A Vocational Training Report
On
Python Programming from Udemy
(15.06.2022 to 01.08.2022)

L C I T

GROUP OF INSTITUTIONS

Submitted to:

Mr. Rahul Gedam
Head of the Department
Lakhmi Chand Institute
of Technology
Vidyasthali, Bilaspur (C.G.)

Submitted by:

Aman Raj Yadav
Bachelor of Technology
(ET & T)
7th Semester
Roll. No. - 303102819001

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I feel great pleasure on my vocational training report on **Python Programming from Udemy.** I am very thankful to my training officer who gave me this opportunity to undergo vocational training and supporting my practical background knowledge fortunately. I express my sincere gratitude to **Dr. Angela Yu** (Udemy) for supporting me to complete my vocational training. And last but not the least I am also thankful too and appreciate their efforts without it would not be able to complete this project report.

DECLARATION

I, the undersign hereby declare that this project report title at **Udemy** is an original and bonafide work carried out under the guidance of **Dr. Angela Yu** the empirical find- ing in this report on the data and has not been taken from any other report. This report does not form any basis for other degree or diploma.

Signature of Student

Aman Raj Yadav

Under Guidance of:

Dr. Angela Yu

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SUDHA BIO POWER PRIVATE LIMITED

SUDHA BIO Power Private Limited is an Indian Non-Government Company. It's a private company and is classified as company limited by shares.

Company's authorized capital stands at Rs 3600.0 lakhs and has 25.027779% paid-up capital which is Rs 901.0 lakhs.

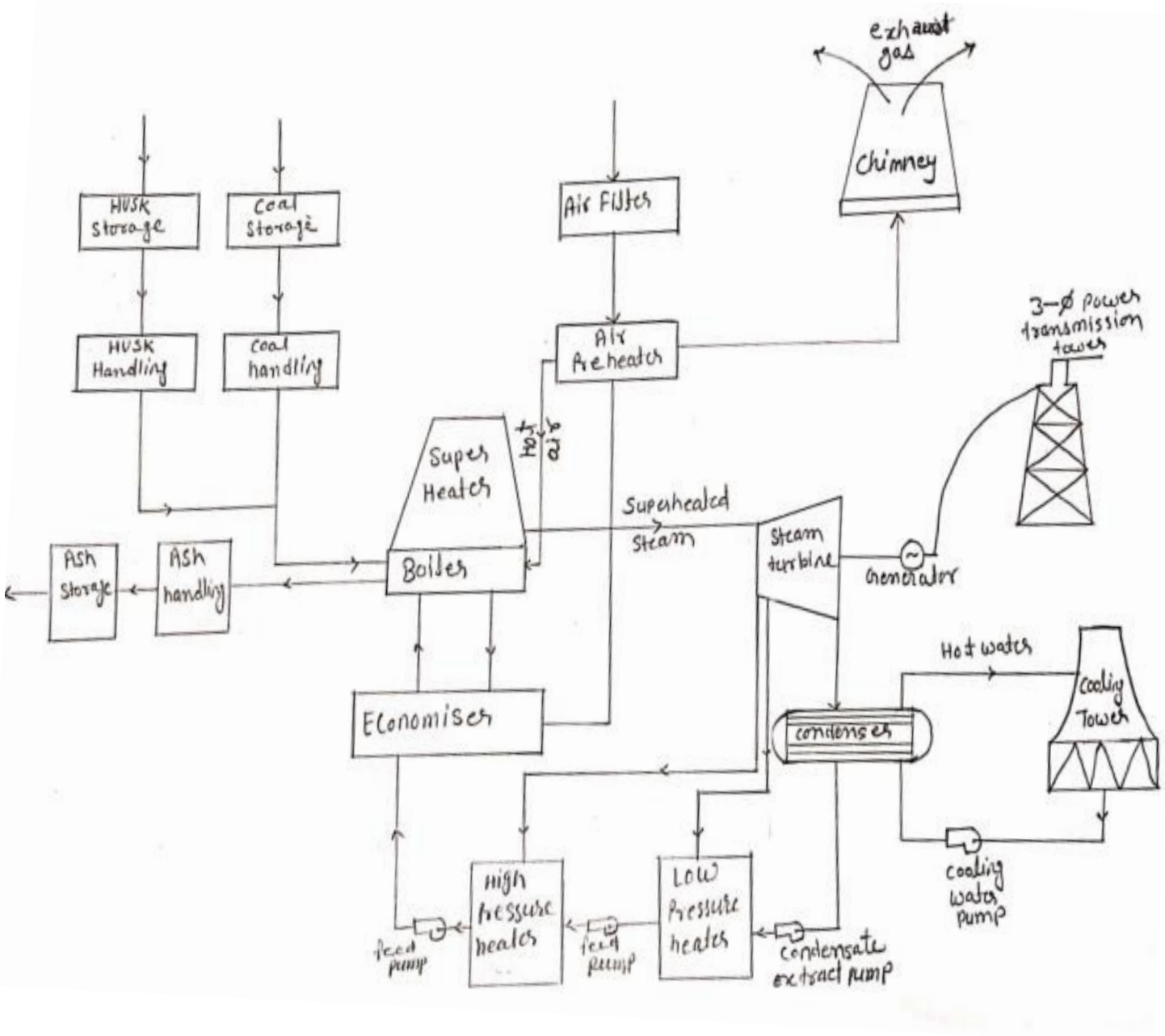
SUDHA BIO Power Private Limited is majorly in Electricity, Gas & Water companies business and currently, company operations are active.

Company is registered in Hyderabad (Andhra Pradesh) Registrar Office.

SUDHA Bio-Power Pvt. Ltd. in Ratanpur Road, Bilaspur-Chhattisgarh is known to satisfactorily cater to the demands of its customer base. It stands located at Ratanpur Road, Bilaspur, Chhattisgarh-495009.The business strives to make for a positive experience through its offerings.

Customer centricity is at the core of SUDHA Bio-Power Pvt. Ltd. in Ratanpur Road, Bilaspur-Chhattisgarh and it is this belief that has led the business to build long-term relationships. Ensuring a positive customer experience, making available goods and/or services that are of top-notch quality is given prime importance.

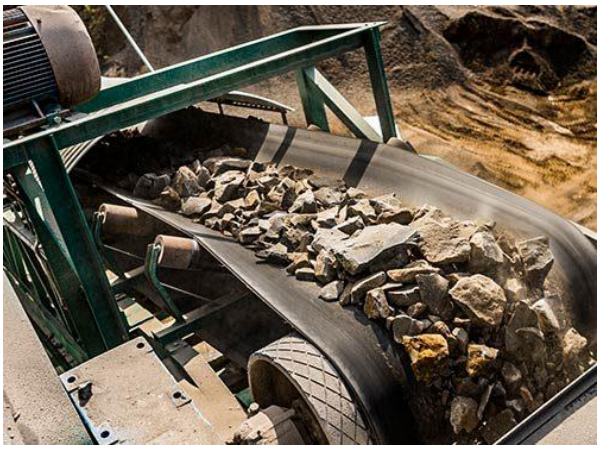
LAYOUT OF SUDHA BIO POWER PLANT, BILASPUR



FUEL HANDLING SYSTEM

Fuel management systems are used to maintain, control and monitor fuel consumption and stock in any type of industry that uses transport, including rail, road, water and air, as a means of business. Fuel-management systems are designed to effectively measure and manage the use offuel within the transportation and construction industries. They are typically used for fleets of vehicles, including railway vehicles and aircraft, as well as any vehicle that requires fuel to operate. They employ various methods and technologies to monitor and track fuel inventories, fuel purchases and fuel dispensed. This information can be then stored in computerized systems and reports generated with data to inform management practices. Online fuel management is provided through the use of web portals to provide detailed fueling data, usually vis a vis the back end of an automated fuel-management system. This enables consumption control, cost analysis and tax accounting for fuel purchases.

There are several types of fuel-management systems. Card-based fuel-management systems typically track fuel transactions based on a fueling credit card and the associated driver PIN. Reports can then be generated based on fuel consumption by driver, and data can

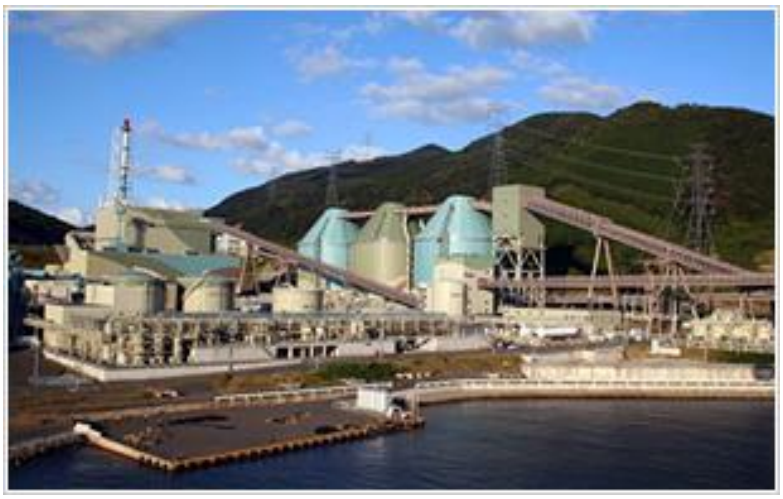


be directly downloaded. On-site fuel-management systems may employ fleet refueling services or bulk fuel tanks at the site. Fuel is tracked as it is pumped into vehicles, and on-site storage levels can be managed.

Some fuel companies offer total fuel-management systems whereby they provide elements of a card-based system along with on-site fuel delivery and refueling services. Mobile fuel management refers to a fleet of fuel trucks or tankers which provide fuel supply to commercial fleets of trucks or construction equipment. May involve combining RFID technology to identify equipment and automated fuel management to append the details of each transaction to a unique piece of equipment. By refueling vehicles in the evening when they are not in use, the company can conserve man-hours as the operators do not refuel and the vehicles do not require additional fuel to travel to the refueling station. They may also employ more sophisticated systems that utilize remote data collection to gather specific technical information about the vehicle usage and performance characteristics such as mileage, hours of operation and engine idling time.

TYPES OF FUEL USED

Coal



- Coal is classified by application as either fuel coal or coking coal; the coal used for power generation is classified as fuel coal.
- Because the calorific value per unit of weight is relatively low, large-scale boilers are necessary for effective combustion. Because coal is in solid form, conveyers are required to transport it, thus increasing the cost of facilities.
- One coal carrier vessel (about 85,000-ton capacity) can serve the electricity needs of about 1.05 million households/month.*
- Because it has a high nitrogen and sulfur content, it imparts a larger environmental impact during combustion than other fossil fuels.

Biomass

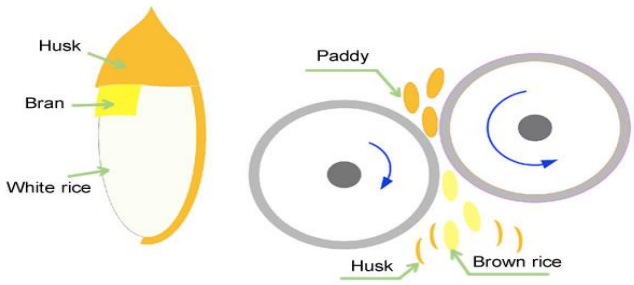
• Biomass is fuel that is developed from organic materials; a renewable and sustainable source of energy used to create electricity or other forms of power.

• It is a form of bioenergy. Making use of biobased feedstocks can enhance the resilience of rural industries by creating revenue for their waste streams while also benefiting the environment by replacing fossil-based fuels and sequestering carbon.

• Some examples of materials used to produce bioenergy are:

1. Forest and Sawmill Residues
2. Purpose-Grown Crops
3. Agricultural Co-Products
4. Food Waste
5. Animal Manure
6. Landfill Gas
7. Municipal Solid Waste
8. Wastewater Treatment Sludge and Residues

RICE HUSK



The rice husk, also called rice hull, is the coating on a seed or grain of rice. It is formed from hard materials, including silica and lignin, to protect the seed during the growing season. Each kg of milled white rice results in roughly 0.28 kg of rice husk as a by-product of rice production during milling.

Common products from rice husk are: solid fuel (i.e., loose form, briquettes, and pellets), carbonized rice husk produced after burning, and the remaining rice husk ash after combustion.

Rice husk ash is the remaining by-product after combustion is done. The amount of carbon remaining in ash depends on the combustion performance (i.e., complete or incomplete combustion). Rice husk ash can be used as a soil amendment and as additive in cement and steel, among others. However, only small amounts compared to the total rice husk production are used for such purposes.

Carbonized rice husk is produced by thermal decomposition of the rice husk under a limited supply of oxygen (O_2) and at relatively low temperatures (less than 700°C). Biochar produced from carbonization can be used as soil amendment, for processing fertilizer, and as activated carbon, etc.

Rice husk as a biomass fuel

Rice husk is a by-product of rice growing. The prevalence and year-round production of rice crops on both an industrial and small scale means that rice husks are an attractive biomass fuel because they are not only readily available in large quantities but are also easy to collect. Furthermore, combusting the husk solves the problem of waste husk disposal. Husk-based power plants have the potential to be not only viable, but highly profitable, provided that the fuel properties are well understood and that the fuel is combusted using equipment which is specifically designed, and therefore enables cost effective exploitation.

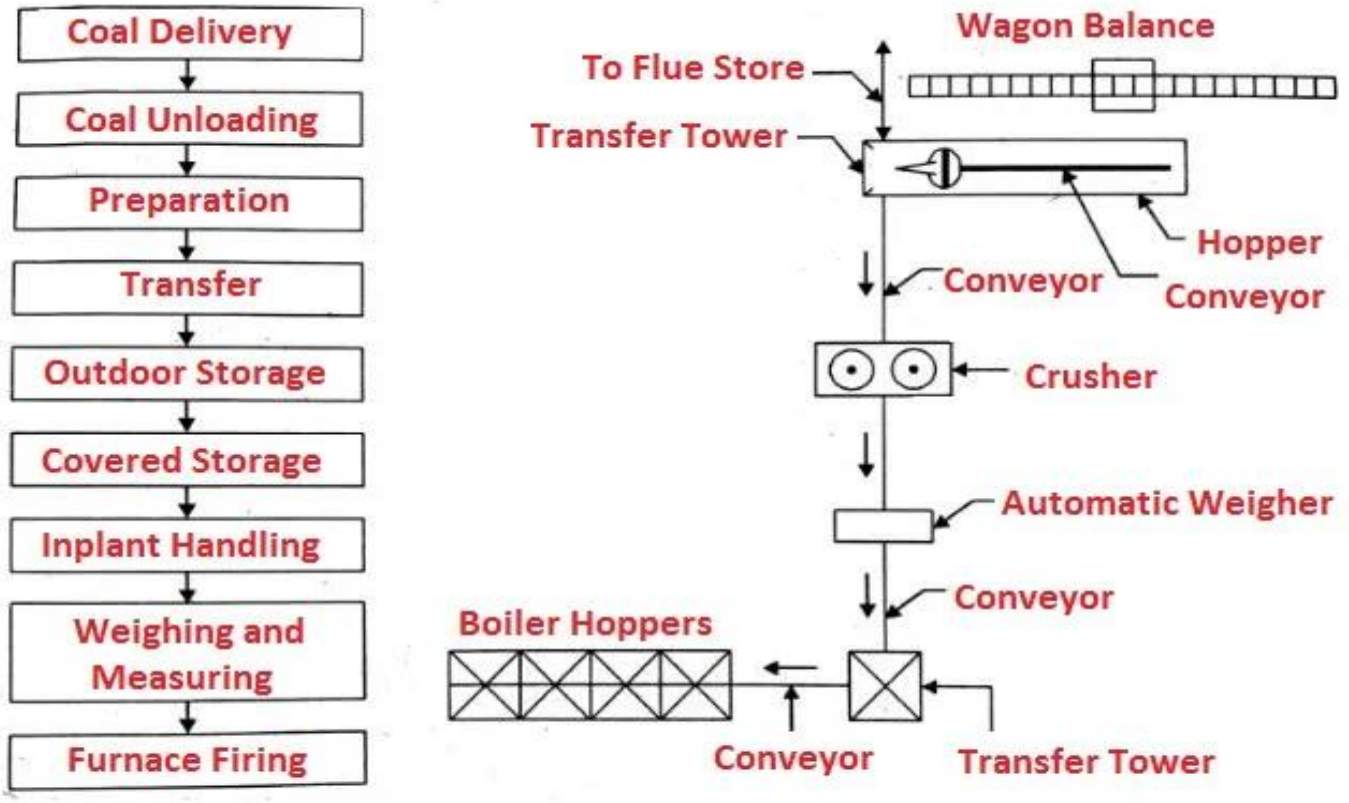
Combustion: Rice husk has a very favourable chemical composition compared to many other biomass fuels - particularly the more herbaceous biomass fuels such as rice straw - rice husk causes relatively low amount of corrosion, fouling and sintering. The most influential chemical components of ash which affect the ash fusion temperature are silicon dioxide (SiO2), potassium oxide (K2O), sodium oxide (Na2O) and calcium oxide (CaO). The following graph taken from DP Biomass Lab demonstrates how this can differ depending on region and rice variety.

- Rice husk typically has ash contents from 15–25 w-% in dry solids, which is higher than many other biomass fuels.
- Rice husk can be characterized as a biomass rich in Si, but poor in Ca, K. The analysis indicates SiO2 of over 75%, but it can, in many cases contain over 90%, making it very different from the straws of other cereals and even rice straw ash. As identified earlier, this is a valuable raw material suited to many industrial purposes.
- Potassium and calcium contents in rice husk ashes are low compared to rice straw, containing up to 15% K2O and 3.5% CaO.

COAL HANDLING LAYOUT

A simple **coal handling** layout as shown in the figure. It consists of

1. Coal delivery
2. Coal unloading.
3. Preparation
4. Transfer
5. Outdoor storage.



Coal Handling Layout

COAL HANDLING METHODS

Following are the different coal handling methods are used:

1. Transportation by sea or river
2. Rail
3. Ropeways
4. Road
5. Pipeline

1. Transportation by Sea or River

The coal can be transported from the mines to the power stations by means of ships or large boats through the ocean or river. The unloaded coal from the ship can be either sent to the storage yard or directly to the conveyor system which directly to the combustion chamber hopper.

2. Transportation by Rail

In this case, the railway is used to transport the coal from the mines directly to the power stations, most of the thermal power stations will receive the coal from rail transport. The coal from the railway wagon is taken to the power station and is either delivered to the storage yard or close to the point of consumption.

3. Transportation by Ropeways

It is the most efficient method of transporting coal from the mine to the power station. It is particularly used when the distance between the power station and mine is less than 10 km.

The major advantage of such a system is, it supplies the coal continuously and free from worker's strike which is common with rain transport.

4. Transportation by Road

The coal can be transported from mines to the power plant by means of trucks, tippers, tractors etc., through road, but it is used only for small capacity power stations. The major advantage of this type is that the coal can be carried directly into the powerhouse up to the point of consumption.

5. Transportation by Pipeline

In this method, the coal in the form of slurry is directly supplied from the remote mines to the strategically located thermal power plants through pipelining. This method is the most efficient one.

It supplies a large quantity of coal continuously without any problem and loss. This system is costlier than all other systems but most economical in operation.

VARIOUS STAGES IN COAL HANDLING

The various stages in coal handling are:

1. Coal Delivery

From the supply points, the coal may be delivered to the power station through rail, road, river or sea. Plants situated near the river or sea may make use of ships or boats. The stations which cannot make use of ships or boats may be supplied either by rail or trucks.

If the coal mine is nearer to the plant or when the necessary railway facilities are not available, then the coal is supplied by truck. In case rail transport is to be adopted, the necessary siding for receiving the coal should be made near the station.

2. Unloading

The coal is unloaded by using proper unloading equipment. The use of unloading equipment in the plant depends upon the type of out-plant handling mode as road, rail or ship. If the coal is delivered by trucks, there is no need of unloading device as the trucks may dump the coal to the outdoor storage. The coal is easily handled if the lift trucks with scoop are used.When the coal is transported by sea, the unloading is carried out by portable conveyors, coal accelerators, coal towers, unloading bridges or by safe unloading boats.

3. Preparation

If the coal when delivered is in the form of lumps (not of proper size), the coal preparation may be carried out by :

1. Breakers
2. Crushers
3. Sizers
4. Dryers
5. Magnetic separator

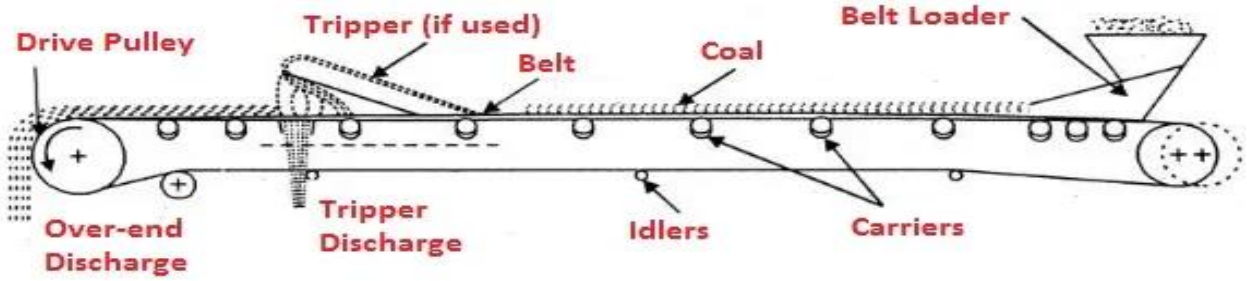
4. Transfer

After preparation, the coal is transferred to the final storage point from where it is discharged to the fixing equipment.

Following equipment are used for the transfer of coal:

1. Belt conveyors
2. Flight conveyor

4.1 Belt Conveyors

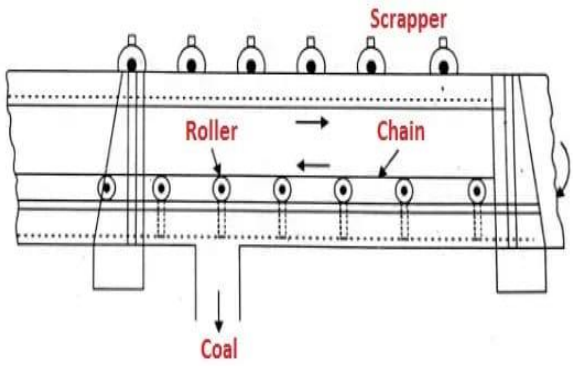


Belt Conveyor

A belt conveyor is a very suitable means of transporting the coal in large quantities over large distances as shown in the figure. It consists of an endless belt running over a pair of end pulleys and supported by a series of rollers called idlers provided at regular intervals.

4.2 Flight Conveyor

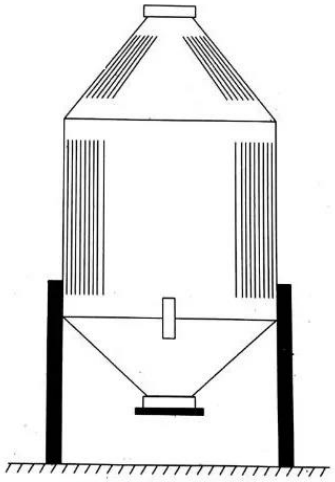
It is generally used for the transfer of coal when filling of the number of storage bins situated under the conveyor is required. It consists of one or two strands of chain, to which steel scraper are attached. The scraper scrapes the coal through a trough and the coal is discharged in the bottom of the trough as shown in the figure.



Flight Conveyor

5. Storage of Coal

It is very essential that an adequate quantity of coal should be stored. The coal storage gives protection against the interruption of coal supplies when there is a delay in the transportation of coal.Coal storage requirements should be considered when selecting a site for storage.



Cylindrical Bunker

8. Furnace Firing (Fuel Burning)

Efficient combustion of fuel in the combustion chamber and efficient transfer of heat energy to water for steam generation is necessary for economical functioning of the power plant.

Classification of Fuel Firing:

The two common methods used for burning the coal (solid fuel) are:

1. Stoker firing :
    1. Travelling grate stoker
        1. Chain grate stoker
        2. Bar grate stoker
    2. Spreader stoker

2. Pulverised fuel firing :
    1. Single retort stoker
    2. Multi-retort stoke

METHODS OF COAL STORAGE

The coal can be stored by using one of the following methods to reduce the chances of oxidation and combustion :

1. Stocking the coal in heaps
2. Underwater storage

1. Stocking the Coal in Heaps

Following steps are used while stocking the coal in heaps:

1. The ground used for stocking the coal should be dry and level. Generally, the concrete-floored area is used to prevent the flow of air from the bottom.
2. The coal is piled on the ground up to 10-12 m height.
3. During storage of coal in heaps, the coal should be compacted in a layer of 15 to 30 cm in thickness by means of bulldozers and rubber-tired scrapers.
4. This effectively prevents air circulation in the interior of the pile.
5. Then the pile top should be given a gentle slope in the direction in which rain may be drained off so that the water will be removed. But it should not be drained so rapidly as to cause serious washing.
6. The sealing of the stored pile may be done to avoid the oxidation of coal after packing an air-tight layer of coal.

2. Under Water Storage

The possibility of slow oxidation and spontaneous combustion may be totally eliminated by storing coal underwater. The dock basins can be used for storing the coal under-water.

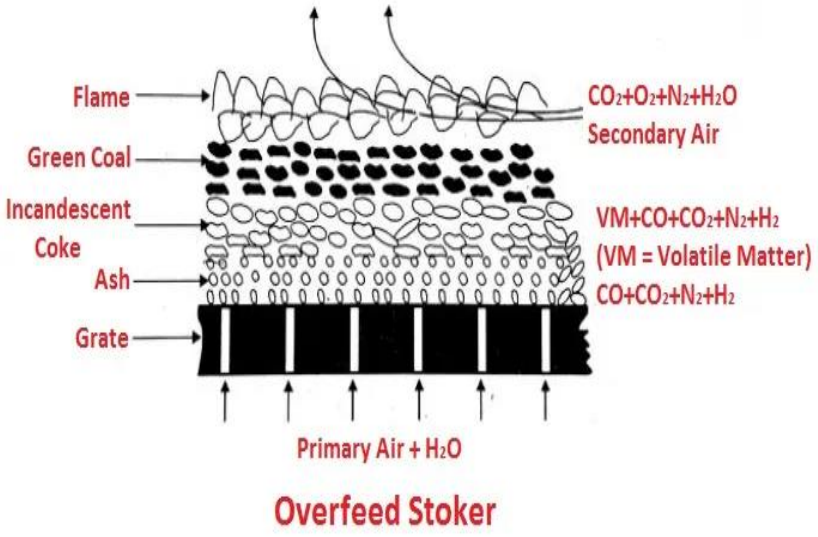
METHODS OF FUEL BURNING

1. Stoker Firing

A stocker is an electric-powered fuel feeding mechanism and great. The stokers are classified into:

1. Overfeed stokers
2. Underfeed stokers.

1.1 Overfeed Stoker



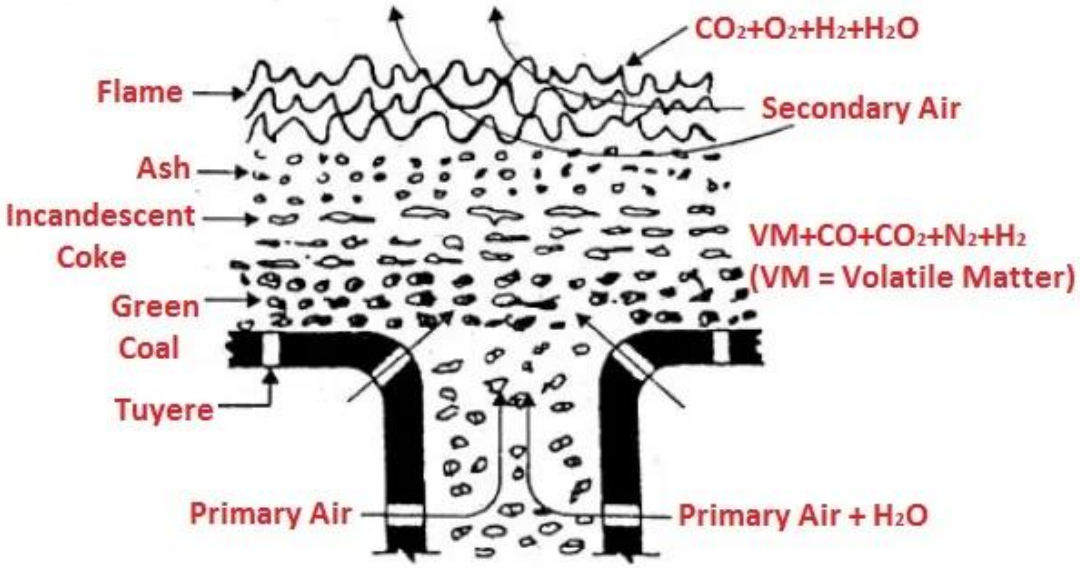
Overfeed Stoker

The principle operation of overfeeding stoker is shown in the figure. The coal is supplied on the top surface of the grate. The ignition plane lies within green coal and incandescent coke. The air enters from the bottom of the grate under pressure. The air is heated while passing and cools the ash and grate and comes in contact with incandescent coke.At this stage, the oxygen reacts with carbon to form carbon dioxide and the water vapour entering with the air reacts with coke to form CO2, CO and free H2. Upon further travels, through the incandescent region, some of the CO reacts with coke to form CO. Hence no free O2 will be present in the gases leaving the incandescent region.

The raw coal continuously supplied on the surface of the coke bed losses its volatile matter by distillation due to the hot gases diffusing through the coke bed. Therefore the ignition zone lies directly below the raw fuel undergoing distillation.

To burn the combustible gases, additional secondary air must be fed at high speed into the furnace to supply the needed oxygen. The combustible gases then burn in the furnace.

1.2 Underfeed Stoker



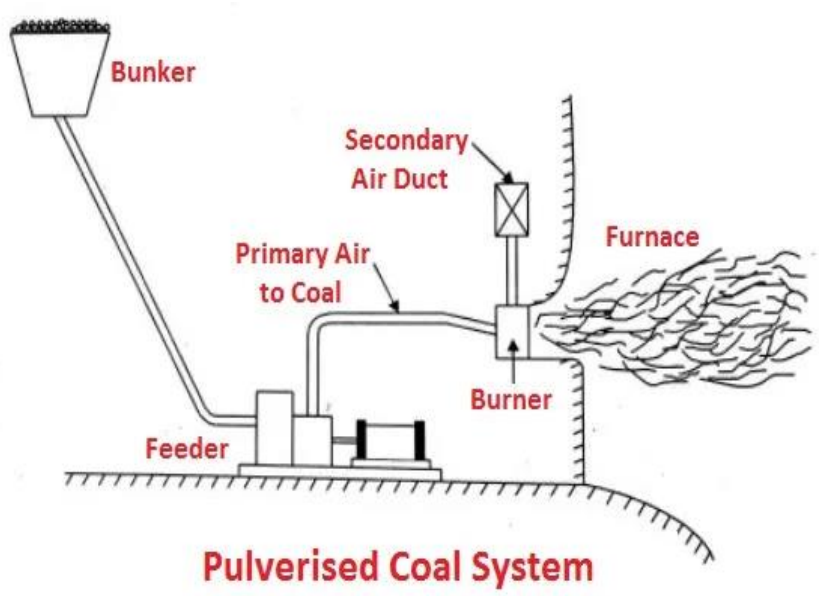
Underfeed Stoker

An underfeed stoker is suitable for burning the semi-bituminous and bituminous coals. The principle operation of underfeeds stoker as shown in the figure. An air entering through the holes in the grate comes in contact with the raw coal (green coal).

Then it passes through the incandescent coke where reactions similar to overfeed system takes place. The gases generated then pass by a layer of ash. The secondary air is provided to burn the combustible gases.

The produced gases then pass through a layer of ash. Secondary air is supplied to burn combustible gases.

2. Pulverized Fuel Firing (Pulverized Fuel Handling System)



In an inflated fuel firing system, coal is reduced to a fine powder with the help of grinding the mill and is then projected into the combustion chamber with the help of hot air current. The amount of air required (secondary air) to complete the combustion is supplied separately to the combustion chamber.

The resulting turbulence in the combustion chamber helps for uniform mixing of fuel and air and thorough combustion. The primary air is used to carry the coal and dry it before entering the combustion chamber as shown in the figure. The efficiency of pulverized fuel firing system depends on the size of the powder.

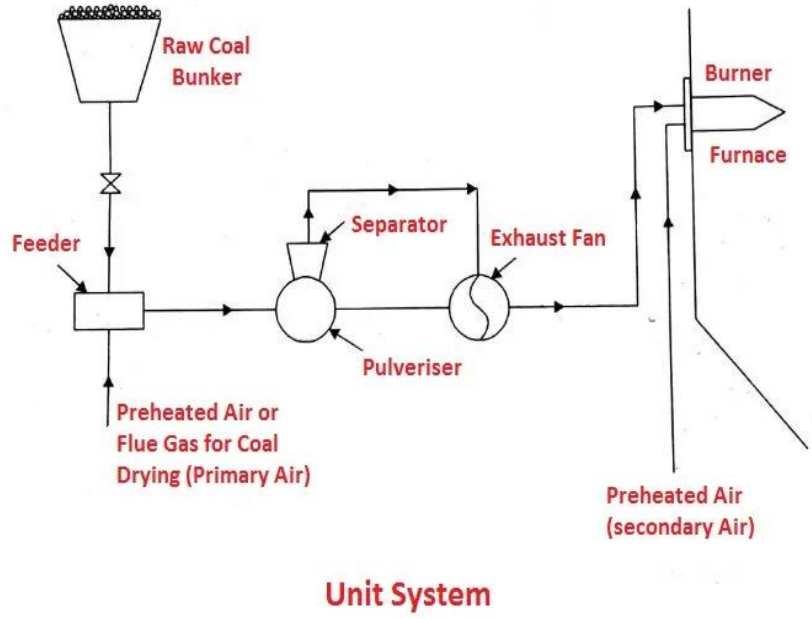
3. Systems of Pulverized (Fuel) Coal Firing (Pulverized Fuel Handling Systems)

Following are the systems of pulverized coal firing:

1. Unit system or direct system
2. Central system or bin system

1. Unit System

In this system, the raw coal from the bunker is supplied to the feeder as shown in the figure. Hot air is passed by the feeder to dry the coal.



Unit System

The dry coal is then transferred to the pulverizing mill to pulverize the coal. The primary air is supplied to the mill to carry the pulverized coal to the burner where the secondary air is mixed to have complete combustion of the fuel.

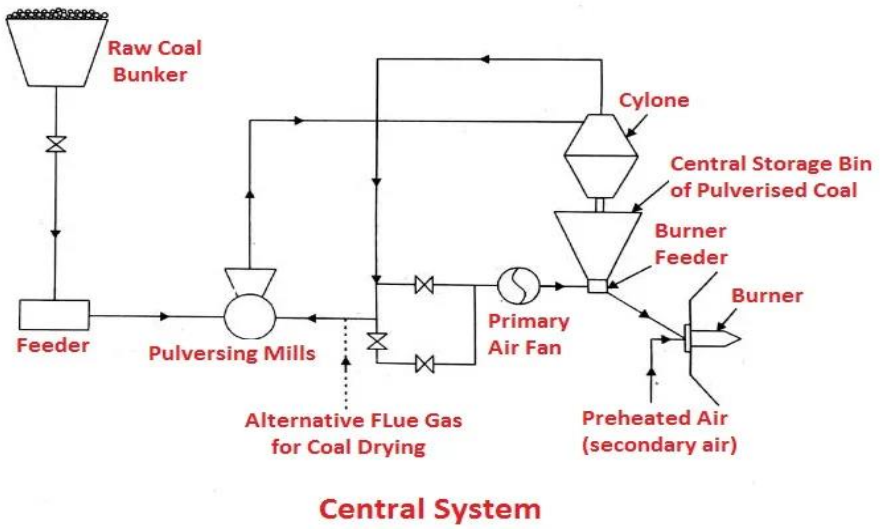
2. Central System

A central system as shown in the figure. The raw coal from the bunker is supplied to the feeder where the primary air drives the coal and transferred to the pulverizing mill.

The pulverized coal from a mill is transferred through alternative flue gas to the cyclone separator, where the coal is separated and flue gas is sent back to the mill. The coal is then supplied to the burner feeder from where it is mixed with primary air and supplied to the burner for the combustion.

4. Pulverization of Coal

The pulverization of coal means coal is powdered to the required size for the burner for the combustion of a fuel.



Central System

The efficiency of a pulverized fuel firing system depends mostly on the size of the powder. The pulverized coal is obtained by grinding the raw coal in pulverizing mill. The various pulverizing mill used for pulverization as follows:

1. Ball mill
2. Hammermill
3. Bowl mill
4. Ball and Race Mill.

ASH HANDLING SYSTEM

A huge quantity of ash is produced in the central station, sometimes as much as 10 to 20% of the total quantity of coal burnt in a day. Therefore hundreds of tonnes of ash may have to be handled every day in large power plants. Handling of ash includes:

1. Its removal from the furnace.
2. Loading on the conveyors and delivery to fill or dump into the sump, from where it can be disposed of.

For ash handling, the modern ash handling systems may be used, these are:

1. Gravity system or Hydraulic system.
2. Electrostatic Precipitators (A Dust Collector) System
3. Electrostatic precipitation (ESP) system.
4. Mechanical dust collector.

1. Gravity System or Hydraulic System

In this system, ash is carried with the flow of water with high velocity through a channel and finally dumped in the sump. This system is divided into:

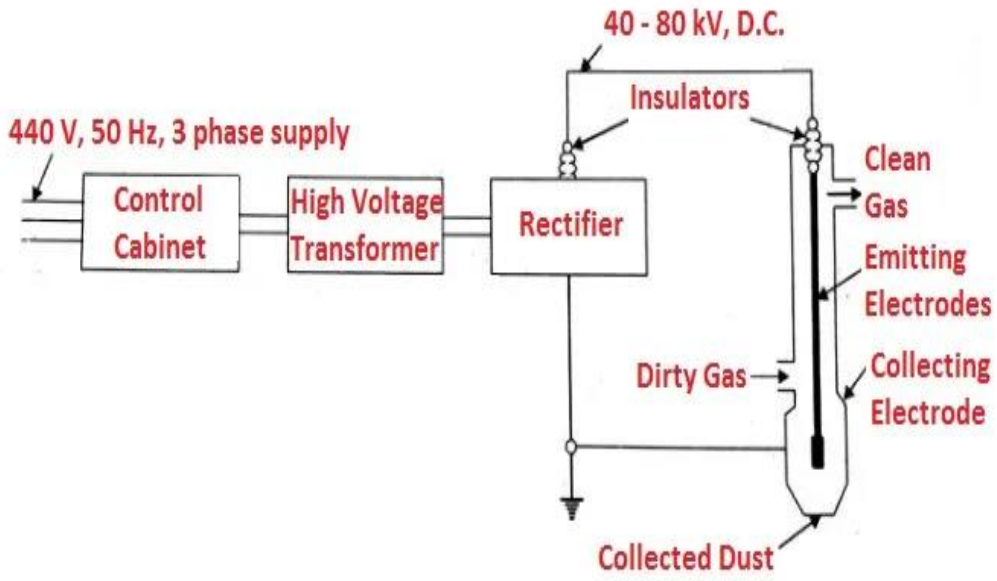
1. Low-pressure system
2. High-pressure system.

2. Electrostatic Precipitators (A Dust Collector) System

It is also called as “Cottrell precipitators”. The basic elements of an electrostatic precipitator as shown in the figure.

1. Source of high voltage
2. Ionizing and collecting electrodes

3. Dust-removal mechanism
4. Shell to house the elements.



Electrostatic Precipitators

The precipitator has two sets of electrodes, insulated from each other, that maintain an electrostatic field between them at high voltage. The field ionizes dust particles that pass through it attracting them to the electrode of opposite charge. The high voltage system maintains a negative potential of 30,000 to 60,000 volts with the collecting electrodes grounded.

The collecting electrodes have a large contact surface. Accumulated dust falls of the electrode when it is rapped at a regular interval mechanically. A wet type of this unit removes dust by a water film flowing down on the inner side of the collecting electrode.

FEED WATER AND ITS TREATMENT

For thermal power plants, water is one of the most important raw materials. In most of the cases, water used for thermal power plants contains impurities which must be treated before use. All-natural waters-even rain, snow, hail, treated municipal supplies contain impurities in one form or the other.

The presence of the impurities in the water may cause the following problems:

1. Scale formation
2. Corrosion
3. Carry over
4. Embrittlement.

Following different methods can be adopted for water treatment:

1. Mechanical treatment:
    1. Sedimentation
    2. Coagulation
    3. Filtration
    4. Interior painting
2. Thermal treatment:
    1. Deaeration
    2. Distillation by evaporators
3. Chemical treatment.
4. Demineralization.
5. Blow down.

TYPES OF FILTER

1) Dual media filter (DMF)

a. Treated water or effluent from the treated water tank is feed to DMF.
b. Dual Media Filter (DMF) is ideal for filtration of water having very fine suspended matter like mud, dust particles and biological growth.
c. DMF is a vessel constructed of welded mild steel and provided with manhole with cover/top and bottom flanged covers, supports, raw water distributor, underdrain collection and backwash water jet system.
d. Treated water flows downwards through the filter bed, and the turbidity and suspended matter are retained on the sand surface.
e. Filtered water is collected by an underdrain system in the bottom of the vessel and flows through the outlet to service.
f. Resistance is experienced when a water of normal flow rate passes through the passage.
g. Cleaning of filter bed is effected by passing a reverse upward flow of water through the filter for approximately 3 to 5 minutes.

2) Activated Carbon Filter (ACF)

a. Treated water will be transferred to the activated carbon filter.
b. Activated carbon filter consists of a vertical pressure vessel fitted with a set of frontal pipe and valves, different type of filtration media

will be supported by layers of a bed consisting of pebbles and gravels with a distributor at top to distribute the incoming water across the filter and an underdrain system for the collection of filtered water.

c. ACF is a pressurized filter with backwash arrangement.

3) Pressure Sand Filter (PSF)

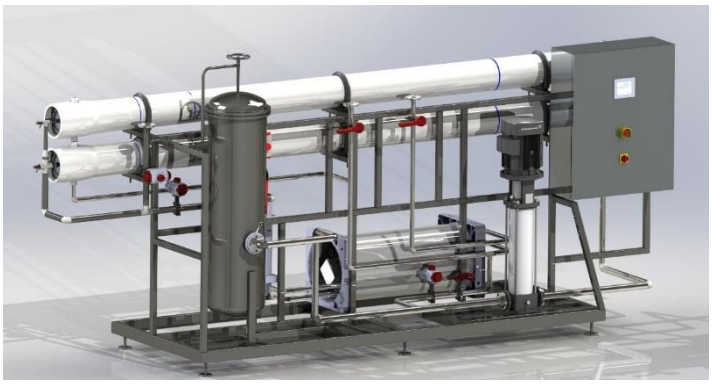
a. The Pressure Sand Filter consists of a multiple layer of sand with a variety in size and specific gravity.
b. These Filters are designed to remove turbidity and suspended particles present in the feed water with minimum pressure drop.
c. The Pressure sand filter consists of a pressure vessel either vertical or horizontal, with a set of pipe work and valves, graded silica quartz sand supported by layers of graded under bed consisting of pebbles and gravels, and a top distributor to distribute the incoming water uniformly throughout the cross section of the filter, also an under drain system to uniformly collect the filtered water.

4) Multi Grade Filter (MGF)

1. Multi grade filter is a depth filter that makes use of coarse and fine media mixed together in a fixed proportion.
2. The arrangement produces a filter bed with adequate pore dimensions for retaining both

large and small suspended particles. The filter performs at a substantially higher specific flow rate than conventional filters.

5) Reverse Osmosis Plant (RO Plant)

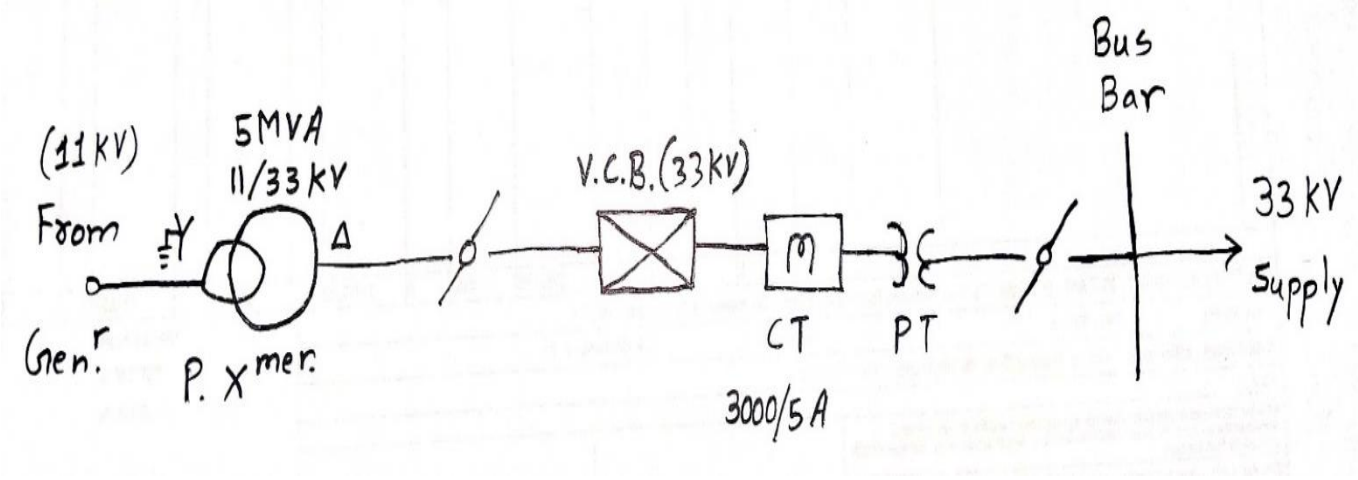


A reverse osmosis plant is a manufacturing plant where the process of reverse osmosis takes place. Reverse osmosis is a common process to purify or desalinate contaminated water by forcing water through a membrane. Water produced by reverse osmosis may be used for a variety of purposes, including desalination, wastewater treatment, concentration of contaminants, and the reclamation of dissolved minerals.

An average modern reverse osmosis plant needs six kilowatt-hours of electricity to desalinate one cubic metre of water. The process also results in an amount of salty briny waste.

The challenge for these plants is to find ways to reduce energy consumption, use sustainable energy sources, improve the process of desalination and to innovate in the area of waste management to deal with the waste. Self-contained water treatment plants using reverse osmosis, called reverse osmosis water purification units, are normally used in a military context.

LINE DIAGRAM OF SWITCHYARD



COMPONENTS OF SWITCHYARD:

List of Electrical Substation Equipment :

a) Instrument Transformers
b) Current Transformer
c) Potential Transformer
d) Conductors
e) Insulators
f) Isolators
g) Busbars
h) Lightning Arrestors
i) Circuit Breakers
j) Relays
k) The Outgoing Feeders

Instrument Transformers

The instrument transformer is a static device utilized for reduction of higher currents and voltages for safe and practical usage which are measurable with traditional instruments such as digital multi-meter etc. The value range is from 1A to 5A and voltages such as 110V etc. The transformers are also used for actuation of AC protective relay through supporting voltage and current. Instrument transformers are shown in the figure below and its two types are also discussed underneath.

Current Transformer

A current transformer is a gadget utilized for the transformation of higher value currents into lower values. It is utilized in an analogous manner to that of AC instruments, control apparatus, and meters. These are having lower current ratings and are used for maintenance and installation of current relays for protection purpose in substations.

Potential Transformer

The potential transformers are similar in characteristics as current transformers but are utilized for converting high voltages to lower voltages for protection of relay system and for lower rating metering of voltage measurements.

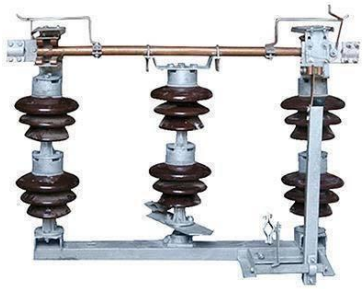
Conductors

Conductors are the materials which permit flow of electrons through it. The best conductors are copper and aluminum etc. The conductors are utilized for transmission of energy from place to place over substations.

Insulators

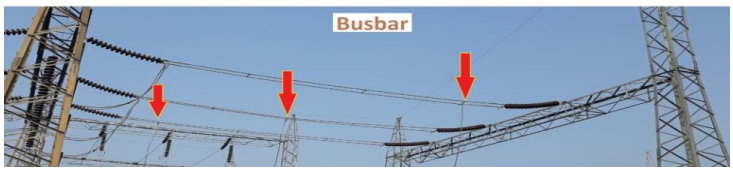
The insulators are the materials which do not permit flow of electrons through it. Insulators are resisting electric property. There are numerous types of insulators such as shackle, strain type, suspension type, and stray type etc. Insulators are used in substations for avoiding contact with humans or short circuit.

Isolators



The isolators in substations are mechanical switches which are deployed for isolation of circuits when there is an interruption of current. These are also known with the name of disconnected switches operation under no-load conditions and are not fortified with arc-quenching devices. These switches have no specific current breaking value neither these have current making value. These are mechanically operated switches.

Busbars



The busbar is among the most important elements of the substation and is a conductor which carries current to a point having numerous connections with it. The busbar is a kind of electrical junction which has outgoing and incoming current paths. Whenever a fault occurs in the busbar, entire components connected to that specific section should be tripped for giving

thorough isolation in a small time, for instance, 60ms for avoiding danger rising due to conductor's heat. These are of different types such as ring bus, double bus, and single bus etc. A simple bus bar is shown in the figure below which is considered as one of the most vital electrical substation components**.**

Lightning Arresters

The lightning arresters can be considered as the first ever components of a substation. These are having a function of protecting equipment of substation from high voltages and are also limiting the amplitude and duration of the current's flow. These are connected amid earth and line i.e. connected in line with equipment in the substation. These are meant for diversion of current to earth if any current surge appears hence by protecting insulation as well as conductor from damages. These are of various types and are distinguished based on duties.

Circuit Breakers

The circuit breakers are such type of switches utilized for closing or opening circuits at the time when a fault occurs within the system. The circuit breaker has 2 mobile contacts which are in OFF condition in normal situations. At the time when any fault occurs in the system, a relay is sending the tripped command to the circuit breaker which moves the contacts apart, hence avoiding any damage to the circuitry.

Relays

Relays are a dedicated component of electrical substation equipment for the protection of system against abnormal situations e.g. faults. Relays are basically sensing gadgets which are devoted for sensing faults and are determining its location as well as sending interruption message of tripped command to the specific point of the circuit. A circuit breaker is falling apart its contacts after getting the command from relays. These are protecting equipment from other damages as well such as fire, the risk to human life, and removal of fault from a particular section of the substation. Following is the substation component diagram is known as a relay.

Outgoing Feeders

There are numerous outgoing feeders which are connected to that of substations. Basically, the connection is with a bus of the substation for carrying power from the substation to service points. The feeders can hug overhead streets, underground, underneath streets, and are carrying electrical power to that of distribution transformers at near or farther premises. The isolator in substation and breaker of the feeder are considered as entities of the substation and are of metal-clad typically. Whenever a fault is occurring in the feeder, the protection is detecting and the circuit breaker is opened. After detection of fault through manual or automatic way, there are more than one attempts for re-energizing the feeder.

CONCLUSION

Now from this report one can conclude that Power Generation plays an important role in our life. At the end of the training, I came to know about the various parts of the Power Plant and how they are operated. Also I learnt about how generation is done using Biomass. As evident from the report, a power plant plays a very important role in the generation system. That's why various protective measures are taken to protect the power plant from various faults and its smooth functioning. **Sudha Bio Power Private Limited** takes such steps so that a uniform and stable generation of electricity is done.