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RESEARCH ARTICLE OPEN ACCESS

DESIGN AND FABRICATION OF PORTABAL SAND, SHOT BLASTING WITH AIR CLEANER FOE SURFACE PREPARATION.

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Abstract:

When a metal is exposed to atmosphere, it gets corroded by atmospheric air. To overcome this shot blasting process are used. When machining leaves the sharp burrs or edges on an object, sandblasters can smooth it until it is safe to handle. Sand blasting a method used to clean, polish or strengthen metal with the help of abrasive material. Sand blasting is used in almost every industry that uses metal, including aerospace, automotive, construction, shipbuilding, rail, and many others. Sand blasting machines uses abrasive material like steel grit, glass bead, sand. The blast media is pneumatically accelerated by compressed air and projected by nozzles onto the component to roughen a smooth surface, shape a surface or remove surface contaminants. For the application of sand blasting process on a big component, which may require secondary surface treatment, which is carried out in a confined space, so many times we have to shift jobs to confined room. Due to this material handling cost increases. To avoid this, there is need of design of portable type of sand

Keywords **— non renewable energy sources, Unmanned River Cleaning Bot**

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INTRODUCTION

Sand Blasting is a surface treatment process using high velocity steel abrasive. Sand blasting is used to obtain excellent cleaning and surface preparation for secondary finishing operations. 1) The cleaning of iron, steel, non-cast parts, forgings, etc. 2) Mechanical cleaning of sheets, rods, coils, wire, etc. 3) Shot penning to alter mechanical properties (increasing resistance to fatigue for springs, gears, etc.) Sandblasting is also known as abrasive blasting. Basically, it is the process of bombarding a stream of abrasive material to the surface which we want to clean. The sandblasting operation is done with high pressure to smooth a rough surface. There are several types of sandblasting process like Soda blasting, Shot blasting and Bead blasting.

Sandblasting is an extremely useful procedure in a welding applications and industries for removing excess weld ments as well as for cleaning the surface. Whether a material needs to be cleaned, deburies, prepped for powder-coating, de-rusted, shot- peened or otherwise just have its paint removed, sandblasting is the process for the job. These machines are mainly use full in the auto industry, in ship and rail yards and in a range of industrial applications. Certain degrees of skill and safety training are required to use the sandblaster as abrasive material may cause some injuries. The sand blasting machine which was used in the industry are big in size and cannot be mobile so our main objective of our project is to make the machine mobile and less space occupying machine with reduction in weight, also reducing the cost of

machine to make it budget friendly for small scale industries too.

The "Wireless River Cleaning Boat" is a novel and innovative solution designed to address the growing concern of water pollution in rivers and water bodies. This project presents a cost-effective and eco-friendly approach to river cleaning by utilizing a remotely operated boat that is controlled via Bluetooth technology. The core functionality of this system is centred on its ability to be controlled wirelessly using a mobile device through Bluetooth connectivity. Users can remotely navigate the boat within the water body, enabling precise targeting of polluted areas. The cleaning mechanism consists of waste collecting tray and waste storing net. The collected waste is securely stored on the boat for later disposal, ensuring the efficient and responsible management of river clean up

1. It serves as a roadmap guiding the members through the various stages of their investigation, ensuring that their findings are both credible and reliable.

2. In this comprehensive overview, we will delve into the essential components of a methodology section, exploring its significance, key elements, and best practices.

3. The methodology section typically comprises several key elements namely, literature survey, designing, calculations, fabrication and testing.

4.At first, the title of the project is submitted according to the vision of the team members. The next step would be to conduct a meticulous and well researched literature survey.

5. By reviewing existing literature, members can identify gaps, controversies, and areas ripe for exploration, there by framing their own project within the existing body of knowledge

6. Literature surveys often contribute to the development of theoretical frameworks or conceptual models that underpin research studies

We can also adopt the methodologies and techniques deployed in the previous works.

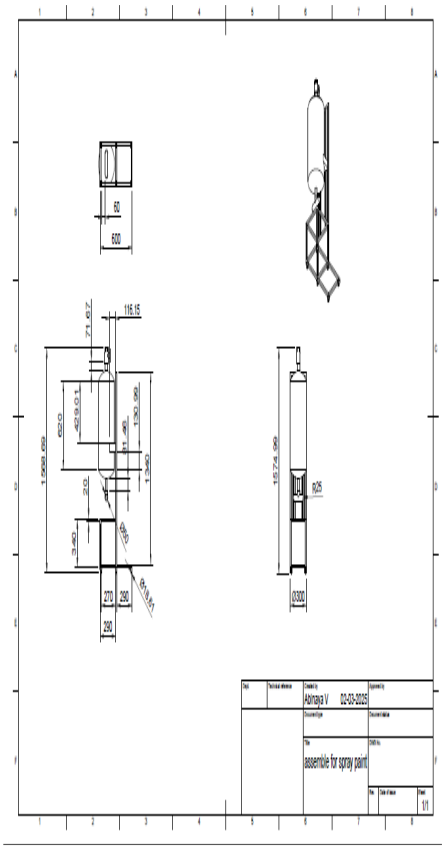
Technical Specifications:

Hardware:

Valve: air flow control valve
Cylinder: sans, shot coli cater
Nozzle: steel gun
Tube: air flow tub
Power Source: air compressor tank

WORKING PRINCIPLE

Times more effective and quicker than the suction blasters. Pressure blasters Pressure blast systems are the systems which are ten times more effective and quicker than the suction blasters. They are also easier to use. They consist of large container comprising of silica sand under high pressure. A gun is joined to the upper portion of the container with the help of a hose that can bear the abrading effects of sand. These blasters are moderately cheap and are more likely to find. They consist of three main parts. A sandblasting gun with two hoses of which one hose is connected to the bottom of the handle and the other hose is connected to the lower side of the barrel. It has a repository of loose sand. Some type of container or bucket is formed by this type. As the gun is fired, the air creates a suction that pulls the sand into the gun. Now sand can be reused by collecting it and placing back into the reservoir.



CONCLUSION

The portable sand blasting machine is very economical & useful for heavy fabrication company. There are such big products in size and it requires sand blasting process before painting, so every time we need to re-shift such big products in confined space of blasting after welding small components or some rework on small attachments, this increase material handling cost. After manufacturing portable sand blasting machine, we can do local blasting on small components which we welded after first blasting process; this can be done on same location where we can manufacture, in this way we need not to shift same again to confined space of blasting room

REFERENCES

[1] Rupesh Narkhede , Ganesh Jadhav, Jagruti Rane, Design of portable sand blasting machine, International Journa of Research in Engineering, Science and

Management, volume-2, Issue-8,August 2019.
Comparative research on abrasive blasting of 145Cr6 steel, D Dudek 2018 IOP Conf. Ser.: Mater. Sci. Eng. 461 012015

Chuanli Yu, Zhiyong Houng, Zian Zhang, Jian Wang, Jirbinshen, Zhiping Xu, “Effect of Sandblasting and HIP on very high cycle fatigue performance of SLM

Fabricated IN 718 superalloys ,”, Journal of Material Research and Technology, pp.29-43, February 2022.

Christin Finger, MeikeStiesch, Michael Eisenberger, Bernd Breidenstein Sarah Busemann, Andreas Greuling, Effect of sandblasting on the surface roughness

and residual stress of 3Y TZP (zirconia), Received: 8 June 2020 / Accepted: 3 September 2020 / Published online: 14 September 2020.
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