

INDUSTRIAL VISIT 2022

- On date 16/03/2022 we had visited **Oritech solution** on Sarkhej- Bavla highway. Prof. H. N. Raval and Prof. G. B. Buch were guiding us during visit. ORITECH SOLUTIONS commenced its operations in the year 2005 with the manufacturing Induction Heating and Hardening Equipment using the IGBT technology in PowerElectronics which is more advanced and sophisticated compared to the Thyristor based Induction Equipment commonly used in India.
- Company has installed over 100+ heating equipments all over india ranging from 10kw to 1000kw & 0.5kHz to 200kHz. These equipment cover wide application like caseand surface hardening to through heating annealing to stress relieving.



- What is principle of heating in Induction Furnace?

Induction heating furnace basically works on 2 principles.

1) Faraday's law of electromagnetic induction $E = BVL \sin(BV)$

Where L is length of magnetic wire

BV angle between velocity and magnetic field

2) Joule's law $Q = I^2 R t$

Where Q= joules

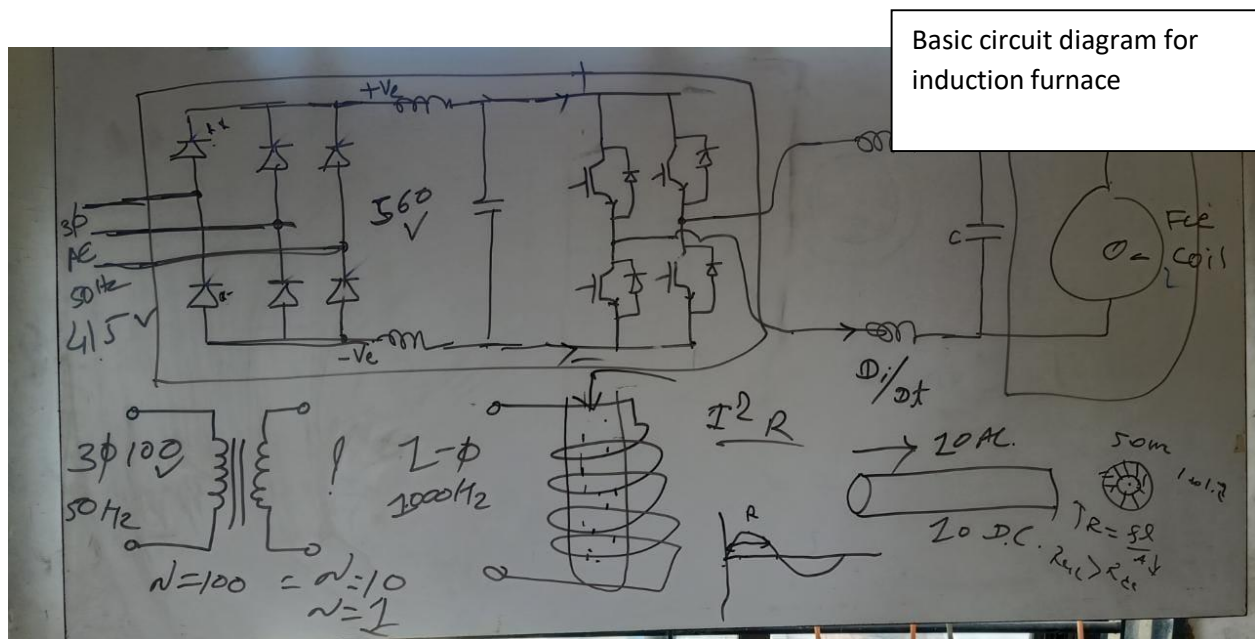
I= Current R=Resistance

t= time when current energies

- All the devices regarding to furnace control are also manufactured by them. It starts with control panel where line voltage is first converted into DC by 3phase rectifier . this rectified output further connected to inverter where we can control frequency of inverted output. There also tank capacitor connected parallel across coil.



Tank capacitor



Inverter is controlled by IGBT which is further controlled by microcontroller. Oritech solution has their own design for microcontroller.

□ WHY USE IGBT?

With every upgrade, technology have given us more simpler, more efficient and lesser power consuming devices.

Valves, Diodes, Thyristors (SCR) ... IGBT is now the NEXT SUCCESSOR ...

From SMPS to UPS, Electrical discharge machines to Voltage /frequency converters, Welding machines to Cutting machines, Robotics to Medical instruments, AC Drives to Servo Control Drives, Elevators to Railway Engines, IGBTs are now everywhere in operation.

Noise reduction, better efficiency, low switching losses, better control and simpler yet stable operation have made IGBTs being widely accepted in all these machines.

As a part of innovative design, ORITECH in 2005 soon after its inception, designed and engineered its first IGBT based induction equipment.

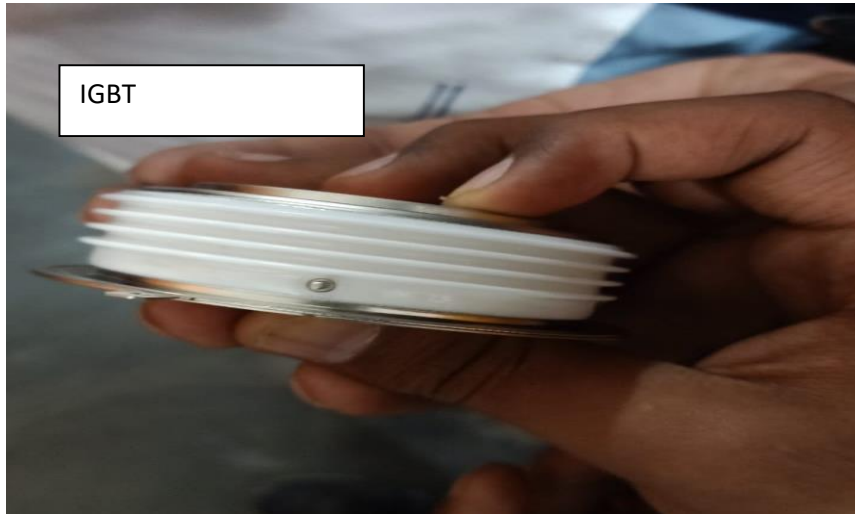
In later years, persistent upgrading and development confidently lead this company to to manufacture induction equipment based ONLY on IGBT technology; a 'UNIQUE TREND' which in the coming years will possibly elevate the Induction Equipment technology to a new level.

This company is widely appreciated and admired by the Experts of the industry.



- Furnace is made for different requirement in tons. Furnace mainly consist of copper coil, cooling system and tank capacitors. Cross section of different copper conductor selected based upon tons requirement of furnace. These copper conductor are hollow inside , through which coolingwater is passed. Whole furnace system is connected through hydraulic mechanism by which we can take out melted material from out of furnace.





This complete system is very complex to design and manufacture. It requires skilled manpower .

- Overall experience is very good, we gain practical knowledge . This industrial visit is worth for us as we learn uses of different electrical equipments. We have been introduced to so many industrial processes like panel manufacturing, gas welding, testing at various stages of manufacturing, heating furnace etc. By this experience we learn so many detailed things about induction furnace. Thanks to our professors and company officials to provide such a valuable experience to us.

