

Seat NO: ENVDOO4002

INPLANT TRAINING REPORT

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY

Chhatrapati Sambhajanagar



Department of Environmental Science

In-plant Training Report

In Aurangabad Packaging Powder Coating Unit

F-48,MIDC,Waluj, Aurangabad



Aurangabad Packaging
Powder Coating Unit

Submitted By

Miss.Bhumini Govinda Bompilwar

Postgraduate in M.Sc. Environmental Science

Under the guidance of,

Shri.Sanjay Tripathi Sir

(ETP Manager, Aurangabad Packaging Powder Coating Unit)

2023-24



Aurangabad Packaging

Powder Coating Unit

DATE :11 July 2023

Seat NO : ENVDO04002

CERTIFICATE

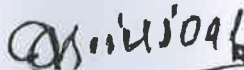
To whom so ever it may concern


This is to inform that **Ms Bhumini Govinda Bompilwar** of M.Sc. (**Environmental Science**)
r. Babasaheb Ambedkar Marathwada University, Aurangabad has successfully completed
the 4 week Industrial training from 10 June 2023 to 10 July 2023 in
Aurangabad packaging, F-48, MIDC, WALUJ, Aurangabad

We wish her Best of Luck in here future endeavours.

Regards,

AURANGABAD PACKAGING
For Aurangabad Packaging


Proprietor
Authorise signatory


07/07/2024

Certificate

This is to certify that, the present work in the form of 'In plant Training Report' Entitled 'Study of ETP Plant' Is carried out by Miss.Bhumini Govinda Bompilwar student of M.Sc. Environmental Science, Second year, during the academic year 2023-2024 at Aurangabad Packaging Powder Coating Plant,Waluj MIDC, Chhatrapati Sambhajnagar through Department of Environmental Science, Dr. Babasaheb Ambedkar Marathwada University,Chhatrapati Sambhajnagar.



Dr. Mahadev Mule Sir

Head of the Department,

Department of Environmental Science,

Dr. B.A.M.U., Chhatrapati Sambhajnagar

Acknowledgement

I have attempted to understand all the aspects regarding the Effluent Treatment Plant in Chhatrapati Sambhajinagar Packaging Powder Coating Unit .

I am thankful to Dr. Mahadev Mule, HOD, Department of Environmental Science for providing me an opportunity to do my in- plant training at Aurangabad Packaging Powder Coating Unit, Chhatrapati Sambhajinagar. For me, it was a unique experience to study about Effluent Treatment Plant. This training period was a great chance of learning and professional development. I am also thankful to Dr. S. S. Patil, Dr. N. N. Bandela, Dr. Y. L. Padme, Dr. B. L. Chavan from department of environmental science, B.A.M.U., Chhatrapati Sambhajinagar for their constant encouragement during report work.

I would like to express my sincere thanks to Shri.Sanjay Tripathi Sir(ETP manager, Aurangabad Packaging Powder Coating Unit).

I'd like to express my deepest gratitude to my parents and friends who always stood by me and provided strength.

Miss.Bhumini Govinda Bompilwar

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Introduction about Company

Aurangabad Packaging Powder Coating Unit is a company based in Aurangabad, India, specializing in providing powder coating services for various industries. With a focus on enhancing the durability, appearance, and protection of products, the company utilizes advanced powder coating techniques to apply a dry powder onto surfaces, creating a durable and high-quality finish. The company's skilled team, state-of-the-art equipment, and commitment to delivering superior coating solutions make it a reliable choice for businesses seeking effective surface finishing solutions.

A powder coating unit is a specialized facility that applies a dry powder coating material to various surfaces, creating a durable and protective finish. This process involves electrostatically charging the powder particles and then spraying them onto the object's surface. The charged particles adhere to the surface and are then cured in an oven, melting and fusing into a smooth, hard coating.

Powder coating offers several advantages, including enhanced durability, resistance to corrosion, chemicals, and UV rays, as well as a wide range of colors and finishes. It's commonly used in industries such as automotive, aerospace, appliances, furniture, and more. The process is environmentally friendly since it produces minimal waste and doesn't require solvents.

Objectives

The objectives of company typically revolve around providing high-quality coating solutions that enhance the appearance, durability, and functionality of various products. Here are some common objectives:

- 1) Superior Protection: Powder coating aim to provide coatings that offer excellent protection against factors such as corrosion, abrasion, chemicals, and weather, extending the lifespan of products and reducing maintenance needs.
- 2) Enhanced Aesthetics: One of the goals is to improve the visual appeal of products by offering a wide range of colors, finishes, and textures that can transform the appearance of surfaces.
- 3) Environmental Responsibility: Focus on environmentally friendly processes, as powder coating generates less waste compared to traditional liquid painting methods. Their objective might involve minimizing the use of harmful solvents and VOCs (volatile organic compounds).
- 4) Cost Efficiency: Powder coating can be more cost-effective than other coating methods due to reduced material wastage, faster application, and fewer reworks.
- 5) Customization: Company often aim to provide customized coating solutions to meet the unique needs of different industries and products, offering tailored finishes and performance characteristics.
- 6) Innovation: Continuous research and development are important objectives for powder coating company. They aim to stay updated with the latest coating technologies and application methods to offer cutting-edge solutions.
- 7) Quality Assurance: Ensuring consistent and high-quality coating application is a key objective. This involves using advanced equipment, quality control measures, and skilled technicians to achieve reliable results.
- 8) Client Satisfaction: Ultimately, the satisfaction of clients is a primary objective. Powder coating company work to understand their clients' needs,

provide efficient services, and deliver coatings that meet or exceed expectations.

Types of Wastes Produced

Powder coating generate several types of waste as part of their operations. These can include:

1)Excess Powder: During the powder coating process, not all powder adheres to the object being coated. This excess powder, known as overspray, is collected and can become waste.

2)Rejected Parts: Sometimes, products might not meet quality standards due to defects or other reasons. These rejected parts can accumulate as waste.

3)Cleaning Waste: Equipment used in powder coating, such as spray booths and recovery systems, requires regular cleaning. The waste generated during cleaning can include contaminated rags, filters, and cleaning agents.

4)Coating Booth Waste: Dust and particles collected in the powder coating booth's filters also contribute to waste. These filters need to be replaced periodically.

5)Packaging Waste: Materials used for packaging, such as cardboard, plastic wrap, and protective materials, can contribute to waste in powder coating companies.

6)Chemical Waste: Some chemicals used in the powder coating process, such as solvents or pretreatment chemicals, can result in hazardous waste that requires proper disposal.

7)Spent Powder: Powder that becomes unusable due to contamination or age can become waste.

8)Empty Containers: Containers used to hold powder, chemicals, or other materials can contribute to waste once they are empty.

Company adopt measures like recycling overspray powder, properly disposing of hazardous waste, and using efficient filtration systems to reduce waste generation.

9) Water Reuse: Depending on local regulations and the quality of treated water, some companies may choose to recycle and reuse treated water within their processes.

10) Compliance : The treated effluent is monitored to ensure it meets local environmental standards before being discharge into public water ways or sewage systems





Treatment Methods

Effluent treatment plants (ETPs) in powder coating facilities utilize various methods to effectively treat the wastewater generated during the coating process. Here are some common treatment methods employed in powder coating ETPs:

1. Physical Treatment:

Screening: Wastewater is passed through screens to remove large solid particles and debris.

Sedimentation: Heavy particles settle at the bottom of a settling tank, allowing clearer water to be separated.

2. Chemical Treatment:

Coagulation and Flocculation: Chemicals are added to the wastewater to coagulate and clump fine suspended particles into larger flocs, which are easier to settle or filter out.

Neutralization: pH levels are adjusted using chemicals to bring the wastewater to a neutral range, preventing corrosion and facilitating effective treatment.

3. Biological Treatment:

Aerobic Treatment: Microorganisms break down organic contaminants in the presence of oxygen. Activated sludge processes and sequencing batch reactors are common methods of Anaerobic Treatment: Organic matter is broken down by microorganisms in the absence of oxygen. Anaerobic digesters can be used for this purpose.

Filtration:

Sand Filtration: Wastewater is passed through layers of sand to remove finer suspended particles.

Activated Carbon Filtration: Activated carbon adsorbs organic compounds and certain chemicals from the water.

Advanced Treatment:

Membrane Filtration: Methods like ultrafiltration and reverse osmosis can remove very fine particles, dissolved solids, and contaminants from the water.

UV Disinfection: Ultraviolet light is used to disinfect water by disrupting the DNA of microorganisms, rendering them unable to reproduce.

4. Chemical Oxidation:

Ozonation: Ozone gas is used to oxidize and break down organic compounds and contaminants in the water.

5. Sludge Management:

Dewatering: Solid sludge is mechanically dewatered to reduce moisture content.

Sludge Treatment: Sludge can undergo further treatment processes such as digestion, drying, or incineration for safe disposal or reuse.

The combination of these methods depends on factors such as the characteristics of the wastewater, local environmental regulations, and the desired effluent quality. The goal is to effectively remove contaminants, pollutants, and suspended solids to ensure the treated water meets regulatory standards before discharge. The ETP not only safeguards the surrounding environment from the potential negative impacts of untreated wastewater but also contributes to the sustainability of the powder coating industry. By properly managing wastewater, powder coating companies can reduce their ecological footprint, minimize water pollution, and comply with regulatory requirements. Additionally, effective effluent treatment can support water conservation efforts and potentially allow for the reuse of treated water within the facility, promoting resource efficiency in discharged or reused.

Conclusion

In conclusion, the implementation of an efficient Effluent Treatment Plant (ETP) within a powder coating facility is essential for responsible waste management and environmental stewardship. The ETP serves as a comprehensive system that utilizes a combination of physical, chemical, biological, and advanced treatment methods to effectively treat the wastewater generated during the powder coating process. By addressing various pollutants, contaminants, and solid particles present in the wastewater, the ETP ensures that the treated effluent meets or exceeds local environmental standards before being discharged into water bodies or sewage systems.

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Ultimately, the successful operation of a powder coating ETP reflects the commitment of powder coating companies to uphold environmental responsibility, prioritize public health, and contribute positively to their communities. As technologies and best practices continue to evolve, the ongoing optimization and innovation of effluent treatment processes will play a pivotal role in shaping the industry's future with a focus on sustainability and environmental well-being.

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