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Boiler Monitoring System

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Abstract: ***The steel industry is one of the most important industries in India. During 2014 through 2015, India was the third largest producer of raw steel. Analysis of these plants at all times is a must, since these plants are operated continuously. Boiler is the major part of any Steel plant. Hence monitoring the boiler parameters such as temperature and humidity are of great importance in Steel plant. It is not always possible for continuous monitoring in the plant premises because of an unpleasant industrial environment. In this project it is proposed to develop boiler regulatory system. The proposed method provides a solution for these constraints by using an application to analysis the boilers. The proposed method also provides an option of alarm system if boiler exists the maximum temperature.***
Keywords: Cloud computing, Data Analysis, Boiler efficiency.

I. INTRODUCTION

Over the years the demand for high quality, greater efficiency and machines has increased in the industrial sector of steel plants. Basically boilers are used to produce steam which will then use for different operations like to run the turbine. After that steam water used for different sectors for reuse. During this process it is essential to monitor the temperature, steam pressure, water level, etc for reliable operation and to avoid errors and damages. But with the human workers there are number of possibilities of errors while measuring at different stages. In order for the safety of the boilers these parameters values has to be controlled. So it can be control by creating an application and provide a cloud hosting which is responsible for collecting and storing the data. The section II describes related work. The section III summarizes concept of boiler regulation. The section IV deals with Fuzzy logic control method with its advantages and drawbacks. The section V deals with embedded system based control with its advantages and disadvantages. Section VI deals with boiler automation using PLC and SCADA and finally the section VII includes conclusion.

II. RELATED WORK

This paper describe the uses of firebase system in android application. Firebase system is considered as web application platform. It helps developers‟ builds high-quality apps. There are many services available in firebase system such as Firebase Cloud Messaging, Real-time Database, Firebase Notifications, and Firebase Storage etc. [1].This paper describe the firebase data structure is defined and how the data is stored in cloud. Firebase uses the No SQL data storage format. All objects saved into and read from databases are JSON objects. The firebase system also provide services like Data retrieval and updates, Security. [2]

This paper describe the boiler level must be controlled to the limits specified by the boiler manufacturer. If the boiler level does not stay within these limits, there may be water carryover. If the level exceeds the limits, boiler water carryover into the super-heater or the turbine may cause damage resulting in extensive maintenance costs or outages of either the turbine or the boiler. In the proposed system ARM 8 processor is used that controls all sub devices connected across it. For monitoring and controlling the boiler parameters such as temperature level, pressure level, water level and droplet identifier is measured by using temperature sensor, water level sensor, pressure sensor and rain sensor. [6]

In early 1990s, data loggers were used in temperature monitoring applications [3]. With the advancement in technology, microcontrollers were implemented in the field of monitoring [4]. But, microcontrollers performance gets affected by external factors like humidity, temperature variations etc. [5].

III. CONCEPT OF BOILER REGULATION

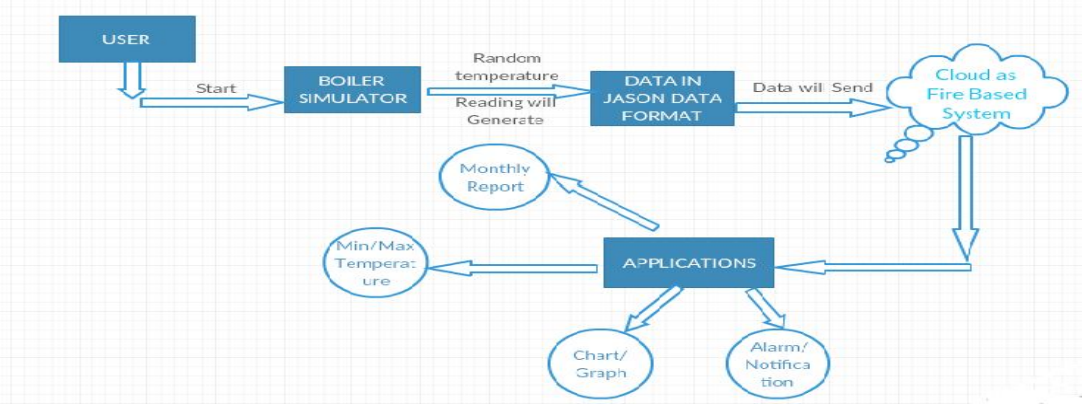
The target for the boiler regulation is to take care of the boiler safety to prevent dangerous conditions occurrence. Thus the boiler regulation must be at the same time fast and informative and it has to be able to offer the operator a tool for his use so that he is able to control the boiler. The purpose of Boiler Regulatory system is to study and analysis the boiler present in the steel plant and also it’s corresponding parameter. With or project we aim to overcome the existing problem the conventional proposed system is employed. In the proposed system of this project is to monitor the boiler parameters by using the Web Application. Where We Make an Simulator Which will Acts As Boiler Which will provide an reading of every boiler and that reading will goes to cloud and from cloud we will read data and monitor the boiler through we application. In this conventional type of monitoring if the any boiler exists over the temperature level. Immediate alert system is available so for taking preventive action leading to production loss, workman.

Boiler Application: In these module generally it creating a boiler simulator which will act as a boiler steel plant. The simulator model will give a random generating reading of the boiler parameter i.e. temperature and humidity. The reading will be generated as per minutes for each boiler. The simulator will display the reading in form of graphically. We built this simulator because we cannot work on real boiler and all requirement sensor that will cost expensive. Instead of this we make a simulator to provide reading regarding to their parameter.

Firebase system cloud: Basically in these model it will stored the data of all the boiler. The cloud will manage the data which based on Firebase. Firebase is a simplest cloud hosting that can easily fetch or store the data. The storing of data at cloud make it easy to manage the data instead of make own server that's make highly cost and can be access the data at any time as we want.

Alert system: Application will be used to analysis the boiler on the basis of their parameter i.e. temperature and humidity. It will help to analysis the boiler easily and also provide the alarm system. Whenever the boiler temperature cross the minimum threshold then the alarm system will generate in which it will provide an email/message notification to particular responsible person. The person will manually control.

IV. FLOW DIAGRAM



The above figure shows the flow diagram of this project. when the boiler simulator start both parameters i.e. temperature and humidity random reading values are generated and then reading will send to the cloud and then cloud is responsible to store the data and the analysis operation for the whole process is to be done through the application so the application has to be created in order to control the parameter values. Once the parameter value exists the limited threshold then the control action can be taken by the application. An alarm system will arise and send the 2email/message to the particular person and the fault occurrence can be reduced.

V. CONCLUSION

The major advantages to the system are that it can be aimed toward an accurately data to the control system. However, the major care to be taken that, the data comes from boiler's reading's as per minute .We can store the data to the cloud and read data to our application to monitor and generate the report like highest temp. Level of month. Best performing of boiler, graph/chart.

VI. ACKNOWLEDGEMENTS

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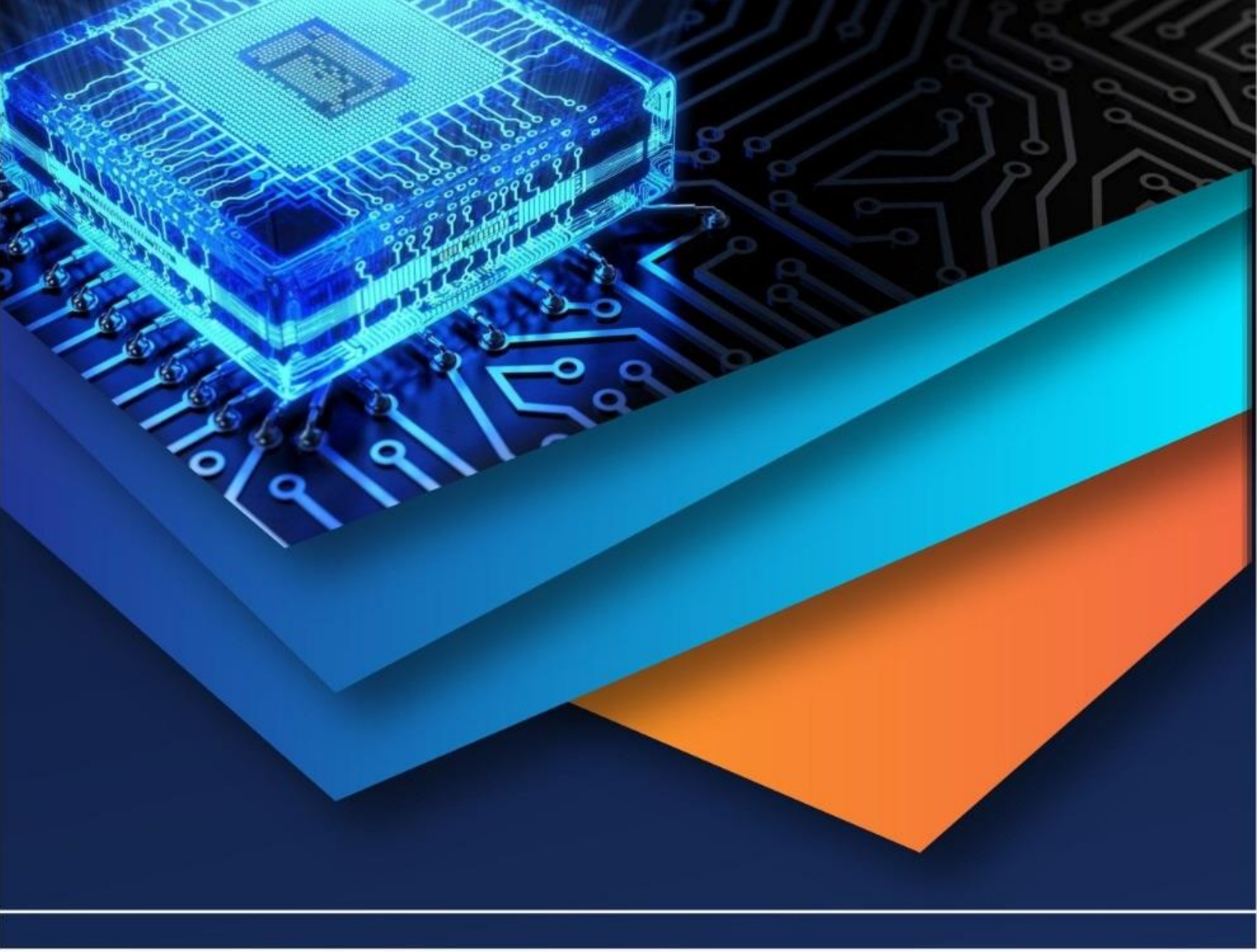

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