**Project Learning`s**

1. WDO from HP Absorber
2. Condensate from 1st crystallizer
3. Vapours from 2nd crystallizer
4. Vapours from Solvent Strippers

Above Streams enter DH columns at various sections of the column. Purge Stream is taken from DH to the purge column to reduce PX concentration and to break PX-nPA Azeotrope.

Fresh Acetic Acid is added from the tank farm at the bottom of the column to maintain the bottom product concentration.

Reboiler is provided near the bottom of the column which provide the heat for the distillation using a LP steam.

Bottom product conc – Acetic acid 95% and Water 5%

Top product conc – Water, nPA, methyl acetate and traces of acetic acid.

The overhead products from DH column are sent to DH condenser, contact and entrainer storage tank.

DH condenser condenses azeotrope of nPA and water to separate them as aqueous and organic phase in the DH decanter.

A by pass to condenser is provide to avoid condensation of methyl acetate. If methyl acetate condenses then it gets mixed in the decanter and it is lost.

Methyl acetate vapours and condensed azeotrope are contacted at the DH column contactor so that equilibrium of various component takes places. These vapors are sent to Methyl Acetate recovery column.

Overhead stream of the recovery column contains methyl acetate as a major product.

Bottom stream of the recovery column contains waste water as a major product which is sent to various section of the plant to use and hence fresh water consumption is reduced.

Entrainer storage tank contains condensed nPA from the decanter and a stream of make up nPA from the tank farm.

nPA is lost during the process in the following section :

1. Bottoms of DH column
2. Purge column
3. Overhead reboiler of recovery column
4. Bottom of Recovery column

Stabilization of DH column:

To maintain 70:30 Acetic acid to water ratio in WDO: fresh solvent and waste water are added to WDO stream to maintain the above ratio. It is important to maintain above ratio to efficiently carry out the distillation process as the position of stream is maintained as such.

To maintain Column bottom temperature and water concentration: Flow of the LP steam is adjusted to maintain the column bottom temperature and concentration. If the bottom column temperature increases, concentration of water in the bottom decreases which leads to corrosion.

Temperature of Interest and nPA front: TOI and nPA are maintained using reflux flow rate so that proper position of nPA is maintained.