

AUTOMATIC SMART DRILL

Sandesh Kounsalye¹, Asif ansari², Asif mansuri³,
Akash Gondane⁴, Sagar Baraikar⁵

Guide Prof. P.P Ulhe

Mechanical Engineering

JD college of Engineering & Management, Nagpur, India.

ABSTRACT:

Evolution takes place rapidly in manufacturing industry i.e. why Industry 4.0 is set to be one of the new manufacturing objectives. The technologies involved to achieve **smart drill manufacturing** under industry 4.0 are Internet of Things (IoT), online monitoring, online controlling and Cloud Manufacturing (CM). The objective of this review paper is to fully develop an appropriate methodology with convenient and simple architecture for real-time monitoring and remote control of smart drill manufacturing using **integration of wireless technology and operations of smart drill manufacturing according to smart connection regarding IoT, CPS, Cloud computing**. This review paper presents a new enabling technology to bring traditional Drill machine tools online with combined monitoring and control capability. It will be consider that the fastly developed technology can be ready applied to real manufacturing shop floor environments with increased productivity, flexibility, and responsiveness.

KEYWORDS: Smart drill, Automation, data processing, Internet of Things (IoT), online monitoring.

INTRODUCTION:

This review paper is mainly focus on the industrial automation especially for small scale industry. We know that drill operation is common in all industry. With the rapid change in development of computer and information technology, manufacturing industry, the traditional drill machine tools have undertaken more complicated machining tasks under the industry 4.0. The traditional drill machines have major disadvantages like accurate depth of cut/feed, proper positioning of drill area, etc. To avoid such type of major problems in traditional drill machine we are applying industry 4.0 concept on this machine to make it Automate drill machine. To achieve high Production rate, accuracy, and repeatability in production. Compared With Traditional drill machine, **smart drill machine** has a number of advantages, including improvement in accurate depth of cut and yield, and savings of energy and manpower. The Internet of Things (IoT) [1] provides a promising solution for online monitoring and related activities, along with wireless sensor networks (WSNs) [2] and mobile Internet [3]. The IoT devices using such a Sensors, Wi-Fi-router, circuit board, etc. and devices which are used in IoT like **sensors** which are directly located on the Automated object of the real world. IoT devices collect the data from the real world object and transfer the data to the user monitor via. Wireless network. On the monitor user get all the information regarded the operation perform on the real world object [4].

LITERATURE REVIEW:

J. Pan, R. Jain, S. Paul, and T. Vu, is research paper on “Internet of Things frameworks for smart energy in building”, in this paper they research that how the IoT framework used. They make a prototype of the model and perform a experiment.[1]

P.L.S.C Alwis, A.S premarthna, Y.P Fonseka, establish a research paper on “Automated Printed circuit Board (PCB) Drilling Machine with Efficient Path Planning”, in this Alwis and his team design a PCB drill machine. Through PCB they make a effective path for drill beat to move according to the requirement. It provide proper planning path for drill bit for effective time to perform drilling operation. [5]

N.Blasubramnyam his researched on “PC-based drill machine” in which the drill beat of the drill machine are control with the help of computer. Coding can be done on c-language to control the movement of the tool independently. To perform the drill operation the command given to the motor with the help of PC by using a C-language. Also they achieve a better depth of cut rather than a traditional method of drilling. [6]

With reference to the research paper by Raju Belgavakar, Harshkumar Bhatt, Aniruddhsinh Parmar, on “sensible drilling operation.” The author design a machine with using IR sensor, belt conveyor, motors, microcontroller, Pneumatic cylinder. They get all type of data like pressure, temperature, depth of cut, etc. On their monitoring system. From the conveyer belt the work piece came to a drill machine and the drilling operation can be performed. Due to the presence of Sensors we get all the data on the monitor The purpose of this research paper to achieve a accuracy in depth of cut. [7]

“Design and Fabrication of Automatic Wood Drilling Machine”, in this research paper they construct a Automatic wood drilling machine which work in three dimension to achieve a precision accuracy in drilling operation. In which the X & Y direction move on horizontal plane to make hole in wooden block and the Z direction are to move a drill bit in vertical direction (up and down). They also develop a code in a software to control the movement of the drill bit tool. This machine reduce the price of wooden drilling compare to the other manufacturing machine of other company.[8]

Reference to the paper “An IoT Based Online Monitoring System for Continuous Steel Casting”, by Feng Zhang, Min Liu, Zhuo Zhou and Weiming Shen. In this paper the author create a online monitoring methodology. Due to which the steel casting process can be seen on monitor with the help of sensing layer. All the processes can done layer by layer that was develop for online monitoring for continuous steel casting. In this Architect all the data collected from the sensing layer and transfer service resource layer with the help of network layer. All the process done on the service layer like data processing, sensing data management. Finally transfer to the Application layer where the all process seen on a monitor with the help of web services.[9]

CONCLUSION:

Based on the above review papers the possibility of successfully implementation of the project concept can be assure. We have identified the scope of project in small and medium scale industries. The main aim of the project is to provide low cost automated Drilling solution which can be controlled with IoT.

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