Reuse in the broadest sense refers to any action that extends the life of an object. On the other hand, recycling is the process of making a product into a new product Reuse as a new ingredient to use Is to process. Recycling has been used for a long time and the benefits of recovering materials for production. However, recycling will always produce more waste than recycling This results in the ability to reuse a sustainable production target rather than recycling, Money to recycle And energy cost [4]. Predicting the performance value of life remaining at a given time rather than the performance value or Will be less than the Acceptable condition. Predicted And as an input to the performance network Used. Predicting the residual life expectancy at a given time may be less than the performance value or below the acceptable level.It This from a historical and on-line Evaluate the reuse of the facility Proposed to guarantee perspective in conjunction with the predictive performance network as well as a system of reliability methods of on-based forecasting. For a given convenience, its reliability Of a population of homogeneous units Calculated by matching the vibration distribution with the time-failure data, And based on its remaining life Predicted by prediction method [5]. The first of a feature After lifeUse it again only if its reliability still exceeds a limit Can. Therefore, the convenience is its reliability Maintaining within range is very important. Maintenance Adjustment or both as Should be described by the main categories prevention. Repair Maintenance is anything that happens when a system fails Is maintenance. Preventive care is computer Any maintenance that may occur during operation [6].

Additive Manufacturing

Combined production (AM), 3D printing, also industrial production transformative approach It is lighter, stronger Create components and systems Allows. ... as its name implies Like, extra production Create an object Adds material. The term compound production comes from the process of how objects are created in 3D printing. ... "Why is this called extra production?" To answer the question, add the creation process instead of subtracting the raw material. Common uses include environmental control systems (ECS) hose, custom cosmetic aircraft interior components, rocket engine components, combustion liners, mixer equipment, oil and fuel tanks and UAV components. 3D printing provides complex, integrated parts with high strength. Formation occurs in the adhesive pool. A laser beam, activated in the adhesive pool, detects the cross-sectional pattern of the specimen for a particular layer and cures it. During the phase rotation, the base on which the structure is repositioned, reduces the thickness of a layer.The process is repeated until the creation or model is complete and attractive to look at. Special material may be required to add support for some sample features. Samples can be used as molds for machine and needle molding, thermoforming or other molding processes.Found in this study The most common spatter morphology Spherical dendritic surface particles,with an increase in porosity of the area where additional distinct shapes are formed and is fines removal associatedIt helps to fill the intermediate levels with the help of a particle distribution and density. In addition, decreased ductility Used for most studies Inadditionally tested machine models with ATI 718 powders As a result of recycling powder, increased Oxygen, commercially available 316 L and Co28 CR6 Mo powders As alternative examples of spatter Were used only [7].Although the interfaces can be positioned at almost Any convenient place, Wrench for installing fittings and cartridge valves Permission is required. In addition, the design associated with AM Restrictions were also considered. Several additional test models have been added to assess dimensional accuracy and surface finish.In addition, a dangerous situation Likes unused items When support channels are

cut Found, which release metal dust Led to. as a consequence, solid, fully dense layers can be combined Future structures will be given strong consideration to design the structural layout, where components will be removed from the build platform [8]. On the other hand, adequate in engineering applications And provide clear definition Natural language is very vague. In addition, text-based definitions are more difficult And not enough to retrieve information, Because they require text-matching search. As our team's previous work, It is based on a case recovery approach to support process planning in layer-based additional production [9]. The current method is made for IN718, one of the most widely used super alloys, which is widely used in many astronomical applications such as turbine blades, compressor blades and combustion chambers. It is a nickel based heat resistant alloy that is forged and difficult to machine. Due to the high cost of In718 components it was considered a good candidate for processing operations to be incorporated by manufacturing processes [10]. On the other hand, the primary vitrifying oxide concentration of untreated MSW flying ash - by adding the appropriate amount of amorphous silica - is Following a sintering treatment for compounds, there does not appear to be a suitable way to produce cindered products for recycling such as concrete. Total, High content of sulfates in particularly untreated MSW flying ash and strict limits for these species in concrete aggregates have been established. These degradations may be due to the addition of Powder recovery, Sieve process And when particles impact between the particles during high heat and melting of the particles and satellites. These flaws are clip-on, Broken particles, scattered particles, Rolled cylinders, Particles, with molten satellites Elongated particles and formed Are classified as decomposed particles according to classification. [12].

Powder Reuse

One purpose of modeling powder reuse is to measure the powder application to identify when the powder is unusable. In this case, two facts are important. Firstly, the use of powder in LPBF AM may cause a gradual deterioration in the powder properties. When mixed with re-used powders as a practical ingredient. Renisha PLC, UK) and is further supported by the reference to the Renisha White Paper related to this matter. The presentation began by underlining that the properties of the powder and the mechanical parameters used to process it are closely related. Therefore, the chemical and physical properties of the powder are important. Left-powder is generally discarded or reused for many cycles that are usually determined by the operator's experience (Mostly after mixing with arbitrary amounts of virgin powder). Considering the high percentage of powder remaining after a precipitation, powder recycling is attractive from an economic and green engineering perspective, Hence the need to understand the direct relationship between the properties of the powder and the properties of the fabricated components. The goal of this study is to use powder that remains and collects from the LENS phase. [13]. None of the previous models considered the economic benefits of powder reuse. Therefore, it is important for AM to become economically competitive against conventional production methods, becoming a more attractive and direct method of reducing recycling material costs. However, powder reuse is not trivial because it should not compromise mechanical properties or increase waste prices due to poor quality. Changes in powder morphology and volume distribution are additional concerns in powder reuse [14]. The number of large-scale pores increased with powder reuse in the L-PBF process. Furthermore, in relation to defect morphology, compared with plasma-atomic powders, a relatively large portion of the defects were not deficient in recycling PPF work. [15]. The analysis of recycled powder recycling was carried out experimentally using an industrial SLM system developed by MCP. The Inconel 718 Ni Super Alloy is a single 25 kg block, It is obtained by nuclear power with argon gas, which is the most suitable method for obtaining high quality powders with small particle size distribution and large homogeneity [16]. In this study, a three-tier P-SaaS model was proposed, It treats PPs as a service to manufacturing companies with knowledge collaboration and reuse. A Smiths Pianistic Transformational Approach to Improving the Success of Industrial Case Study in the Decision Making Process with Intellectual Collaboration and Reuse A formal TWF, introduced, was proposed to plan the work of PPs. The main emphasis is on internal research. Nevertheless, they do not have a proper focus on the production of knowledge cooperation and reuse in the decision-making process for resolving PPs. [17]. The truly modular planning environment, which allows for a comprehensive reuse of past developments, makes it easier for planners to create, maintain, and evolve than different versions of a plan. These jobs are often based on the design of the lower control levels of a given workshop, and it is not possible to reuse food items in other workshops again Accelerated life cycle testing was used to analyze material behavior at low load levels again. It is clear that fatigue programs are not affected by powder reuse. Porosity has an important effect on fatigue performance. Since no effects of powder reuse were found on the area density, no dependence on the powder reuse on the density of the printed parts was revealed by the government or implicitly [19]. The process of creating reusable software is significantly different from the traditional development process. In both cases there are certain requirements, a process and some distributions. However, in the previous case, several additional functions were integrated. These functions can be grouped under two headings: development of reusable components and existing ones Reuse of generated components: or, in other words, development for reuse and development with reuse [20].

Knowledge Management

Knowledge management is a set of processes for creating, storing, transferring and applying knowledge in an organization. ... Knowledge management learns from its environment and knowledge in its business processes Promotes organizational learning by increasing the ability to integrate. Knowledge management is the process by which an organization collects, organizes, shares and analyzes its knowledge in a way that is easily accessible to employees. This knowledge includes technical resources, frequently asked questions, training documents and people's skills. Knowledge management helps

individuals promote innovation and cultural change and is needed to build the company and meet the changing business needs. With quick access to information and resources throughout the organization, knowledge workers can act quickly. Advanced product definition This suggests that the use design purpose is a valuable approach in improving relationships. Twenty years ago, the industry incorporated the concept of DFM to clarify the exchange of information through industry management and commercially available DFM tools. Management uses this research engineering-transformation-request process as a case in point [21]. This model followed an integrated approach that included technical and business data, information and knowledge, envisioning it as the basis for developing CAPP solutions with advanced management and advanced decision support features. Companies, especially SMEs. Knowledge of production, process and infrastructure (machinery and equipment) is not really managed, but only the documents on which it is performed [22]. APQP integrates both process design and manufacturing process knowledge to help improve the potential for a successful product release. Knowledge of this approach is captured primarily within four documents, namely DFMEA, PFMEA, Process Flow Chart and Control Plan. These documents reflect both design and production process knowledge and are considered life documents that can be used for knowledge management [23]. The proposed framework for knowledge management and reuse is shown in the design for PSS. This structure has four layers: application layer, process-task layer, knowledge representation layer and shared layer. The shared tier domain provides definitions of definitions, attributes, and relationships to each other. The knowledge representation layer converts different types of knowledge sources into meta-knowledge. The personalization approach makes it difficult to share knowledge for the entire life cycle and multi-domain collaboration, so all companies place more emphasis on the development of information and knowledge management systems because of the global pressure to get design for the first time. Competition [24]. Equally important but not the focus of this paper is on customization approaches to knowledge management. Personalization approaches promote the growth and retention of knowledge by individuals and communities, Focus on coding strategies, how to capture information and knowledge about current aspects of operation in service such as problem maintenance requirements, performance and product reliability. And reused [25]. The current major challenge for manufacturing companies is their ability to derive a large share of their information assets in terms of knowledge management. Increasingly, they need to provide efficient and intelligent digital support for their team, doers and decision makers. Access any data they need within application limits. The diversity of design knowledge management tools is a major barrier to the sharing and exchange of knowledge across design processes across multiple disciplines [26]. To support the knowledge management process, he designed the intellectual knowledge based system. A multifaceted system was implemented to support intellectual management. In this model, an initial domain modelling is achieved. A knowledge acquisition phase is made gradually from the daily activities of individuals [27].

Water Reuse Treatment

Water recycling is generally treated wastewater (reclaimed water) for agricultural and landscaping, industrial processes, and potable urban applications (such as toilet washing, street washing and fire safety). Groundwater recharge is used for useful purposes such as recreation. Water recovery is the treatment or treatment of wastewater. Water reuse is the use of treated wastewater (or reclaimed water) for a useful purpose. Wastewater recycling or water recycling is the use of treated wastewater (or untreated wastewater) for a useful purpose. One of the main benefits of water recycling is the need to protect water resources by reducing water pollution and removing water from natural practices. Gray water in California is defined as shower and bath, washing machine and bathroom sink water. Black water in California is defined as kitchen and toilet sink. There is a difference between states. Many other states consider kitchen water to be gray water, or kitchen sink water to be dark gray water, in this study, the waste from the Tan Boo groundwater treatment plant (Ho Chi Minh City, Vietnam) for adobe brick production Reuse is explored. Fly ash collected from Formosa Thermal Power Station The main component used in this study is sludge collected from the Tan Pu Groundwater Treatment Plant in Vietnam. The production and use of adobe bricks will minimize the negative impacts on the environment and climate change. In particular, the development of adobe bricks allows the use of sludge from water treatment plants and the flying ash of coal-fired power, otherwise proper management will be required to reduce environmental pollution. [28]. Membrane ultrafiltration should be an effective treatment method for nitro toluene production water reuse Plant water reuse. Kozinsky and Lightfoot. 12 TNT production for water recycling Purification of waste through membrane processes is a very promising application. Three types of wastewater were generated during TNT production [29]. The two gateways proposed for reuse water are provided before the RO unit, and the reuse water B is provided before the ion-exchanger (composite resin). The ratio of ion-exchange capacity and its effect on the purity of recycled water is estimated. MFA, focusing on particulate contamination in recycled water, has been conducted around interest systems to verify the technical feasibility of water reuse [30]. Water is used throughout the food production chain at various stages including microbial, chemical and physical hazards to determine the safety of water reuse. The water coming from these streams can be recovered and purified (restored) to any quality level, For reuse in the same or other processes. Instead, guidelines for water reuse should be developed for specific products, as water reuse practice varies widely depending on the type of industry. [31]. The recovered water is suitable for use in any food activity, dictated by the quality of the water required in that process, the quality of the water used, the recovery and distribution system and the ability to recycle the required amount of water. As with all other food processing activities, HACCP should be used to control potential risks associated with water reuse. The safety of food items exposed to water reuse has only rarely been explored [32]. Water-reuse alone cannot be justified on

the basis of different freshwater storage and wastewater treatment costs. The cost of disposal of solids, chlorination and supply of freshwater resources depends on the water source, purification technology, and industrial water reuse. Thus, tools such as water-pinch technology [33]. In terms of water intake demand equations, X_{1i} and X_{2i} descriptive variables. The only difference of the vector is that the former includes the water reuse price. This feature is due to the fact that recycled water can be an alternative to water withdrawal, so plants that reuse water will consider the cost of recycling in their intake requirement results. Water demand of both groups demonstrates the expected negative resilience with respect to fresh water price (PFWAT), i.e. increase in fresh water price decreases water demand [34]. Several treatment modalities such as physio-chemical, biological and hybridization processes have been explored to remove industrial waste. In addition to wastewater treatment that is incapable of obtaining quality water within specific quality discharge limits, the wastewater used in this study was obtained by ion exchange resin adhesion regeneration Urea-formaldehyde capacitor (UFC) provided by the same company [35]. The average wastewater quality is controlled by the discharge quality for the wester-shelled surface water. The quality of the indoor water is strictly monitored and if the spec waste is discharged, Membrane units can use the new surface water as feed water in the operation of RO units, the feed water change being positive for the first 18 months. Compared to SW fodder, plant recovery increased by 20%, saving on 3 million m^3 / a water intake. Reduced water intake helps reduce the use of active chemicals [36]. The fact that burnt clay sludge sludges absorb significantly more water than normal dense aggregates is mainly due to their cohesive cellular structure and the size of the pores. A 0.5-water-cement ratio was used to cast the concrete, in which the sand was very fine and the clay-mixed mud was coarse. The maximum size of the coarse total nominal size is 20 mm. Normal Portland cement was used in all mixtures. For compression strength estimation, 100 mm cubic samples [37]. The main feature is that some streams flowing to a certain number of rinses in the primary network can be disconnected in the secondary network so that the overall rinse quality of freshwater and used water is still in the specification. Therefore, by repeatedly switching between two water-recycling networks, it is possible to reduce excess freshwater use and wastewater production. For WRND based on the given production method, the water flow connections between the processing units are known. All processing units can be tabulated and the total number N can form a $N \times N$ event matrix. If the matrix is water then its element is equal to 1 [38]. Water is used to produce building materials such as concrete blocks. At this point, a portion of the oxide mixture is able to undergo heat release hydration reactions, and the associated hydroxide compounds are formed. The main hydration reactions between water and the following systems were thought to occur: CaO ; MGO ; And K_2O . The remaining compounds, in general, are not changed during material processing [39]. Since the particle size of ceramic tile waste is smaller than natural, the compressive strength for each percentage of the three wastes used instead of sand and cement, The results obtained for porosity and water absorption were compared with control concrete. Sand [40]. The use of A, B and C wastes in the inspected concretes increases the number of fines; Furthermore, ceramic polishing wastes are finer than sand and, as expected, these properties increase water demand and reduce concrete performance.

Conclusion

Sustainable production is the production of products produced by Energy and natural resources Negative environment when protecting Economically reducing vulnerabilities Good processes. Fixed production employee, Improves community and product security. Sustainable production can be very cost effective. Knowledge of sustainability and its indicators are important in describing, understanding and applying sustainable production. These topics are explained in this section. Improving the sustainability of production Various models have been developed to implement sustainability in production through. Combined production (AM), 3D printing, also industrial production transformative approach It is lighter, stronger Create components and systems Allows. ... as its name implies Like, extra production Create an object Adds material. The process is repeated until the creation or model is complete and attractive to look at. Special material may be required to add support for some sample features. Samples can be used as molds for machine and needle molding, thermoforming or other molding processes. The most common found in this study Spatter morphology Spherical dendritic surface particles, one purpose of modelling powder reuse is to measure powder application to identify when the powder is unusable. In this case, two facts are important. First, the use of powder in LPBF AM may cause a gradual decline in powder properties. Mixed with used powders. The mechanical parameters The use of processing is closely related. Therefore the chemical and physical properties of the powder are important. Knowledge management is a set of processes for creating, storing, transferring and applying knowledge in an organization. ... Knowledge management promotes organizational learning by enhancing the ability to learn from its environment and incorporate knowledge into its business processes. Knowledge management is when an organization stores its knowledge in a way that is easily accessible to employees. Is the process of organizing, sharing and analysing. This suggests that the use of advanced product definition is a valuable approach in improving design purpose interactions. Twenty years ago, the industry adapted the concept of DFM to clarify communications through knowledge management, water recycling generally treated wastewater (reclaimed water) for agriculture and landscaping, industrial processes, Refers to use for beneficial purposes such as drinking urban space. Utilities (such as toilet flushing, street flushing and fire safety), groundwater recharge, recreation, and water recovery are purification or purification. Water reuse is the use of treated wastewater (or reclaimed water) for a useful purpose. Wastewater recycling or water recycling is the use of treated wastewater (or untreated wastewater) for a useful purpose. One of the main benefits of recycling water is, It is essential to protect water resources by reducing water pollution and removing water from natural habitats. Gray water in California is for showers and baths, washing machines

and The bathroom is defined as sink water. Black water in California is defined as kitchen and toilet sink. There is a difference between states.

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