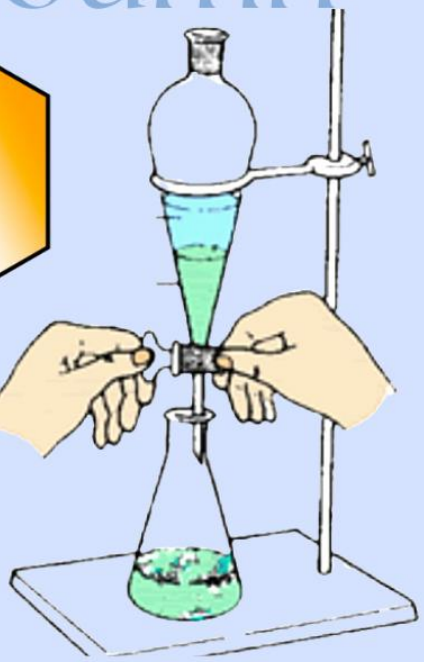
THE FINAL WORD



The official e- newsletter of
Industrial Chemistry (IC) Department, ISTAR,
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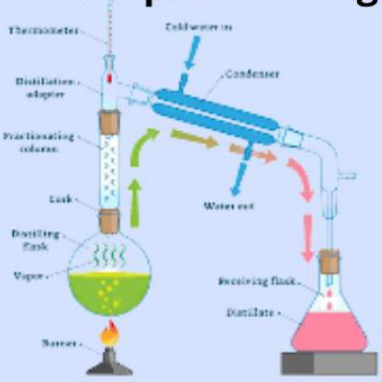

INDUSTRIAL CHEMISTRY DEPARTMENT

Summer Inplant Training

During these summer 98 students of semester-2 went to different industries in Gujarat for their 45 days in-plant training.

In our department it is mandatory for students to join summer in-plant training after completion of semester-2 exams.

Some of the students have shared their experience below:

- The internship has help me grow and expand my knowledge. The employees of the industry were friendly and eager to teach and share their experience. I was able to apply my academic knowledge in the practical settings. It was tough and exhausting at times but it was always fun. I feel confident after learning new skills and concepts which will help me in academics and professional career.

Sahiel Sharma
(21IC79)

- I can honestly say that my time spent interning with industry resulted in one of the best summers of my life. Not only did I gain practical skills but I also had the opportunity to meet many fantastic people. The atmosphere at the industry was always welcoming and it was a great experience for my practical knowledge. Overall, my internship has been a success. I was able to gain practical skills, work in a fantastic environment, and make connections that will last a lifetime.

Riya Uteshiya
(21IC75)

- I have enjoyed my training work in industry and training has taught me a lot. It was one of the best experience. Industrial training has become the link between those who want to enter to working life from the academic life. Industrial training provided me the encouragement to understand and realize the real life working experiences. In-plant has provided me knowledge, communication skill and help me realize my strength and weakness that would be more helpful to develop my career in the future.

Raj Thakor
(21IC72)

- The internship opportunity I had with paint industry was a great chance for learning new things and professional development. Therefore, I consider myself a lucky individual to get an experience in the field. I am also grateful for having the chance to meet so many wonderful professionals who led me through this internship period. It was an honor for me to get a chance to experience what it feels like to be in an industry where discipline and hard work are very essential. This internship was a bridge between the theoretical and practical aspects of my knowledge.

Rahul Darbar:
(21IC68)

- First of all I am very grateful to have an opportunity to intern in an industry. On my first day I was little bit nervous but as time spent by in industry and meeting very friendly and passionate employees in the work space it all went away. Learning new things and applying my theoretical knowledge to the practical setting was one of the best experience. Industrial training also help me grow as a person, develop my communication skills and increase my practical knowledge. Over all it was a best experience a student can ask who's planning a future in an industry.

Zeel Patel
(21IC99)

The Buddy Club

The Buddy club of our department connects the new students with some of their seniors who guide them and facilitate their integration into the department culture and values. The buddy may also offer encouragement and knowledge resources, as they help introduce the new entrants to the Industrial Chemistry culture. This enables the new entrants to become knowledgeable about department practices and culture in a shorter period. The interaction is also aimed at emphasizing punctuality, discipline, leadership and interpersonal skills.

Article

CRYOGENIC DISTILLATION OF AIR

❖ What is Cryogenic Distillation?

- Cryogenic Distillation is the technique in which Nitrogen and Oxygen are separated from air. In some cases, Argon is also separated. The meaning of 'Cryogenic' is low temperature and the 'Distillation' is unit operation in which the constituents are separated from a mixture by utilizing the property of vapour pressure of the constituents. In cryogenic distillations, very low boiling point the components are distilled selectively at low temperatures. This method produces products of high purity but also it is quite energy intensive. This method of separation was developed by Carl Von Linde in 1895 and it was applied to industries for first time in 1902.

- The distillation columns and heat exchangers which operate on very low temperatures are installed inside a very large insulated vessel called the cold box. The refrigeration cycle operates on Joule Thomson effect also called throttling effect. During throttling the gas is passed through an insulated valve or an insulated porous plug, the temperature of the gas changes due to change in pressure.

Figure:1 Cryogenic distillation of Air

❖ **Cryogenic distillation layout**

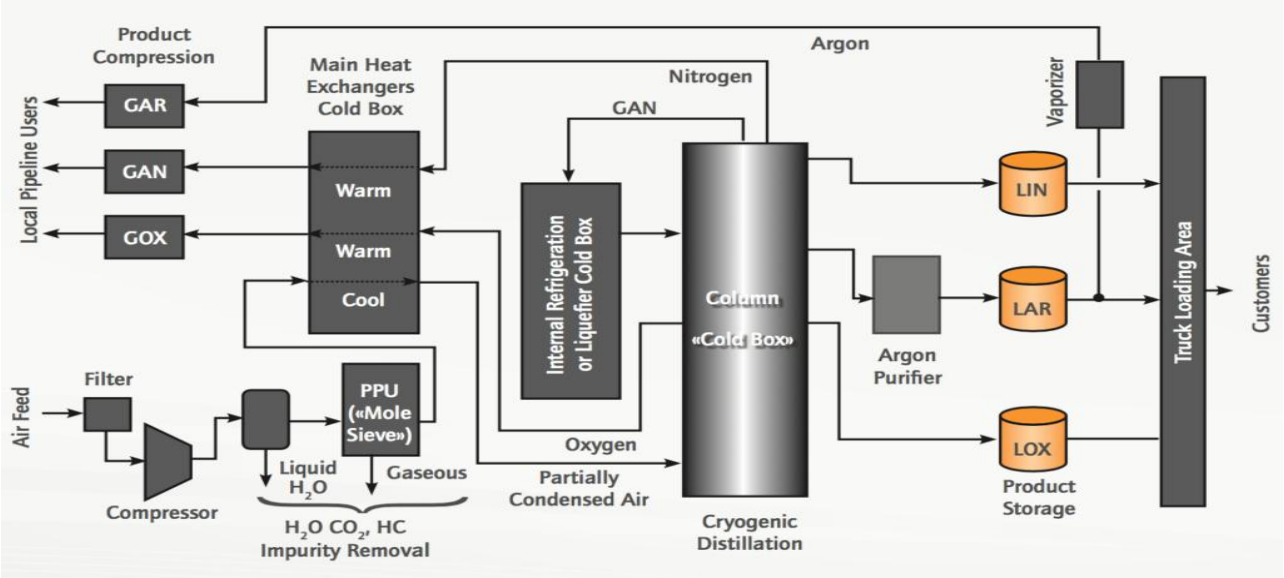

Figure:2 Flow diagram of distillation

- ✓ Steps in Cryogenic Distillation of Air

1. Pre-treatment, Compressing and Cooling of incoming Air.
2. Removal of Carbon Dioxide.
3. Heat transfer to bring air feed to cryogenic temperature.
4. Distillation of Air.

1. Pre-treatment, Compressing and Cooling of incoming Air

- ➢ Pre-treatment of Air consists of removal of dirt using filtration devices. Then it is compressed and passed through several stages of intercoolers where the air is cooled in order to remove water vapour.

- ➢ The temperature of the air has to be brought considerably down to the optimum temperatures suitable for downstream equipment hence often the air has to be further cooled with mechanical refrigeration cycle. Much of the water vapour gets removed in this step.

2. Removal of Carbon Dioxide

- ➢ It is important to remove Water vapour and Carbon Dioxide before transferring the air to downstream units because at low temperatures they will freeze and clog the equipment.

- The pre-treated, compressed and cooled air is then passed through the molecular sieves. The molecular sieves are porous materials having very small sized pores; the size of the pores is in the dimension of the size of molecules. Molecules whose size is smaller than the pores will pass through the pores and molecules whose size is larger than the pores will not pass through. The materials can be selectively chosen to adsorb the Carbon Dioxide and the remaining Water vapour.

3. Heat transfer to bring air feed to cryogenic temperature

- The incoming air feed is passed through a heat exchanger where the cold product stream and the waste gas stream from the cryogenic distillation units are used to cool the incoming air feed so that it gets to the temperature suitable for downstream units.

4. Distillation of Air

- In order to separate Nitrogen usually only one distillation column is needed. If Nitrogen is required in very high degree of purity, then two distillation columns are used.

Rahul Darbar
(21IC68)

Sweet Words From Family

College life is a very important phase of life. I have had a great college life, full of memories to cherish for a lifetime. It's been 15 years and still feels like yesterday. It also gave me an opportunity to meet different kinds of people, make friends and learn from the interactions.

I am thankful to all the faculty members, mentors and the non-teaching staff department of IC Department for providing us with quality education.

I would like to take the opportunity to thank Merlin Mam, Jigar Sir & Tejas Sir for all the effort that they took to groom us. I also appreciate the efforts being put in by the current team of faculty members to create and sustain the alumni network.

The focus of the department on getting the students readied in line with the broader requirement of the industry is commendable. The content of Industrial Chemistry course is very extensive and covers a wide range of areas like pharmaceuticals, petrochemicals, paints, polymers, etc, which helps students to find opportunity in a variety of sectors within the chemical industry.

The years spent at IC department have been full of learning opportunities. I will always be grateful to the department for providing me a platform for learning and preparing me for the rigor of corporate life.

Rejoy Kuriyan
Atul USA Inc
Charlotte
Year 2005 to 2007