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Sl. No.	Name of the Faculty Author	Title of the Paper	National/ International Conference	Name Of The Conference
1.	Dr. K.B.V.S.R Subrahmanayam	Performance of 1-Phase GIS with and without dielectric coating	International	ICRAEM 2020 IOP Conference Series: Materials Science and Engineering
2.		Particle movement pattern in a 1- $\phi$ GIB under abnormal conditions	International	ICRAEM 2020 IOP Conference Series: Materials Science and Engineering
3.		Intelligent detector: Detection of forest fires using LoRaWSN technology	International	ICRSET-2021 AIP Conference Proceedings 2418
4.	Dr. M.Anjan kumar	Effect of soil slope on Failure Mechanism of Soil-Nailed Structures by Aluminium Nails and Bamboo nails	National	indian Geotechnical Conference
5.		Influence of Terrazyme on Compaction and Consolidation Properties of expansion soil	national	indian Geotechnical Conference

## Performance of 1- $\phi$ GIS with and without dielectric coating

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**Abstract.** In Gas Insulated Substations (GIS), a free conducting particle can approximate any shape. If the conductor surface is not smooth and rough, then dielectric strength will be lost. So, to regain the dielectric strength, which was lost, the conductor inner surface is coated with a dielectric material of epoxy resin for which the dielectric strength can be regained. In this paper, work of simulation is done for voltage class 132kV, 145kV, 220KV and 245KV in a 1- $\phi$  GIB for Al & Cu particles and peak radial movement was found. All the simulation analysis was carried out and results are shown in detail.

**Keywords.** Gas Insulated Bus duct (GIB), Gas Insulated substation (GIS), Breakdown (B.D), Particle movement, Dielectric coating

### 1. Introduction

Across the globe, Gas Insulated Substation (GIS) is widely preferred as it offers excellent benefits compared to Air Insulated Substation (AIS). The main parameters for popularity of GIS is its safety, problems of land availability and pollution aspects. Hence, there is necessity of shifting from the AIS to GIS. It was known from the studies that almost 30% failures are caused because of contamination of particles which is by defects of manufacturing or due to transportation [1-2]. There are so many merits with dielectric coating in GIB. If the inner surface is rough, then chances of failure of insulation is more as it deteriorates the dielectric strength. But with coating, the surface becomes smooth and chances of insulation failure is less, and electrical strength increases and lift-off field also increases. At the same time, the charge acquired by the particle also reduces.

In this paper, the free conducting particle radial peak movement was found in 1- $\Phi$  GIB for with & without dielectric coating.



# Particle movement pattern in a 1- $\phi$ GIB under abnormal conditions

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**Abstract.** Power system comprises of various over voltages which are transient in nature namely lightning and switching phenomenon under abnormal conditions which cause flashover in Gas Insulated Bus-duct (GIB) if not protected properly. So, there is a necessity for GIS to have withstanding capability of lightning and switching. Otherwise they may cause shut down of the system. In this work, 1050 kV Lightning Impulse and 750 kV Switching Impulse is superimposed on normal frequency voltage class of 100 kV, 132 kV and 145kV and are given to 1- $\Phi$ GIB for finding peak radial movement for Al and Cu particles. The movement patterns for both lightning and switching over voltages are compared. All the simulation results are shown in this paper

**Keywords.** Gas Insulated Bus duct(GIB), Gas Insulated Substation (GIS), Breakdown (B.D), Air insulated substation(AIS), Particle Movement, Lightning, Switching.

## 1. Introduction

Today, Gas Insulated Substations (GIS) are widely used because of their excellent aesthetic and technical merits to Air Insulated Substation (AIS). GIS is more reliable and safer than AIS in many aspects. One of the important parameters affecting the system of GIS is the contamination of the metallic particle[1]. They may approximate any shape. Over voltages which are transient in nature are two types namely lightning and switching phenomenon. Switching phenomenon is internal to the system. Lightning phenomenon is external to the system and depends on climatic conditions.

The gas that is widely used in GIS is the compressed SF<sub>6</sub> gas as it possesses wonderful dielectric strength and properties of arc quenching. In this paper, particle radial peak movement was found in 1- $\Phi$  GIB for both lightning and switching phenomenon superimposed on normal frequency voltages and are compared. Lightning and switching over voltages are shown as a double exponential wave shape [12-19].



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# Effect of Soil Slope on Failure Mechanism of Soil-Nailed Structures by Aluminum Nails and Bamboo Nails



Venkateswarlu Dumpa, G. Kumar, Chandra Shekhar Rayi,  
M. Anjan Kumar, and G. V. R. Prasada Raju

**Abstract** In the present day scenario, improvement of ground is necessary in various occasions due to wide range of construction requirements. Various ground improvement techniques have been developed over the past few years. Increasing the load carrying capacity by inserting steel bars generally termed as soil nails is one of the effective techniques. These are mostly used in improvement of soil slopes. Wide range of materials can be used as soil nails. In the present study, hollow aluminum tubes and bamboos were used as soil nails for improving the ground characteristics. Model tests were performed for soil slope with different conditions of nail inclination. Further, these test results are compared with unreinforced soil. Parameters considered for the study are nail inclination and soil slope. Three nail inclinations are considered for the present study; they are  $0^\circ$ ,  $15^\circ$ , and  $30^\circ$  with horizontal axis and two soil slopes they are  $45^\circ$  and  $60^\circ$ . Constant parameters considered for the study are soil, height, nail length, and nail pattern. The results obtained are compared with the conventional unreinforced soil slope for each case and curves for load versus settlement were developed for the same. From experimental results, soil slope with  $0^\circ$  nail inclination with horizontal axis gives the maximum load carrying capacity in all the cases, followed by  $15^\circ$  nail inclination with horizontal axis and then  $30^\circ$  nail inclination with horizontal axis.

**Keywords** Backfill · Reinforced soil · Soil nail · Unreinforced soil

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# Intelligent Detector: Detection of Forest Fires Using LoRaWSN Technology

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**Abstract.** Forest Fires are a significant factor in modeling various ecosystems on earth. They naturally process the clearance of plant debris and dead trees, making way for the young vegetation to thrive. The severity and frequency of the fires being high, leads to uncontrollable and nearly unstoppable forest fires which results in pollution of air with harmful emissions affecting human health and affecting the ozone layer. The proposed system here comprises developing distributed wireless sensor networks over highly selective zones in the forest to collect data such as sensing the flames of the fire, temperature and humidity fluctuations, CO<sub>2</sub> percentage in air, for determining the possibility of fire outbreak or its detection if already it has caught fire. The data collected over the LoRa WAN technology send to the base control station where it is analyzed, and the officials can alert the concerned authorities and fire control station.

**Keywords.** Forest fires, Sensor networks, LoRa WAN technology.

## INTRODUCTION


Fire is one of the panchatatvas. But it can also destroy everything caught in its midst in a wide and uncontrollable way. Fire can reduce an entire forest to a pile of ash and charred wood. Bandipur Forest fire, Australian bush-fires, Amazon forest fire, etc. and can be quoted as some examples of forest fires that caused havoc and ecological imbalance. Forest Fires are caused by Natural phenomena or Man-made (or human negligence). Natural Causes can be attributed to changes in temperature and humidity level due to Global Warming and abrupt Climate Change. A dry weather and lightning ignites a flame that spreads swiftly over a wide area. Man-made causes include Jhum Cultivation Culture (i.e., Clear the forest land and use it for agriculture), unregulated and illegal mining, and hunting of animals for their char meat etc.

Fires are a daily occurrence within the Amazon during the season, but nearly 73,000 fires were recorded between January and August 2019, subsequently the following year also has an alarming statistics. This raised the alarm for the emergency address of the issue. In this modern era, technology has become more sophisticated, thus easing more remote works. The proposed system here is Integrating Wireless Sensor Network based on the LoRa module, which can be an alternative to detect fires within the forest areas.



# Influence of TerraZyme on Compaction and Consolidation Properties of Expansive Soil



Aswari Sultana Begum, G. V. R. Prasada Raju, D. S. V. Prasad , and M. Anjan Kumar

**Abstract** Augmentation as well as stabilization of soils is extensively used as a substitute due to the lacking of appropriate material on site. In this manuscript, universally available bioenzymes (TerraZyme) and their effect on engineering properties of soil are discussed. Differential Free Swell, Consistency Limit, Modified Compaction and Consolidation tests were conducted out in the laboratory for dissimilar mix proportions of TerraZyme with black cotton soil and from the results addition of the TerraZyme to the soil reduces the clay content and increases in the % of coarser particles, reduces Liquid limit values are decreasing and plastic limit increasing irrespective of the percentage of addition of TerraZyme. Maximum dry density increases and OMC goes decreasing with increase in % of TerraZyme. The consolidation parameters compressive index and coefficient of compressibility are decreased. From the above results, TerraZyme can be utilized for intensification of the expansive soil with a substantial save in cost of construction.

**Keywords** Consolidation characteristics · Expansive soil · TerraZyme · Free swell · Optimum moisture content · Maximum dry density

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