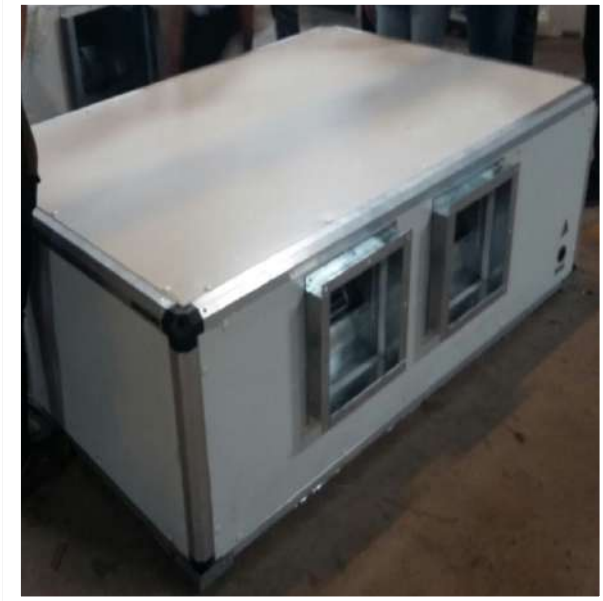
REPORT ON THIRD YEAR MECHANICAL ENGINEERING STUDENTS INDUSTRIAL VISIT TO ADVANTEK AIR SYSTEMS, BHIVANDI CONDUCTED BY ISHRAE THANE STUDENT CHAPTER AT DBIT

Date: - 16th September, 2017

ISHRAE THANE CHAPTER conducted an Industrial Visit at Advantek Air System, Bhiwandi for Third Year students of Mechanical Engineering of DBIT. There were 27 students along with ISHRAE DBIT Student Council Members Mitesh S. Joshi and Kaustubh S. Morye who attended this I.V. Advantek Air System is known for their production of Air Handling Units of Centralised Air-conditioning system. This company is related to Refrigeration and Air conditioning which very useful for mechanical students. The design of AHU is done by company personnel according to customer requirements. This company produces Air-handling units of tonnage capacity of 5 ton to 60 ton.



Overhang Air Handling Unit

AHU Cross section

Students reached the site at 11 A.M. on 16th September, 2017. Factory Head Mr. Prashant Jadhav first gave introduction about their company, their

products, about centralised air-conditioning systems. Then he showed various processes going on the factory in manufacturing air handling units.

The first process carried out is the Shearing (Cutting) Process. In this process, shearing of 6 to 1.2 mm aluminium sheet metal into required dimension is carried out. This aluminium sheets are first in the wounded form. Unwinding machine is used to unwind aluminium sheets. After unwinding, this sheet metal

Sheet cutting process

is cut in the shearing machine unit.

The next process is carried out is the Bending Process. Aluminium sheets cut in cutting operations are used to make casings of Air-handling units.

Bending machine

Bending process is done by using hydraulic bending machine and V-bending is carried out. The pressure variation can change according to required bending operations. After bending process we get different casing parts.

The next process carried out is known as Forming and Insulation pouring. After bending operation two components are obtained viz., outer casing and inner casing. This process is carried to join these two components and restrict heat transfer from inner surface to outer surface. Special pouring machine is used to the insulation material and it is poured between inner and outer casing and it is stamped. This insulation material acts as Thermal barrier between two metal sheets and restricts heat transfer. The outcome of this process is a sandwich panel of aluminium sheets and insulation material.

Pouring machine

After forming, Punching process is carried out. For adjustment of screw and nuts and for assembly purpose, different size of punch and holes are required. This is done by automatic punching machine. One programmer makes

Automatic Punching machine

programme according to required punch and it is fed into computer for automatic punching process.

Frame production of Air-handling units is carried out simultaneously with production of casing. Frame is produced by cutting hollow rectangular steel tubes in required dimensions and then these tubes were welded. Thus making frame light-weight and strong.

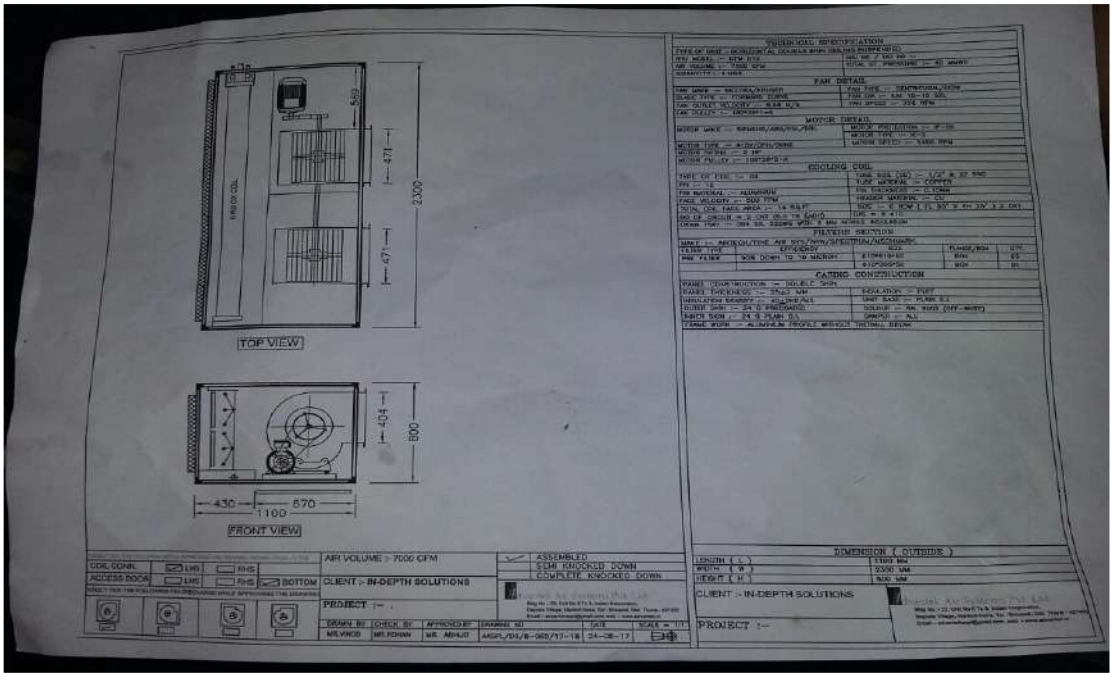
Frame Production

Once required casing and frame is ready, assembly is carried out. Usually assembly is done in factory for small and medium size Air handling units and large size Air handling units are assembled at the site of application. During assembly components like Air Filter, Refrigeration Coils, Fans and other electronic components are fitted in the unit. The working of an Air-handling unit was also explained by Mr. Prashant. The incoming air is first filtered using filter. The air is passes between Refrigeration coils. This air then gets cooled and circulated via ducting with the help of fans. Depending upon the required air-conditioning, Chilled water type refrigeration mesh or Refrigeration coil is used. Different types of fans are used according to customer's requirement.

Design of Air-handling unit is done according to Customer's requirement. Usually following two criteria are used in design of air handling unit.

1) Cooling area (on m^3 basis)

2) Static flow



AHU Design

Industrial Visit was concluded at 1:00 PM.

Group photo of TE students at Adavantek Air Systems

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