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Double Distillation Column Process for Separation of Azeotropic Mixture (Pyridine-Water) using Pressure SwingDistillation (PSD).

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ABSTRACT

Background and Description:

Pressure Swing Distillation (PSD) is the Process to be utilised to Separate the Pressure sensitive mixture with the close boiling point or forming Azeotrope. PSD is special Distillation technique in which no new additive is added. Boiling point of pyridine is 115°C and Water is 100°C. But when they mix and mixture is form then, boiling point of mixture is 92.6°C (when 43% water and 57% pyridine is present). That's why we use PSD technique to separate.

Process:

Here, firstly feed (FEED) is introduced to 1st distillation column (High pressure Vessel) in which high pressure is generated. From column, there are two products are come one is topmost product (Distillate-1) in which mixture of pyridine and water is present but, in that pyridine, as in lower amount as compare amount of water and second one is bottom product (Bottom-1) in which high concentrated pyridine is taken out. After that Topmost product of 1st column is going to Low pressure Vessel (Distillation column), in which low pressure is generated, there are also two products come from second distillation column same as first but it has different composition. Topmost product (Distillate-2) has small amount of Pyridine and water both which is then recycled to the first distillation column with help of recycler (RECYCLE) and Bottom product (Bottom-2) has water composition around 97%.

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