Boiler Regulatory 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 Analytics.

I. INTRODUCTION

A steel plant is referred to as a generating steel from iron ore and scrap. Where Steel plant use boilers. The boiler based upon the different parameter such as temperature and humidity these parameter should be controlled. These parameter is an important parameter that has to be controlled in the boiler safety and improve the reliability of the boiler. In these case if Parameters are not controlled then there will be an occurrence of fault in the boiler. 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.

Residential boiler maintenance Issues and Procedure:

The following maintenance procedures refers to actual maintenance of the boiler system done by the boiler technician for proper. The procedures described here should only perform by a qualified technician. Serious injury or death could result if improperly handled.

Boiler Pressure: Look for a temperature Pressure Gauge on the front of your boiler. Normally just above the burners or on side manifold. For most residential and small commercial systems this pressure should be 12-15 pounds. Read the gauge when the boiler is cold and the circulating pump is off. This will show the static water pressure of your boiler set by the water feed regulator. If the pressure is too high the regulator may be set too high or leaking through the regulator. If the feed regulator bypasses even a small amount of water from scale or sediment trapped in the seat the pressure on the system will creep up to the pressure relief set point and blow off water.

Pressure Relief Valve: Every boiler has at least one pressure relief valve. If the pressure climbs too high on your boiler it will open and blow off the excessive pressure and close again when the pressure falls below the set point. There should be a tag on the valve to tell you at what pressure it will open. If your boiler is operating close to this set point the pressure relief valve will leak slowly. The cause of the high boiler pressure needs to found. At least once a year this valve should be open to blow off water and make sure it has not plugged up with sediment and scale. Check the boiler pressure before you begin, if it is close to the set point the relief valve will not close right away.

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.

At present, industries are increasingly shifting towards automation. The boiler level must be controlled to the limits specified by the boiler manufacturer. For that first we

construct a simulated design in simulator according to the actual specification of boiler to be built.

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 NoSQL 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.   PROBLEM STATEMENT

The objective is to create an application which Monitor the Boiler performance according to its threshold specification.

IV.   PROPOSED PLAN

In order 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 Simulator Module: In these model 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.

Cloud Hosting: 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.

Alarm System Module: 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.

V.   FLOW DIAGRAM
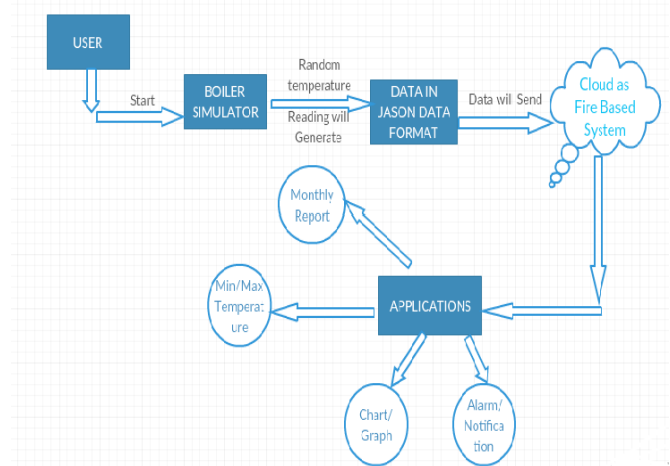
The above figure shows the flow diagram of this project. when the boiler simulator start both parameters i.e. temperature and humidity random reading values are generated and then reading will send to the cloud and then cloud is responsible to store the data and the analysis operation for the whole process 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.

VI. RESULT AND DISCUSSION

There are many similar project of boiler regulatory system such as boiler monitoring system, boiler room monitoring system and so on. Our project is also similar to this project. Our project provides more additional features from the existing similar project.it gives an application which will provide a simple interface to analysis those boilers. Many other project have included a hardware part into its project. But in our project we doesn't include any hardware part like sensors to gat reading from the boiler's. We basically have the boiler simulator which will generate the reading of boilers on their conditional parameter such as temperature and humidity. The objective is to create a web application which Monitor the Boiler. The application is implemented using JavaScript, angular JS and CSS programming language. Another objective is that this application also allows provides a real time readings like for 10 boilers 10 reading/min from Simulator to the cloud. Where the cloud will be based on fire based system which is used to store all data/reading of boiler's to the cloud. Another objective is to provide an alert system whenever the boiler temperature exists over the max level.

VII. CONCLUSION AND FUTURE SCOPE

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.

Future Enhancement: As we make a web application where we generate the boiler reading through simulator and that reading goes to cloud and from cloud we read the data and display our application. If any boiler goes high temp. It will generate alarm. Here we just generate an alarm and inform them to control the boiler temp. By doing manually.so may

be in future we can control in automatically where if boiler goes high temp. Then it control automatically.

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