2nd International
&
14th National Conference
on

IPRoMM 2022

INDUSTRIAL PROBLEMS ON MACHINES & MECHANISMS

December 22- 23, 2022

Organized by :

Department of Mechanical Engineering
Indian Institute of Technology (Indian School of Mines)
Dhanbad-826 004, Jharkhand (INDIA)

Under the aegis of
Association of Machines and Mechanisms (AMM),
India

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Letter of acceptance for Paper ID: 3186 - IPRoMM 2022

IPRoMM 2022 <ipromm2022@easychair.org> Tue, Nov 29, 2022 at 2:36 PM
To: Chandan Chattoraj <chandan.chattoraj@bcrec.ac.in>

Dear Chandan Chattoraj,

I am pleased to announce that your manuscript with paper-ID 3186, titled as "Study of Health Monitoring of Conveyor Belt – A Review" has been accepted for publication in the 2nd International & 14th National conference "Industrial Problems on Machines and Mechanisms" which is going to be held on December 22nd-23rd, 2022 at Indian Institute of Technology (Indian School of Mines) Dhanbad. The primary goal of the conference is to promote advanced innovative solutions for industrial problems along with scientific information interchange between researchers, students, industry professionals from different parts of the world. The proceedings of the conference will be published by the Springer in the "Lecture Notes in Mechanical Engineering".

I would like to kindly invite you to present your work in the IPRoMM-2022 conference at IIT (ISM) Dhanbad. The Conference Program and Presentation Schedule will be available in the Program section on the conference website as soon as possible. Kindly mark your presence by filling out the google form https://forms.gle/jKy43W2Gq86Cbdo47. Please note that the authors must prepare a 10-minute oral presentation for their work to be presented.

Kindly complete the registration process by following the registration guidelines available on the conference website if not already done, to avoid last minute hassles.
Registration Guidelines: http://ipromm2022.ammindia.org/registration/

Fill up the following google form to submit the camera-ready manuscript along with a rebuttal, if not already done.
Camera-ready manuscript submission: https://forms.gle/dsp7pNCv4zf2W65aA

You can visit the Useful Information section on the website to get information regarding accommodation and travel.
Useful Information: http://ipromm2022.ammindia.org/useful-information

On behalf of the organizing committee of IPRoMM-2022, I look forward to welcoming you to IIT (ISM) Dhanbad.

Best regards,
Sanjoy Kumar Ghoshal (Convener)

PARALLEL SESSION 12 (PS-12)
(THEME: THERMAL AND THERMO-FLUID ANALYSIS)
Session Chair:
Session Co-Chair: Prof. Aditi Sengupta

Paper ID	Title	Authors
9364	Sound Radiation of Clamped Multi-layered Functionally Graded Plates Considering Physical Neutral Surface	Baij Singh, R.N Hota and Vinayak Ranjan
9859	A Comprehensive Thermo-Mechanical Analysis of a Tapered Solid and Porous Fin Using In-Line and Staggered Arrangement	Indramani and Surja Deka
9900	Performance And Stress Analysis of Helical Darrieus Hydrokinetic Turbine	Rakesh Kumar, Indrajeet Yadav and Shibayan Sarkar
6556	Multiphase CFD Simulation of Coal Dust Dispersion & Explosion in a 20L Explosion Chamber	Asfar Mobin Khan, Niroj Kumar Mohalik, Santosh Kumar Ray, Debashish Mishra, Jai Krishna Pandey and Somu Manda

PARALLEL SESSION 13 (PS-13)
(THEME: FAULT DETECTION AND STRUCTURAL HEALTH MONITORING)
Session Chair:
Session Co-Chair: Prof. Jayanta Das

Paper ID	Title	Authors
1970	Rolling Element Bearing Fault Analysis Using Machine Learning	V N Patel, Mehdiali S Agharia and Vedang D Chauhan
3186	Study of Health Monitoring of Conveyor Belt – A Review	Rittik Kumar Das, Arnab Konar, Prasanta Jana, Chandan Chattoraj, Subrata Samanta and Kanchan Chatterjee
9610	Modelling, Simulation and Diagnosis of Faults in Epi-cyclic gear train	Rajeev Kumar, Purusottam Nanda, Chintamani Mishra and Ranjan Mitra
9756	Failure Analysis of Submersible Pumps- A Review	Vishal Kannaujia, Skylab P. Bhore and Hari Sharan Goyal
4785	Bearing Fault Diagnosis in Induction Motor	Prashant Kumar, Ananda

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Study of HealthMonitoring of Conveyor Belt – A Review

Rittik Kumar Das[1a], Arnab konar[1b], Prasanta Jana[1c],Chandan Chattoraj[2d], Subrata Samanta[3e], Kanchan Chatterjee[2f],

Abstract

The paper presents monitoring of health conditions of conveyor belts. Belt conveyor are the equipment extensively used in coal mines and other manufacturing. This paper will focus on few of the technical aspects essential for health monitoring of conveyor belts. The belt is inclined to more than a few failures, such as scratches, cracks, put on and tear.Both academic research and industrial application require effective inspection and defect detection system for conveyor belts.In this paper, we discuss existing techniques used in industrial production for conveyor belt tear detection. First, we condition Monitoring of belt and then belt surface monitoring. After that conductive monitoring is the most popular technology, employed to monitor belt interior or carcass conditions in case of steel cord belts then distinctive methodologies of monitoring system. Induction coils equipped with external transmitters and receivers are usually used for belt rip detection. The laser beam hits the surface of a belt lift aspect before it is reflected and captured by means of the camera. Demonstrates the efficiency of RFID sensors to track the crack orientation into belt. Basic requirements of intelligent monitoring and automated maintenance could be the solution for condition-based strategy. These methods can also detect potential failure of the conveyor belt prior to its occurrence and predict the last belt life. The paper provides a brief overview of the health monitoring system.

Keywords: Health monitoring, Conveyor belt, Belt rip

1. Introduction

Belt conveyors are the equipment extensively used in coal mines and other manufacturing factories, whose most important elements are a wide variety of idlers. Conveyor belt is one of the most high-priced elements on a conveyor machine and wholly practical conveyor system is indispensable to the operation of a mine or plant. Conveyor belts are a transport system formed by way of a continuous belt that runs between two pulleys with an intermediate take up pulley. They operate through friction between the belt and the floor of a pulley, which in flip is pushed by way of a motor. The different pulley commonly rotates freely, except being driven, and its function is to serve as a return to the belt. The belt is supported by using intermediate rollers or idlers, each for training and return, between the two pulleys. Therefore, conveyor belts are made up of a sequence of elements such as the head or power pulley (motor, reducer, bearings, etc.), the tail pulley, the idlers and the belt, amongst others. With the ever-increasing price of mining operations, it has come to be of cardinal importance to make sure the protected and environment friendly running of the conveyor systems. Belt alternative and unplanned downtime may want to have a damaging impact on any operation. It has consequently come to be imperative to be capable to protect conveyor belting and to be able to accurately predict last belt life. This will no longer solely safeguard in opposition to unplanned breakdowns and loss of manufacturing however also put the give up consumer and manufacturer to higher sketch for future belt requirements, therefore decreasing required inventory and growing mechanical availability.It has become possible to more effectively perform health monitoring of conveyor belts. Through data acquisition, analysis and corrective measurements, conveyor belt system has now become more reliable.

Effective health monitoring of conveyor belts ensures safe and most cost-effective operation of the conveyor system. It also reduces unplanned stoppages due to breakdowns and ensures more accurate stock planning.

To improve belt life and operational availability, the maindomains to focus on would be the measurement of belt wear and protecting the belt against longitudinal rips. This present paper will focus on few of the technical aspectsessential for health monitoring of conveyor belts.

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INDUSTRIAL PROBLEMS ON MACHINES & MECHANISMS

Certificate

OF APPRICIATION

IPRoMM 2022

December 22- 23, 2022

Certify that

Prasanta Jana

Presented a Technical Paper titled

"Study of Health Monitoring of Conveyor Belt – A Review"

in the 2nd International & 14th National Conference on Industrial Problems on Machines & Mechanisms (IPRoMM 2022), organized by Department of Mechanical Engineering, IIT(ISM) Dhanbad, under the aegis of Association for Machines and Mechanisms (India), during December 22-23, 2022.

Prof. C. Amarnath
President
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HoD (Mechanical Engg.) & Chairman
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Prof. Sanjoy Kumar Ghoshal
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