

Study on Industrial Training at Walton Hi-Tech Industries Ltd. Chandra, Kaliakoir, Gazipur.

**This thesis has been submitted to the Department of Electrical and Electronic Engineering
for partial completion of the bachelor's degree in Electrical and Electronic Engineering.**

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31 January 20**

Certification

This is to certify that this project and thesis entitled “title” is done by the following students under my direct supervision and this work has been carried out by them in the laboratories of the Department of Electrical and Electronic Engineering under the Faculty of Engineering of Daffodil International University in partial fulfillment of the requirements for the degree of Bachelor of Science in Electrical and Electronic Engineering. The presentation of the work was held on 13 December 2020.

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ACKNOWLEDGEMENT

First of all, the complete reward to “ALMIGHTY ALLAH” the author of universe whatever on this universe. He has made us glorious creatures blessing us accomplish this work. We are very grateful to “ALLAH ALMIGHTY” for giving us such an opportunity to acquire skills at Walton Hi-Tech Industries Limited. I would like to express my sincere gratitude for my internship manual, Mr. Md. AshrafulHaqueDepartment of Electrical and Electronic Engineering.Daffodil InternationalUniversity for its honest effort to make this challenge a success. It turned out to be his guidance and relentless inspiration at one stage of the course of uncertainty and doubt that helped me move with this work. I would like to express my sincere gratitude to Mr. Md. Ashrafulhaque assistant professor

Department of Electrical and Electronic Engineering for his guidance and assistance. I am also grateful to the faculty of Electrical and Electronic Engineering for presenting their supportive direction of our initiative. It turned out to be a great experience to do an internship right here. We have learned many things in practice that we have already learned theoretically. We thank Almighty for enabling us to complete this internship report in a timely manner. These prayers and strong acquire willpower are just a few words for our humble obligation to our loving parents to allow me to achieve this process.

ABSTRACT

This report is based entirely on industrial training in Walton Hi-Tech Industry, which one of the leading brands in Bangladesh. Through this I learned about the history of the company and the success goals of the company and the product manufacturing process, to adopt different types of machines and methods according to different departments to complete the product manufacturing process.

One of the most important department is cyclopenten C-5 chemical plant, this chemical is used to complete the refrigerator foaming system.

And this chemical plant is used for controlling various types of electrical, Electronic and Mechanical devices.

Such as PLC, HMI Monitor Display unit, Magnetic Conductor, Relay, CKT Breaker.

CHAPTER-1

Introduction

1.1: The background of the study:

Every work has a purpose. And just like that similarly I have a purpose behind this thesis report. This report is based on my workplace and its totally based on Walton Hi-Tech Industries. This is the first and best refrigerator brand in Bangladesh. As a result of this thesis we will be able to know about the profile of this company and how it started, its journey and about the present achievements of the company, future goals, various policies and regulations and product manufacturing process and technological development. And also about the function and importance of various electrical, electronic, and mechanical devices used in the manufacturing process. Which will very good affect in my real life.

1.2: Objective of the study:

The main purpose of the study is to access academic knowledge in each part of my work and internship.

The main objective of the study:

- (01) About the company profile.
- (02) About my working and internship place.
- (03) About the working procedure of Electrical, Electronic, and Mechanical devices.

1.3: Limitation:

- (01) I can't obtain all the information due to the internal rules of this company.
- (02) I have no permission to take pictures all of the equipment.

CHAPTER 2

Introduction

2.1: Introduction:

The name of the company is “Walton Hi-Tech Industries Limited” and it is an electronics and home appliance manufacturing company. Walton Hi-Tech Industries Limited is the first largest manufacturing of electronics and home appliance company in Bangladesh. And Walton is the latest multinational electrical, electronics, automobiles and other equipment brand that has managed production through various subsidiaries under the banner of the Walton Group headquarters in Bangladesh, and one of the largest equipped R&D facilities in the world. In the local market Walton developed and supports local demand by entering to export their product to the international market and to give technicians and workers in or country. Today Walton has more than 20,000+ people in a total of 22 production bases Under 667+ acres in the factory field. Annual production capacity is one crore units as per market demand. Walton has earned a high reputation in the relevant industry as a giant professional manufacturing and its unparalleled expertise in producing electrical and electronics products in the most competitive way in terms of quality, cost, design and innovation.

2.2: The History of Walton Group of Industries:

Walton group of Industries was founded by S.M NazrulIslamAlam in 1977 as a trading company.

Which become the leading of private sector business in Bangladesh, and merged with the name of R.B.Group. The business started in 1977 and in early 2006 WHIL started manufacturing refrigerators, freezers, air conditioners, compressors and now expands its operations to televisions, home and electrical appliance equipment. Walton and Marcel has become the most reliable and prestigious brand in the E&E industry in Bangladesh with its strong manufacturing base, quality products, competitive prices, wide market coverage and last but not least, prompt after sales service. As a result, in a very short span of time, both the brands have captured a substantial share of the market and have established themselves as the most influential actors in

the E&E sector in Bangladesh. WHIL's product portfolio includes refrigerators (frost and non frost) freezers, air conditioners, condensers and televisions.

2.3 About of Walton Factory:

Walton has set up all of its plants at Kaliakoir in Gazuipur at the outside of Dhaka.



The Walton headquarters, as the name of the factory is established on 746 acres of land and is divided into Walton Hi-Tech industries, Walton

Micro Corporation and Walton DG-Tech Limited.

The top product of Walton Hi-Tech Industries is a good number of air conditioners and refrigerators and the new one is elevators.

Digi-Tech produce cell phones, computer, and accessories.

2.4: Client and Product:

Walton has earned domestic and worldwide recognition for its reveal in and confirmed song record in a ramification of electronics fields. Walton is the pioneer of growing kingdom of the artwork designs and cutting edge technology having main marketplace proportion specializing in

multi-stored refrigerators, freezers, air conditioners, led/lcd televisions, compressor, smart phones, and home appliance, and chemical. Walton has set up a milestone as the highest exporting Bangladesh employer in the subject of electronics.



2.5: The Journey abroad:

Walton has now focused on keeping a strong foothold in the world market.

It currently exports products to 30 countries, including the largest markets in the Middle East and Africa.

Besides it sends goods to some European and SAARC countries.

Recently, it has signed a deal with aus company to export “Made in Bangladesh” smart handsets to that country. In order to sell 26 thousand units of air conditioners and 1 lakh pieces of fridge in the Indian markets for the next two years, Walton has also inked deals with Korean giant Hyundai and Indian reliance.



Walton has also signed an agreement to sell Walton products on Amazon.

Walton will become one of the top five brands in the world by 2030.

2.6: Manufacturing Facilities:

Walton Hi-Tech Industries has a manufacturing plant and headquarters at Chandra, Kaliakoir, Gazipur. This plant is considered as one of the most sophisticated production centers in Bangladesh as well as south Asia. Walton has come up with a combination of sophisticated technology and skills to build a more advanced, sustainable and environmentally friendly society. WHIL 5,000,000 sft. of working space consisting of 19 Building and Shades.

2.7: Working Environment:

Walton has maintained 100% compliance considering its launce and licensed ISO 14001: 2015 Department of Refrigerators and air Conditioners, ISO 9001: 2015 Department of Refrigerators and Air Conditioners and OHSAS 18001: 2007 Effectively taking sound professional fitness and safety management measures, ensuring efficient workforce control, reducing risk of injury and fixing products. And combine the above to reduce production costs. Our strategic Humanities and Organizations Social Responsibility (CSR) efforts are primarily concerned with our core groupings and awareness with a strong emphasis on innovation in sports and lifestyles, eras and surrounding areas. As the domestic international head of the consumer electronics industry, Walton is fully committed to corporate citizenship and environmental stewardship products, programs, its practices and to the public.

2.8: Safety caution:

To avoid plant hazards, organizations train their employees to operate safely and to manage materials and units installed on plants. So follow these steps for this organization:

01: Give knowledge

02: Give training

03: Problem shooting

04: Smoking is strictly forbidden in all areas of the factory.

05: Leaks can occur and therefore cause serious damage in all (chemical plant, machine, material) so safety is very important, because every small mistake in the factory plant causes a fatal damage.

2.9: Vision & Mission:

2.9.1: Vision:

To become an influential global brand by 2021 and to reach one of the top 5 brands in the world by 2030 in the electrical and electronics sector.

2.9.2: Mission:

01: Through innovation

02: NewTechnology

03: Competitive Price & Superior Quality

04: Ensuring Consumer Satisfaction

2.9.3: Corporate culture:

01: Work Together

02: Don't Say No

03: Apply Creativity

2.9.4: Values:

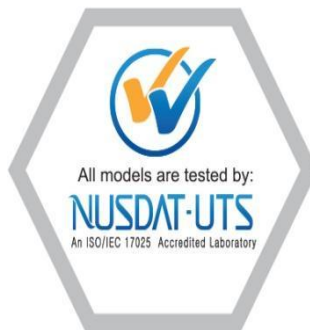
01: Teamwork & Innovation

02: Research & Development

03: Integrity & Consumer Focus

2.10: Certificate:

Walton has maintained 100% compliance since its inception, and the ISO 14001:2004 Department of Refrigerators and air Conditioners, ISO 9001:2015 Refrigerators & Air Conditioner, and the OHSAS 18001:2007 have successfully managed sound professional health and safety management. Combining the above to reduce the risk and ensure the quality of products to achieve adequate corporate reputation and reduce production costs.



Certificate of this company.

2.11: Award:

- 01: International Award.
- 02: Local Award.
- 03: Special Award and Souvenir.

2.11.1: International Award:

- 01: Walton Achieved Super brands 2020-21
- 02: Walton Achieved First for General pavilion Category DITF-2020
- 03: Highest Vat Payer, DITF-2020 from Bangladesh Custom & VAT.
- 04: Second Prize for Premier Pavilion Category, DITF-2020.
- 05: Best VAT Payer DITF-2019 Award from NBR.

- 06: Second Prize for Highest Payer, DITF-2019.
- 07: First Prize for Premier Pavilion Category, DITF-2019.
- 08: First Prize for General Pavilion Category, DITF-2019.
- 09: Bangladesh Master Brand awards 2018.
- 10: First Prize from NBR for the highest VAT payer DITF-2018.
- 11: First Prize for Highest VAT payer, DITF-2018.
- 12: Second Prize for Premier Pavilion Category, DITF-2018.
- 13: First prize for Highest VAT Payer, DITF-2017.
- 14: First Prize for Premier Pavilion Category, DITF-2017.
- 15: First Prize for Highest VAT Payer, DITF-2016.
- 16: First Prize for Premier Pavilion Category, DITF-2016.
- 17: The Golden Globe Tigers Summit Awards, 2015.
- 18: First Prize for Highest VAT Payer, DITF-2015.
- 19: Second Prize for Premier Pavilion Category, DITF-2015.
- 20: Global Brand Excellence Awards, 2014.
- 21: First Prize for Premier Pavilion Category, DITF-2014.
- 22: First Prize for Highest Tax Payer, DITF-2014.
- 23: First Prize for Premier Pavilion Category, DITF-2013.

2.11.2: Local Awards:

- 01: Walton Achieved First Prize National Industrial Fair-2019.
- 02: Walton Achieved First HSBC Business Excellence Awards-2020.

- 03: Best Refrigerator Brand Award-2019.
- 04: IFIC Ban - Somokal Prestigious Large Industry Enterprises Industry and Commerce Award-2018. Manufacturing Achievement Award.
- 05: Walton Hi-Tech Industries Honoured with Nat'l Environment Award.
- 06: Best Refrigerator Brand Award- 2017.
- 07: Best Refrigerator Local Brand Award-2017.
- 08: Best Refrigerator Brand Award-2016.
- 09: Best Refrigerator Local Brand Award-2016.
- 10: Best Refrigerator Brand Award-2015.
- 11: 8th Best TV Local Brand Award-2015.
- 12: 5th Best Refrigerator Local Brand Award-2015.
- 13: Best Refrigerator Brand Award-2014.
- 14: DHL- Daily Star Bangladesh Business Award 2014.
- 15: Best Local Brand Award-2014.
- 16: Best Sponsor Award-2012.
- 17: Creative Media Ltd. BABISAS Award-2012.
- 18: Best Brand Award-2011.
- 19: Purbachal- Alion City BABISAS Award-2011.
- 20: Rup Aroma TRAB Star Award-2011.
- 21: Ashiyan City Trab Award-2010.
- 22: GTC-Term Group BABISAS Award-2010.

2.11.3: Special Award and Souvenir:

01: Souvenir from Channel-I on their 12th anniversary-2.

02: Souvenir from Channel-I on their 9th anniversary.

03: Souvenir from Channel-I on their 7th anniversary.2.12: Company Information:

The basic information of the company is given below:

01	Location Of The Headquarters	Chandra,Kaliakoir,Gazipur. Next to Nandon Park.
02	Address Of Corporate Office	Plot-1088, Block-1, Sabrina Sobhan Road P.O-Khilkhet, P.S-Vatara, Bashundhara R/A, Dhaka-1229.
03	The Nearest Port Of Leading	Chittagong
04	Distance To Port	292 Kilometer
05	Tell Number	008809606-555555
06	Email	hq@waltonbd
07	Legal Status	Private Company
08	Year Of The Construction	1977
09	Certificate	ISO 14001:2004, ISO 9001:2015, OHSAS 18001:2007





Our Production Facilities



Refrigerator Assembly Line



Display Assembly Line



LED Testing Lab



Articulated Robot



Semi-Anechoic Chamber
(Noise Test Lab)



Green Sand Pressure Molding Line



Induction Molding Furnace



Packaging Facilities

CHAPTER-03

About My Working Place

(Cyclopentane-C5 Chemical Plant)

3.1: Introduction:

Through this chapter we will know about the types, uses, and functions of C5 chemicals. We will also learn about C5 chemical loading methods and chemical preservation methods and hazard direction and protective equipment. And discuss in detail the various precautionary directions and procedures.

3.2: Physical Description:

The petroleum-scented cyclopentane appears as a clear colorless liquid. Flash point of -35F. It is usually less dense than water and heavier than water-soluble air.

3.3: Application:

The application of this chemical is foam blowing.

3.4: Packaging Information:

This chemical is available and refundable containers are provided. Store in a cool container, out of the direct sunlight, in a dry and well ventilated place.

3.5: Hazard Statement:

High flammable liquids and vapors (Hazardous combustible liquids).

Harmful to aquatic life with long lasting effects (Harmful to aquatic environment, long term).

3.6: The Cyclopentane C5 Chemical Preservation Methods:

Cyclopentane C5 chemical is a highly flammable substance and explosive liquid chemical. It is a very deadly flammable and vapors liquid. If for any reasons this chemical comes in contact with fire, it is not possible to extinguish it in any way unless it is self-extinguishing. And if it is kept in the open, it mixes with the air very quickly. So, for this reasons it is always stored very carefully. Initially Cyclopentane C5 chemicals were purchased from outside the country and brought to the company through in the containers. And underground storage tanks were built to store the chemical from the container. The Walton company has a total of five underground storage tanks for the storing this cyclopentane C5 chemical, among the total five underground storage tanks which have four underground storage tanks total capacity is 35 Ton and another one new container the number fifth, which chemical contain is 75 Ton. And each of these underground storage tanks is made with a lot of strength and highly safety measures. For this reason every ground storage tank building cost is very expensive. Eventually the underground storage tanks are stored by using with the loading methods from the containers imported from the outside country. And the biggest think is that Cyclopentane C5 chemical underground storage system is the only has Walton company in Bangladesh. And other companies they are bring this chemical from the another country by directly mixing or small chemical drums. Every small chemical contain drums capacity is 200kg.

3.7: The Loading Method OfCyclopentane C5 Chemical:

The cyclopentane C5 chemical loading method is one of the most important and risky work.

Because this cyclopentane C5 chemical is a very flammable substance which is evaporates rapidly and mixes with the air very quickly and spreads around very fast. Before the complete of

this loading work we need to permission of the company's special senior officers and head of the department and the in-charge of the department. Finally with the permission of all special senior officers we are informed to everyone about the loading matter. The first thing to do before the cyclopentane C5 chemical loading, is to release under the underground storage tank nitrogen pressure. This work is most of the important and risky work, among the other before loading work. Because of when the nitrogen pressure is release then the along with the nitrogen pressure the C5 chemical is also spreads around the area. And the reason for using this nitrogen pressure is to hold the chemicals in the underground storage tank under pressure. So that the chemical can't be evaporate. And it is very important to release the nitrogen pressure in the underground storage tank before the cyclopentane C5 chemical loading. Because if this nitrogen pressure is not released then the loading time will be interrupted and it will be seen that it is not possible to complete the loading work at right time. So it is very important to release the nitrogen pressure before the chemical loading. Chemical are transferred from the container to the underground storage tank after the security guards and the fire service team and the and the maintenance team ensure the overall safety then the we are started loading work. And when the loading work is complete then this underground storage tank is ready for transfer to the cyclopentane C5 chemical in every shed.

3.8: Hazard Direction:

- (01) Health Hazard-Extrem danger.
- (02) Fire Hazard-can occur fire at any temperature.
- (03) Specific Hazard-(Oxidizer).
- (04) Instability-(Stable).

3.9: Protective Equipment For Handling Materials:

- (01) Gloves.
- (02) Apron.
- (03) Goggles.

- (04) Boots.
- (05) Respirator.

3.10: Precautionary Measure:

- (01) Highly flammable.
- (02) Keep away from Heat, fire and sparks.
- (03) Put off Keep the container dry.
- (04) Can't eat.
- (05) Use a face mask of the exhaust system is not adequate.

3.11: Emergency Overview:

- (01) Adequate air ventilation should be arranged.
- (02) Wash your face and hands well after use the chemical.
- (03) Explosive resistant safety equipment must be used.
- (04) Ensure safe emissions.
- (05) eye wash and safety power should be provided next to the workplace.
- (06) In case of fire, carbon-dioxide or foam type of dry chemical type fire extinguisher should be used.

3.12: First Aid Procedures:

- (01) If it falls on the eyes, it should be washed immediately with cold water for at least 15 minutes.
- (02) If it falls on the body, it should be washed with plenty of water, until the body is free from chemicals.
- (03) If it enters the human body with breathing, then it should be brought to an open place. And if have any person difficulty to take breathing then oxygen must be provided. Or must be arranged artificial respiration.
- (04) Can't vomit, always keep in a cool place.
- (05) At the end of the initial treatment should be taken to the medical center immediately.

3.13: The warning instruction of cyclopentane C5 area:

- (01) Any type of fire creator equipments are totally use strictly prohibited in cyclopentane C5 area within the seventy feet.
- (02) The welding, grinding or gas cutting this type of works are totally prohibited in the cyclopentane C5 area within the seventy feet.
- (03) Any kind of equipment don't be kept in cyclopentane C5 area within the seventy feet.
- (04) Without permission the electrical work is totally prohibited in the cyclopentane C5 area.
- (05) The working of high voltage line is strictly prohibited.
- (06) No entry into the C5 area without any permission.

(07) The use of mobile phones in the cyclopentane C5 area is strictly prohibited.

(08) Any kind of engine operated vehicles can't go this cyclopentane C5 area within the seventy feet.



Figure:01;The picture of cyclopentane C5 chemical underground storage tank.

3.14:About The Picture:

The picture above shows the cyclopentane C5 chemical underground storage tank. Which is set up to be stored for chemical loading operations purchased from outside the country. And to provide chemicals in every shed.



Figure-02: The Picture OfCyclopentane Chemical Import Container.

3.15: About The Picture:

The picture above shows how to set up the chemical container on the top of the base and prepared for subsequent loading.

Chapter-04

(Importance Of Using Electrical, Electronic & Mechanical devices)

4.1: Introduction:

From this chapter we will know about the working procedure of necessary Electrical, Electronic & mechanical equipment which devices are used in the cyclopentane C5 chemical plant.

4.2: Lightning Arrester:

Lightning arrester is a lightning arrester device. When lightning is occur on the sky in rainy season, its contain millions of volts. When this lightning is in a conductive line, the voltage of the line multiplies. This is called surge voltage. Although transient, it can be very detrimental to the line and the equipment attached to it. So lightning arresters are used along with electrical equipment of the line. It is used like normal time circuit. But when surge voltage is generated it transmits the excess voltage to the ground without flowing in the line.

4.3: The Features Of Lightning Arrester:

(01) Arrester will have one of more spaces which will be through the air.

(02) There is an arc extinguishing system.

(03) Under the normal conditions no current will be flow in the arrester.



Figure:04; Lightning Arrester.

4.4: Nitrogen Pressure:

Nitrogen pressure is a very important component for cyclopentane C5 plant. Because the main purpose of using this pressure is to hold the chemicals inside the underground storage tank by creating pressure. So that the chemical does not evaporate in any way. It is also used to complete chemical loading faster.

4.5: Glycol Chemical:

It is also one of the useful ingredients used in cyclopentane C5 chemical plant. Because the main purpose of using this glycol chemical is to keep the C5 chemical in the underground storage tank and the C5 chemical in the pipeline always cold. And used to detect leaks of chemicals in underground storage tanks and pipelines.



Figure : 05; The Glycol Storage Tanks.

4.6:Earthing:

Earthing is the process by which a conductor transmits electric current from a metal or metal enclosure to protect electrical equipment and people from unwanted electricity.

Why earthing is used: Many people call earthing grounding. If there is a leakage current in the line for any reason, the earthing helps the leakage current to go to the ground easily without causing any danger.

4.7: What are the requirement for earthing:

(01) In case of any kind of fault or to transmit leakage current safely so as to disconnect the faulty circuit of the equipment.

(02) Arrange for any part of the voltage system to be more specific than the ground.

(03) Ensuring that the voltage of the equipment does not reach dangerous levels compared to the ground due to faults or problems in the system.

4.8 What is neutral?

Neutral contains only current. And if it is not neutral then the circuit will not close. And if it is not closed, the current will not flow. The current flows through the neutral and keeps the system running. Provides a relatively short path for neutral current.

4.9 Differences between earthing and neutral:

The earthing is directly connected to the ground where the neutral line goes directly back to the power station or transformer.

4.10: What is the value of earthing resistance:

Home should have a maximum of 5 (Ohms), not more. Sub-stations and power lines should have a maximum of 1(Ohm). Phase, Neutral and earth wire Standard Colors, the color of earth wire is stripped of green or yellow.

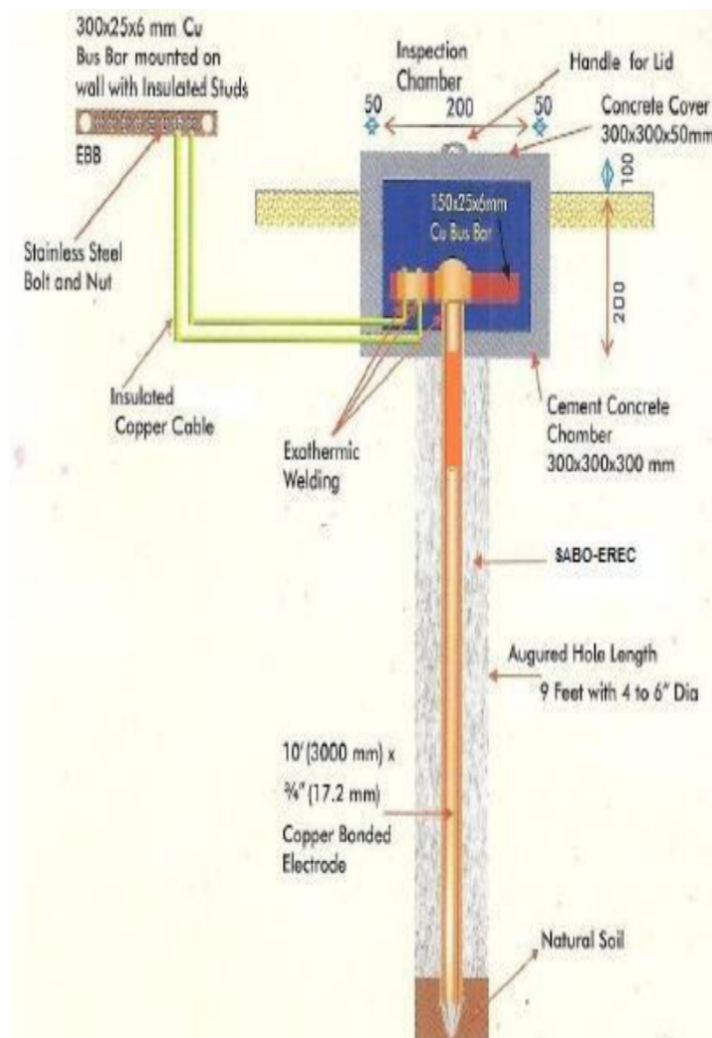


Figure 06; Proper Industrial chemical Pipe Earthing Methods.

4.11: Pressure Gauge Meter:

Pressure gauge meters are used to monitor how much nitrogen pressure is going inside the each tank and how much pressure is inside the tank.



Figure 07; Nitrogen Pressure Gauge Meter.

4.12: Chemical Level Sensor:

Chemical level sensors are used to measure and quantify the amount of the chemical level in the underground stress tank.



Figure 08; C5 Chemical Level Sensor.

4.13: Safety Weight Valence Valve:

Safety weight valence valve this is mainly used to automatically expel the excess nitrogen pressure inside the underground tank. When the nitrogen pressure starts to enter through the pipeline, if the pressure ever exceeds the specified setting, the safety valve automatically opens the excess pressure according to the specified setting.



Figure 09; Safety Weight Valve.

4.14: C5 Gas Sensor:

C5 gas sensor it is mainly used to detect the smell of chemicals mixed with air if there is any leakage problem outside the tank and show the level of leakage in the meter. And the control panel informs about the leakage with the alarm in the display unit.



Figure 10; C5 Gas Sensor.

4.15: Pneumatic Rotary Actuator:

The Pneumatic rotary actuator uses compressed air to produce pendulum motion. Like pneumatic linear actuators. They are also designed to be simple, durable and suitable for work in hazardous environments.

Three of the most common configurations of pneumatic rotary actuators are rack and pinion, scotch yoke and vane design. In the rack and pinion configuration, compressed air pushes the rack at a piston and linear motion, resulting in rotary movement in the pinion gear and output shaft. These can come in single, double or multiple racks.



Figure 10; Pneumatic Actuator.

4.16: Pressure Regulator:

Pressure regulator it is a control device. Which is use for controlled and reduced the nitrogen pressure. And its transmitted the nitrogen pressure inside the underground storage tank as per the specific requirement and at a sp



Figure11; Pressure Regulator.

4.17: Proximity Sensor:

A proximity sensor is a type of sensor that can detect nearby objects without any touch. Proximity sensors are mainly used to indicate the presence of an object or how close it is. Similarly in cyclopentane plant it is used to measure the level of glycol chemical. Whenever the glycol chemical level drops or rises above a certain level, it will notify us with the alarm.

4.18: The Types Of Proximity Sensors:

Proximity sensors are three types:

- (01) Inductive type proximity sensor.
- (02) Capacitive type proximity sensor.
- (03) Photo electric type proximity sensor.

4.18.01: Inductive type proximity sensor:

It is usually used to detect moving objects. It is used to detect elevators or other moving objects.

4.18.02: Capacitive type proximity sensor:

It usually detects liquid or any other dielectric object.

4.18.03: Photoelectric type proximity sensor:

Works on the basis of light or darkness. It has an emitter and a receiver. The light also goes to receiver from the emitter. If for any reason an object moves in the middle, the light cannot go from the emitter to the receiver due to darkness. This is the working method of photoelectric sensor.



Figure 12; Capacitive Type Proximity Sensor.

4.19: Timer:

A timer is a type of time switching device that controls electrical circuits and electronics devices on or of through time setting. Like other controlling devices, timers also have coils when these coils are magnetized, the timer works on or off.

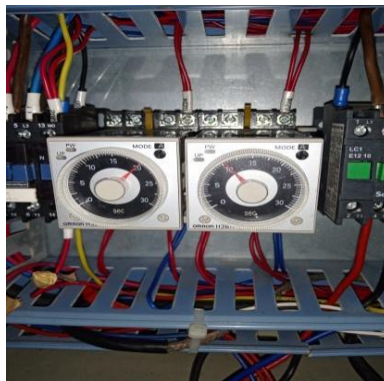


Figure 13; Timer.

4.20: Relay:

A relay is a switching device that controls and protects the current in a circuit.

When current flows through the relay, the coils inside it magnetize, causing the relay to control and regulate the circuit through the on-off switch.



Figure 14; Relay.

4.21: Emergency Push Button Switch:

An emergency stop switch is a safety device used to turn off equipment in an emergency, when it cannot be turned off normally. The purpose of the emergency push button is to quickly shut down equipment when there is a risk of injury or the workflow needs to be stopped. It is designed to avoid damage to people, equipment or the workplace, or to reduce existing hazards, so people also call safety push button switches or push button protection switches.

4.22: Using Place of Emergency Switch:

Emergency stop push buttons can be found in any industry including industrial, commercial and public facilities. These need to be clearly visible to anyone using them. It is also possible to have several emergency stop buttons on a machine depending on which part of the machine needs to be shut down. For example, elevators, packaging machine, lift equipment and many others type of machines.

4.23: Types Of Emergency Switch:

(01) Latching key release.

(02) Latching pull release.

(03) Latching turn release.



Figure 15; Emergency Push Button Switch.

4.24: Circuit Breaker:

A circuit breaker is a device that automatically disconnects a faulty line from the sources.

4.25: When its works?

When a circuit has a voltage higher than the specified voltage, the circuit breaker automatically protects the circuit.

(01) In case of short circuit in AC line (line to line or line to neutral).

(02) If there is excess load.

(03) When the voltage rises.



Figure 16; Miniature Circuit Breaker.

4.26: Fuse:

A fuse is an electrical safety device. When excess current flows in the circuit, the metal wire of the fuse melts and provides protection to the circuit. If the metal wire of the fuse is burnt, it can be re-used.

4.27: Difference Between fuse & Circuit Breaker:

- (01) The working Principal of the fuse is electrical and thermal properties of the conducting materials. And the circuit breaker works on the Electromagnetism and switching materials.
- (02) Circuit Breaker has less response time than fuse.
- (03) Fuse is much cheaper than circuit breakers.
- (04) The circuit breaker can be used as a switch.
- (05) To turn on the fuse, we have need to change the fuse wire and circuit breaker just turn on, circuit breaker we can used number of time.
- (06) Fuse cannot be used as an ON/ OFF switch. But Circuit breaker is used as an ON/ OFF switch.

(07) Fuse only provide protection against power overloads but circuit breaker breakers provide protection against power overload and short circuits.

(08) The breaking capacity of the fuse is less than the circuit breaker.

4.28: Magnetic Conductor:

A magnetic conductor is an electromagnetic switch that is used to control the motor in many large automation industries.



Figure-17: Megnetic Conductor.

4.29: Overload Relay:

An overload relay is an important electrical device. It is usually used to protect expensive motors. This device protects the motor in case of overload or excess temperature of phase triad. The overload relay protects the electric motor. And circuit breakers must used to protect for the circuit.

4.30: Types Of Overload Relay:

(01) Thermal overload relay.

(02) Magnetic overload relay.

4.30.01: Thermal overload relay:

A thermal overload relay is a device that shuts off the power supply when a motor has excess current flowing for a certain period of time.

4.30.02: Magnetic Overload relay:

The magnetic overload relay is operated by detecting the magnetic field energy its generated by the current flowing through the motor. When excess current flows in this relay for a certain period of time, the generated flux pulls a core and overloads the trip.

4.31: Use Of Overload relay:

- (01) Used to protect the motor from over current.
- (02) Used to protect the motor from excessive heat.
- (03) It also provides protection against faults such as phase to phase and phase to ground.



Figure 18; Overload Relay.

4.32: Tank Monitoring System:

Tank monitor system with which various parameter setting of the tank. For example: Density, tank pressure upper limit and lower limit and alarm option of upper limit and lower limit are also set.

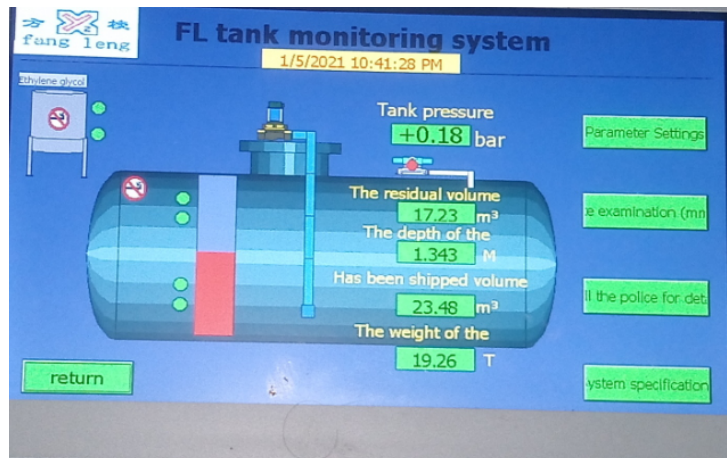


Figure-19: Tank Monitor System.



Figure-20: Chemical Loading On The Underground Storage Tank , From the Base of the Container.



Figure-20: Picture of The C-5 Chemical Mixing Tank.

4.33: About The Figure:

Above the figure 20 shows that C-5 chemical mixing tank , where is C-5 chemical mixing with the others chemical . And which used for the foaming.

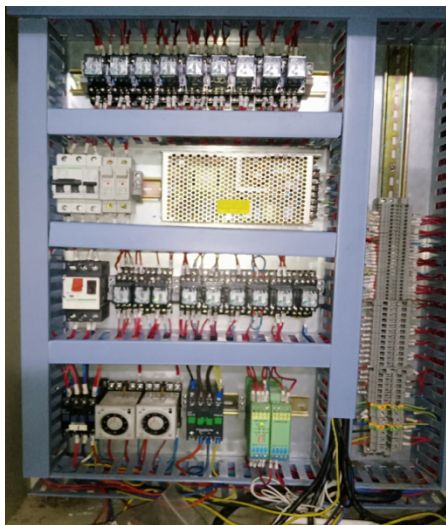


Figure-21: Picture Of The Using Equipment of Control Panel.



Figure-22: Font View Of The All Control Panel.

4.34: C5-Chemical Supply

Pump:

The chemical delivery pump is usually used to supply chemical in every shed.



Figure-23: Chemical Delivery pump.

CHAPTER-05

CONCLUSION

Walton is one of the top electronics manufacturing industries in Bangladesh as well as the best in the world, so this is a great opportunity for me to work with Walton. This plant is being properly maintained with experienced engineers and staff so that I can gain more experience for my professional life. During my work at Walton Hi-Tech Industries Limited, I worked in the chemical sector from the maintenance department. Where I have learned about the various aspects of chemicals and the use and operation of various electrical, electronics and mechanical devices used there. Which will affect my real life a lot.

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