

## ***PRESSURE SWING DISTILLATION OF MAXIMUM BOILING AZEOTROPE DIETHYLAMINE AND METHANOL.***

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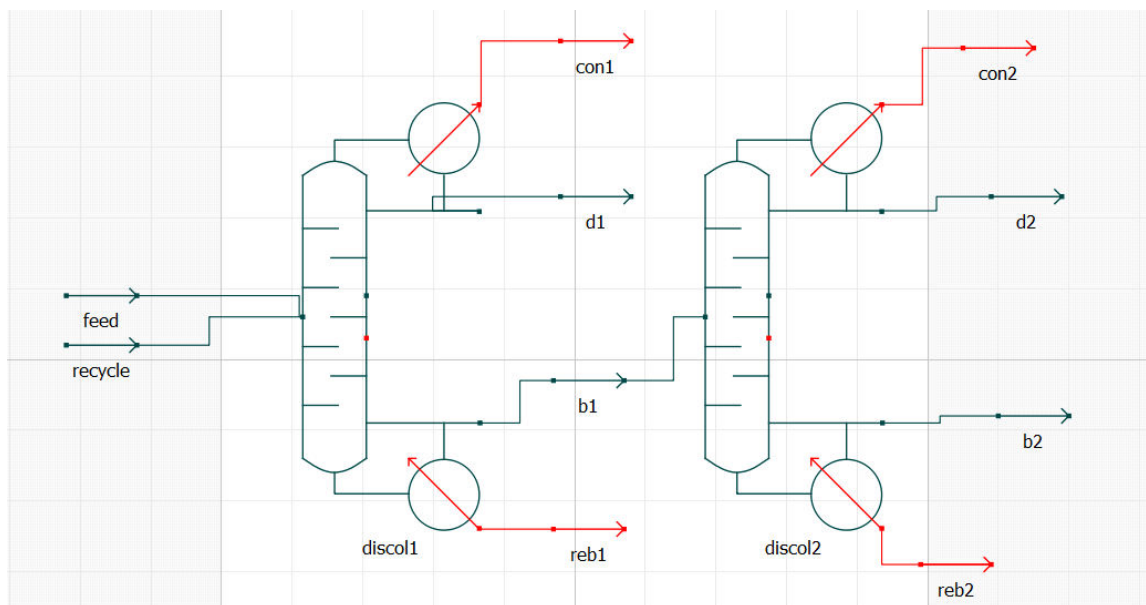
### **Background:**

Diethylamine and Methanol form a maximum boiling azeotrope and its important to seperate them efficiently to retrieve pure diethylamine and methanol respectively. This can be done with pressure swing distillation. This flowsheet explores the same pressure swing distillation to seperate the maximum boiling azeotrope of diethylamine and methanol

### **Description:**

In this flowsheet, fresh feed enters at 70kPa , 330K with mole fractions of both diethylamine and methanol being 0.5.The recycle stream enters along with feed at 70kPa 340K and mole fractions of 0.44 , 0.56 (methanol and diethyamine).The first column has a reflux ratio of 6 at 70kPa. Diethylamine with 97.36% purity are obtained at the distillate 1 stream. The bottoms streams is sent to a second distillation column at 202kPa. Methanol with 99.5% purity is obtained at the distillate 2 stream. The bottoms 2 stream with 0.46 mole fraction methanol and 0.54 mole fraction diethylamine is sent to recycle stream.

### **FLOWSHEET:**



## RESULTS:

COMPONENT	D1	B1	D2	B2
METHANOL	0.02368	0.61	0.995	0.46
DIETHYLAMINE	0.97632	0.39	0.005	0.54

## CONCLUSION:

By separating the maximum boiling azeotrope of methanol and diethylamine using pressure swing distillation we observe that we can get 97.6% pure diethylamine and 99.5% pure methanol which can be widely used in various industrial processes and reactions. Hence this is a very effective method of separation of the given azeotrope.