Moisture Absorbing Chemical Dosing System

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ABSTRACT

The main aim of this project was to design analyses and build Moister absorbing chemical dosing system for moisture absorbing from Raw material & increase the quality of steel products.

This involves understanding the various type of work perform dosing system for absorbing the water from material of belt conveyor, by sprinkle the chemical compound by dosing system to the material of belt. By performing the work equipment's have serial equipment like hopper & door, vibratory feeder, Structure, Eye bolt, potentiometer & etc. Hence this project involved optimization of various parameters for enhanced the quality of product steel. In order to achieved the stated objective, extensive literature review was done in determining the various parameters for erection & build the chemical dosing system in conveyor belt area.

Moisture absorbing chemical compound system beginner by dosing system book by Nalco An Ecolab Company.

The system of interest for this system engineering analysis is a moisture absorbing chemical compound dosing system. The term of chemical compound dosing system will be used in this paper when discussing about chemical compound dosing system. In this report, all of the component, functionalities, operational scenarios and detail will be defined. Concepts and principle is the system engineering course will be applied to describe Moisture absorbing chemical compound dosing system from a system point of view.

Keywords— Moisture Absorber, Industrial

INTRODUCTION

National Aluminum Company Limited (NALCO) is a Navratna CPSE under Ministry of Mines. It was established on 7th January, 1981, with its registered office at Bhubaneswar. The Company is a group 'A' CPSE, having integrated and diversified operations in mining, metal and power. From the days of first commercial operation since 1987 the Company has continuously earned profits for last 34 years. Despite the Global COVID-19 pandemic NALCO. Has posted an impressive net turnover and net profit of Rs.8, 869.29 crore and Rs.1, 299.56 crore respectively in FY20-21. Presently, Government of India holds 51.28% equity of NALCO.

NALCO is one of the largest integrated Bauxite-Alumina Aluminum- Power Complex in the Country. The Company has a 68.25 lakh TPA Bauxite Mine & 21.00 lakh TPA (normative capacity) Alumina Refinery located at Damanjodi in Koraput district of Odisha, and 4.60 lakh TPA Aluminum Smelter & 1200MW Captive Power Plant located at Angul, Odisha.

Steel Works Limited (JSW Steel Ltd.) is an Indian multinational steel making company based in Mumbai, Maharashtra. It is a subsidiary of JSW Group. It is one of the fastest growing companies in India with a global footprint in over 140 countries.After the merger of ISPAT steel, JSW Steel has become India's second largest private sector steel company. The current installed capacity of the company stands at 18 MTPA.A $13 billion conglomerate, with presence across India, USA, South America & Africa, the JSW Group is a part of the O.P. Jindal Group with strong footprints across core economic sectors, namely, Steel, Energy, Infrastructure, Cement, Ventures and Sports.[4] JSW's history can be traced back to 1982, when the Jindal Group acquired Piramal Steel Limited, which operated a mini steel mill at Tarapur in Maharashtra and renamed it as Jindal Iron and Steel Company (JISCO).

OBJECTIVES

- Design and analysis Moisture Absorbing Chemical Dosing System.
- Moisture removal from material.
- To keep the row material dry for rust free for a long time.
- To maintain long time stock material

LITERATURE REVIEW

The following literature is based on the research papers published in various national and international journals, books, and review articles

Propylene glycol is a synthetic liquid substance that absorbs water. Propylene glycol is also used to make polyester compounds, and as a base for deicing solutions. Propylene glycol is used by the chemical, food, and pharmaceutical industries as antifreeze when leakage might lead to contact with food. The Food and Drug Administration (FDA) has classified propylene glycol as an additive that is "generally recognized as safe" for use in food. It is used to absorb extra water and maintain moisture in certain medicines, cosmetics, or food products. It is a solvent for food colors and flavors, and in the paint and plastics industries. Propylene glycol is also used to create artificial smoke or fog used in fire-fighting training and in theatrical productions. Other names for propylene glycol are 1, 2-dihydroxypropane, 1, 2-propanediol, methyl glycol, and trimethyl glycol. Propylene glycol is clear, colorless, slightly syrupy liquid at room temperature. It may exist in air in the vapor form, although propylene glycol must be heated or briskly shaken to produce a vapor. Propylene glycol is practically odorless and tasteless.

CDC-ATSDR Toxic Substances Portal
Thick odorless colorless liquid. Mixes with water. (USCG, 1999)

CAMEO Chemicals
Propane-1, 2-diol is the simplest member of the class of propane-1, 2-diols, consisting of propane in which hydrogen at position 1 and hydrogen at position 2 are substituted by hydroxy groups. A colorless, viscous, hygroscopic, low-melting (-59°C) and high-boiling (188°C) liquid with low toxicity, it is used as a solvent, emulsifying agent, and antifreeze. It has a role as a protic solvent, an allergen, a human xenobiotic metabolite and a mouse metabolite. It is a member of propane-1, 2-diols and a glycol.

METHODOLOGY

1. Chemical Dosing System Basic Structure Made Of Iron, Rod Or Steel Or Structure.
First To Make an Our Machine Stable By we fabricate A Base were we mount our machinery Equipment. To do improve our Quality of Material by impact of dosing Chemical in Whole Area of Material
2. The Our Machinery Equipment bis Process with Filled the Chemical by Hopper Door of Machine which is going to below in getting Assembly by Vibration of Vibratory feeder.
This is ongoing move in to tray area & After Onwards it is going to feed by tray.
3. It Has Several Components which has follows Hopper and Door were we feed the material second components vibratory feeder which work is to generate vibration and feed the chemical in belt area.
4. Third components is tray which work is collecting the chemical from Hopper & Feed to belt Conveyor area for absorbing the moisture of material
Other components is structure were our equipment is mount On Level pad.

I Bolt For Locking The Structure & Equipment

COMPONENTS

HOPPER:

The hoppers are used to feed the conveyor systems with the products to be dosed, Hoppers a hopper is used to hold bulk materials before they are transferred into a conveying system, bag, or container for use or for distribution. The hopper is designed to temporarily store bulk materials until they need to be emptied out into something else through a discharge port on the bottom.

POTENTIOMETER:

A potentiometer is a type of position sensor. They are used to measure displacement in any direction. In Linear Potentiometers the track is straight and in Rotary the track is circular. The wiper moves along the track to measure the displacement through proportionally dividing the input voltage

POWER ON/OFF BUTTON:

The power button is a round or square button that powers an electronic device on and off. Nearly all electronic devices have power buttons or power switches. Typically, the device powers on when a user presses the button and powers off when they press it again

BELLOW:

Bellows are most often used to protect critical components. Bellows are also used as flexible ducting for air exhaust/intake applications, such as traction motor cooling on light rail vehicles. Bellows are used in many industries such as machine tool, medical, and transportation

VIBRATORY FEEDER:

A vibratory feeder is an instrument that uses vibration to "feed" material to a process or machine. Vibratory feeders use both vibration and gravity to move material. Gravity is used to determine the direction, either down, or down and to a side, and then vibration is used to move the material.

EYE BOLT:

A vibratory feeder is an instrument that uses vibration to "feed" material to a process or machine. Vibratory feeders use both vibration and gravity to move material. Gravity is used to determine the direction, either down, or down and to a side, and then vibration is used to move the material.

TRAY:

A tray is a shallow platform designed for the carrying of items. It can be fashioned from numerous materials, including silver, brass, sheet iron, paperboard, wood, melamine, and molded pulp.

LEVEL PAD:

It is widely used in surveying and construction to measure height differences and to transfer, measure, and set heights of known objects or marks. It is also known as a Surveyor's level, Builder's level, Dumpy level or the historic "Y" level.

CONSTRUCTION

Assembly of machine consist of door, hopper, eye Bolt, structure, Gating Assembly, Bellow, Tray Cover, Tray, Vibrator Feeder, Level Pad.

Door and Hopper is provided in the top of machine assembly for feeding of raw materials in this way.

Eye Bolts are provided at the corner of the structure for lifting the whole system. Structure is main body of machine which is holding the machine. Gating assembly is provided for raw materials flow in continues and same quantity. Below is provided for flexible ducting for air exhaust/intake applications. Vibrator feeders use both vibration and gravity to move material. Gravity is used to determine the direction.

Tray is use for carrying materials of the system. Level pad is use to balancing the whole machine.

DESIGN

WORKING

Chemical dosing system it is a mechanism which is use for Extract the moisture from the material by spreading the compound which it store in tank.
In this machine the top part is storage tank where our moisture compound is store and the bottom where vibratory feeder in mount. From vibratory feeder our compound is passes by vibration. And the other is the accessories part or structural part where machine is mounting.

Its processing system is very simple the compound Material is going through vibratory feeder to belt for Extract the moisture from material.

CONCLUSION

The implementation of the 3D TRASAR technology has delivered tangible benefits in terms of system control, water reduction, and integrity of the assets involved, reductions in cost, and continued protection of public health. Sustainability performance has been improved through reduced demand for fresh water. The use of the Nalco 360 Service has also provided the customer with complete peace of mind in relation to programmed performance, providing clear situation updates through a weekly 'Dashboard Report.' The use of the 3D TRASAR technology continues to help the customer achieve 100% compliance

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