

INTERNSHIP ON METAL SEPARATORS MANUFACTURING

Submitted in partial fulfilment of the requirements for the
award of Bachelor of Engineering degree in

ELECTRIC AND ELECTRONICS ENGINEERING

BY

ARYAN GANESAN.S (41140013)



**DEPARTMENT OF ELECTRICAL AND ELECTRONICS
ENGINEERING SCHOOL OF ENGINEERING**

SATHYABAMA

INSTITUTE OF SCIENCE AND
TECHNOLOGY(DEEMED TO BE
UNIVERSITY)

Accredited with Grade "A" by NAAC

JEPPIAAR N AGAR, RAJIV GANDHI

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
BONAFIDE CERTIFICATE

This is to certify that this Report is the bonafide work of **ARYAN GANESAN.S (41140013)** who carried out the internship entitled **METAL SEPARATORS MANUFACTURING** under my supervision from 16-05-2023 to 25-05-2023

EXTERNAL GUIDE

Head of the Department

Submitted for Viva voce Examination held on _____

INTERNAL EXAMINER

EXAMINER(SIGNATURE)

EXTERNAL

(SIGNATURE)

DECLARATION

I **ARYAN GANESAN.S** here by declare that the Report entitled **METAL SEPARATORS MANUFACTURING** done by me at **MAGNATRONIX, CHENNAI** is submitted in partial fulfilment of the requirements for the award of Bachelor of Engineering degree in **ELECTRICAL AND ELECTRONICS ENGINEERING**.

DATE: 16-05-23 to 25-05-

23 PLACE: CHENNAI



ARYAN GANESAN.S

**SIGNATURE OF THE
CANDIDATE**

ACKNOWLEDGEMENT

I am pleased to acknowledge my sincere thanks to Board of Management of **SATHYABAMA** for their kind encouragement in doing this Report and for completing it successfully. I am grateful to them.

I convey my thanks to **DR. N. M. NANDHITHA, Prof. & Dean, School of Electrical and Electronics Engineering** and **DR.S.RADHIKA ,Head of the Department,**

Dept. of ELECTRICAL AND ELECTRONICS ENGINEERING

for providing me necessary support and details at the right time during the progressive reviews.

I wish to express my thanks to all Teaching and Non-teaching staff members of the Department of **Electrical and Electronics Engineering** who were helpful in many ways for the completion of the Report.

ARYAN GANESAN.S

Name of the candidate

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CHAPTER 1 INTRODUCTION

ABOUT THE COMPANY

Established in the year 1995, we, Magna Tronix are reckoned as one of the leading manufacturers and exporter of a wide array of Suspension Magnet, Magnetic Plates, Magnetic Sweepers, Vibrating Screen, Lifting Magnets and many more. Our manufactured products widely caters to the needs of various industries such as food, chemical, pharmaceutical, agricultural, mineral and plastic industry.

These are manufactured using high grade material which ensures the effective functioning and durability. Further, these are highly appreciated by our clients for the high end features like corrosion resistance, shock proof and long life.

In addition to this, we have employed a team of eminent professionals which are the backbone of our organization and works in coordination with each other to ensure our clients a flawless range. Further, we are well-equipped with the state-of-the-art infrastructure that is facilitated with the latest technology and hi-tech machines which helps us in producing the optimum range of products. Apart from this, we work towards achieving our goal of attaining maximum client satisfaction by offering our clients a range of products in standardized and customized form.

Under the supervision of our mentor, Mr. A. V. Murali, we have earned a recognition in the industry. His profound experience has helped us in offering our clients a range that exceeds their expectations.

CHAPTER 2

NATURE OF WORK DONE

In a magnet manufacturing company, the nature of work involves the production of various types of magnets using different processes. This includes tasks such as

sourcing raw materials, conducting quality control checks, operating machinery for magnet production, and ensuring the magnets meet the required specifications. The company may also engage in research and development to improve magnet performance and explore new applications. It's a fascinating industry that combines science, engineering, and innovation

Further, we have an efficient team of quality analysts, which monitors every phase of the production process. In addition to this, to cater to the buyer's expectations, they work in close coordination with the designing and engineering department, and produce reliable and safe products. We also provide our clients a preliminary demonstration facility on order so as to make them understand the proper working of the products

We are well-equipped with the sophisticated R & D unit which composes of the efficient and eminent team of R & D experts. We make sure that our manufactured range is undergone the quality test and various other researches before it is dispatched. Our R & D unit primarily focuses on the following parameters:

- ☒ Reducing the manufacturing cost while maintaining the quality standard
- ☒ Development of new products
- ☒ Improving the quality of our range

Further, our team of R & D experts conduct market research and survey so as to know the ever increasing demands of our clients.

CHAPTER 3 METHODS AND PROCESSES

3.1 MAGNETS

With the wide industry experience, we are engaged in manufacturing and exporting a wide gamut of Industrial Magnetic Equipment such as Suspension Magnet,

Magnetic Plates, Magnetic Sweepers, Vibrating Screen, Lifting Magnets and many more. These find an application in various industries and are appreciated by our clients for the features like corrosion resistance, shock proof and durability. Owing to the efficiency and hard work of our diligent team of professionals, we have been able to understand the ever increasing demands of our clients and offer them the desired range of products. Further, with our client centric approach and pragmatic attitude, we have been able to form a large clientèle base across the globe.

3.2 MAGNETIC EQUIPMENTS

3.2.1 Magnetic Separators:

Magnetic separators method involves using the magnetic properties of either the ore or the gangue to separate them. The Ore is first ground into fine pieces and then passed a conveyor belt passing over a magnetic roller.

The magnetic constituent remains on the belt and the non-magnetic constituent does not remain on the belt.

3.2.2 Suspension Magnet :

Suspension Magnets extract occasional tramp iron from a conveyed product stream on a conveyor belt or vibratory feeder. The Magnet block suspends above a conveyor with sling chains setting the magnet face at the correct angle for optimum extraction. The magnetic field attracts ferrous metal out of the conveyed material and onto the magnet face, remaining securely held until manually cleaned. This ensures that such tramp metal does not damage other processing plant such as crushers, screens, and conveyors.

3.2.3 Industrial Conveyor:

A conveyor belt is a looped belt that is driven by and wrapped around one or more pulleys. It is powered by an electric motor and supported by a metal plate bed or

rollers upon which the conveyor belt rests. The pulley that powers a conveyor belt is referred to as the drive pulley and has an unpowered idler pulley.

Pulley drives at the discharge end of a conveyor belt are referred to as head drives, while ones located at the infeed end are known as tail drives. The preferred type of pulley drive is a head drive located at the discharge end and uses pull force to move a conveyor belt.

3.2.4 Magnetic Sweepers:

Magnetic sweepers are practical tools that attract and collect debris, providing an efficient and convenient way to clean up metal fragments. Since they are equipped with powerful magnets that possess a strong magnetic field, they can retain ferrous materials such as nails, screws, nuts, bolts, shavings, and other small metallic objects.

3.2.5 Industrial Magnets:

Industrial magnets are very powerful magnets that are used in the industrial sector unit.

3.2.6 Lifting Magnets:

A lifting magnet is a type of permanent magnet capable of producing a stronger magnetic field than the normal magnet. This is because they are made of rare-earth metals and alloys such as ferrite.

3.2.7 Metal Detectors:

An electronic device for detecting the presence of metal objects, as one used as a portable sweeping unit or one emplaced in an archway at an airport terminal to detect concealed weapons, explosives, etc.

3.2.8 Powder Metallurgy: This method involves mixing magnetic powders, compacting them into the desired shape, and then sintering them at high temperatures.

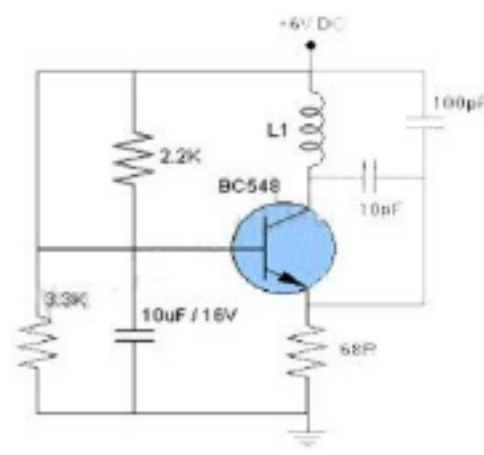
3.2.9 Magnetic Alignment:

After the initial magnet formation, magnets may undergo a process called magnetic alignment, where they are exposed to a strong magnetic field to enhance their magnetic properties.

A magnetic field is a vector field that describes the magnetic influence on moving electric charges, electric currents and magnetic materials. A moving charge in a magnetic field experiences a force perpendicular to its own velocity and to the magnetic field.



Simple Metal Detector



 **CIRCUITS DIY**
REVOLUTION IN ELECTRONICS





3.3 CLASSIFICATION

3.3.1 Strength :

Durable, sturdy & reliable Maximum client satisfaction Excellent logistic support
Specialized R&D wing Excellent performance & Corrosion resistance Dedicated & diligent manpower

3.3.2 Application Area:

Application Area Food Industry Chemical Industry Pharmaceuticals Industry
Agricultural Industry Mineral Industry Plastic Industry

3.3.3 Electromagnets:

These magnets are created by passing an electric current through a coil. Their magnetic field can be controlled by adjusting the current.

3.3.4 Applications:

Without electromagnets, the mobiles and the telephones we used to make phone calls over a long distance could not have taken shape. The electromagnetic pulses and the interaction of the signals make mobiles and telephones very handy.

3.3.5 Industry Standards:

There are dozens of standards organizations in the world. International standards bodies as shown here are broad-based – that is, covering many industries or disciplines. Examples are ISO and ASTM. Many standards organizations are national, such as NIST or ANSI, or regional, such as CEN in Europe.



CHAPTER 4 KNOWLEDGE AND EXPERIENCE

4.1 Testing and Quality assurance:

A quality assurance and quality control plan can only follow a compiled list of the manufacturing steps, an analysis of what is really important to measure, a decision about what are the acceptable tolerances, and a clear definition of what to do when the measured values are outside the target values.

4.2 Innovation:

Discuss recent innovations in magnet manufacturing, such as advancements in magnet design, miniaturization, and the development of eco-friendly manufacturing processes.

4.3 Fabrication Technology :

The fabrication technology is a crucial component in manufacturing. This involves constructing metal structures. Stamping, welding, cutting, machining and other processes are often part of the fabrication.

4.4 Spot Welding:

Welding is a valuable technical skill for manufacturing professions. It involves fusing materials to join and create complex structures. These abilities are necessary for constructing new machines, fixing systems and doing other manufacturing jobs.

4.5 Future Outlook : Offer insights into the future of magnet manufacturing, including emerging technologies and potential disruptions to the industry.

4.6 Sustainability Initiatives:

Highlight any sustainability initiatives or efforts by companies to reduce their environmental footprint in magnet production.

4.7 Global Market Analysis:

Provide data on the global magnet market size, growth projections, and regional variations.

4.8 Market Trends:

Present current market trends, including the growing demand for rare earth magnets and the impact of sustainability on magnet production.

4.9 Packaging and Shipping:

Safeguards magnet packs during transit and ensures they arrive in optimal condition. This knowledge underscores the importance of secure packaging to protect products during delivery.

CHAPTER 5 SUMMARY

AND CONCLUSION

In summary, The magnet manufacturing company specializes in producing high-quality magnets for various industries. They utilize advanced manufacturing techniques and materials to ensure the magnets meet the required specifications. The company has a strong reputation for delivering reliable and durable magnets to their customers.

In conclusion, the magnet manufacturing company plays a crucial role in supplying magnets for a wide range of applications. With their expertise and commitment to quality, they have established themselves as a trusted provider in the industry. Their dedication to innovation and customer satisfaction sets them apart from the competition.

APPENDIX

Magna Tronix

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25.5.2023

INTERNSHIP CERTIFICATE

This is to certify that Mr. **ARYANGANESAN S.** student of **ELECTRICAL AND ELECTRONICS ENGINEERING** From **SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY** has completed Internship Training on “ Embedded Programming “

We have trained them on the real time solution in our metal detector system before delivering the units to our clients at MAGNA TRONIX from 15th May 2023 To 25th May 2023

During this period, he was involved in all aspects and his performance was good.

We wish him success in all future endeavours

For MAGNA TRONIX

A.V. MURALI

(Proprietor)

