



DON BOSCO INSTITUTE OF TECHNOLOGY

AICTE APPROVED, AFFILIATED TO MUMBAI UNIVERSITY,

ISO 9001:2015, NAAC ACCREDITED WITH B++ GRADE

DEPARTMENT OF MECHANICAL ENGINEERING

ISHRAE THANE

DBIT STUDENT CHAPTER

**REPORT ON INDUSTRIAL VISIT AT ZECO
AIRCON LTD.**

14 December, 2021

Document Title: ISHRAE DBIT Student Chapter Industrial Visit Report		
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ISHRAE DBIT Student Chapter under ISHRAE Thane Chapter went for an Industrial Visit on 14th December, 2021 at Zeco Aircon Ltd., Thansit for the student members of ISHRAE DBIT. There were a total of 18 students along with two DBIT faculty members Ms. Cleto Pereira and Mr. Mahesh Rajwade. ISHRAE DBIT council members present in the IV were Saurabh Yadav, Tarun Mulani, Gauri Patil, Prajakta Patil and Simran Ahiwale. This industry is well known for their production of Air Handling Units and manufacturing of Ducts of Centralized Air-conditioning systems. The design of AHU is done by company personnel according to customer requirements. Students reached the industry at around 11 am. The PID Manager first gave an introduction about their company, their products and about centralized air conditioning systems. Then we went to the production floor where we were introduced to the product called Pre-insulated Panels which are used to manufacture ducts for air distribution.



The process can be divided into two parts; firstly, the manufacturing of insulated panels and the manufacturing of pre-insulated ducts. The process started with embossing on aluminum foil with the company logo and texture for prevention of growth of bacteria and fungi. Two different rollers were used with a rectangular texture for 200-micron thick aluminum foil and rough texture for 80-micron

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aluminum foil and the width of foil was 1.2 meters. Then it is slowly folded and transferred to another machine for the rigid polyurethane forming process.

An Italian design machine element which mixes chemicals in right proportions for forming insulation material of PID and it is designed in such a way to produce the material at the right time without affecting its functions.



The machine involves the polyurethane forming process on the aluminum surface. It was a continuous production line with two decoiler at start for insulation. The mixture of four chemical components is evenly spread on the surface of aluminum foil. The mixture of chemical components had a thermal conductivity of 0.019 W/mK and density of 48 kg/m³. Then it moved on a double belt conveyor for uniform heating through the chamber and passed through 45°C temperature. The sandwich panel thus formed is of uniform filling of equal density distribution and thickness. The thickness of the panel can be 20 mm and 30 mm, depending on requirements. The final sandwich panel now extends towards the side edge cutting

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machine where the edges of the panels are smoothed to give it a finished look. Inspection is done by checking for any air gaps. After the panels are smoothed and inspected, the panels are ready to be cut in a straight cutting machine.

The panels are then cut into required shapes and according to requirements the pre-insulated ducts are formed. The advantages of using these pre-insulated ducts are that it has a better thermal conductivity, lesser friction, corrosion resistance, fire retardant, energy saving, light weight, no water solubility. These are used in pharma industries.



Then after a small break we visited the next unit in the factory around 1:00 pm. At this unit, manufacturing of metal duct was done. The metal ducts are made of steel which is being procured from JSW steel. Various types of metal ducts such as rectangular, circular, spiral, oval ducts were being manufactured.

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A duct system is also called ductwork. Various types of C-clits and S-clits used in the duct design were also shown. For cutting GI Ducts, a Plasma Arc cutting machine was used. Factory also manufactured Evaporator Coils. These tubes were assembled along with fins and then rigidly fixed by increasing tube diameter. These coils were checked for leakages by submerging them in water.



The Industrial Visit concluded at 2pm.

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