Separation using Pressure Swing Distillation

Alcoholysis solution contains a ternary mixture of methyl acetate/methanol. In addition to that it also contains a very small quantity of acetaldehyde. Acetaldehyde may decrease the quality of the products which are made from alcoholysis solution, for example manufacturing of Polyvinyl Alcohol, etc.

In order to remove acetaldehyde, we use the process of pressure swing distillation with a side withdrawal. Due to this the small quantity of acetaldehyde is removed. And it cannot be further accumulated with the mixture. Using this procedure for a number of iteration we can separate methyl acetate and methanol.

In the setup we use two distillation columns, i.e. a low pressure column(LPC) and a high pressure column(HPC). In the first column (LPC) we separate the components with lower purity level. The distillate of the column is then fed to HPC where the mixture is further separated with high level of purity. The distillate from HPC is then further recycled and fed to the LPC again. This iteration continues till the process converges.