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ABSTRACT ON

SEPARATION PROCESS OF PYRIDINE AND WATER WITH THE HELP OF PRESSURE SWING DISTILLATION.

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I AM PROPOSING A SIMULATION PROCESS ON DWSIM OPEN SOURCE SOFTWARE WHICH IS,SEPARATION OF AZEOTROPIC MIXTURE OF PYRIDINE AND WATER.PRESSURE-SWING-DISTILLATION(PSD) IS THE PROCESS TO BE UTILIZED 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.

WHEN WE TAKE SOME DATA ABOUT THE MATERIAL,THEN WE KNOW ABOUT THE BEHAVIOUR.

TABLE:1 COMPONENTS AND BOILING POINT.

COMPONENT	***PYRIDINE***	***WATER***
BOILING POINT	***115*** ℃	***100***℃

BUT WHEN WE MIX BOTH OF THESE,THEY MADE AZEOTROPIC MIXTURE.

TABLE:2 BOING POINT OF MIXTURE.

COMPONENTS	**BOILING POINT**
57% PYRIDINE + 43%WATER	**92.6 ℃**

NOW,WE HAVE TO SEPARATE THIS MIXTURE FROM PRESSURE SWING DISTILLATION.IN THIS PROCESS,WE USE REFLUX RATIO,FEED STAGE,EEFECT OF STAGE AND OPTIMIZED THEM.

TABLE:3 FOR 1ST COLUMN(HIGH PRESSURE COLUMN):

PRESSURE	REFLUX RATIO	THEO.NUMBER OF STAGES	FEED STAGE	MOLE FRACTION OF PYRIDINE
500 KPa	1.3	20	10	0.98

TABLE:4 FOR 2ND COLUMN(LOW PRESSURE COLUMN):

PRESSURE	REFLUX RATIO	THEO.NUMBER OF STAGES	FEED STAGE	MOLE FRACTION OF PYRIDINE
101.325 KPa	1.3	20	10	0.97

NRTL IS TAKEN AS THERMODYNAMIC MODEL.

TABLE:5 AZEOTROPIC COMPOSITION OF PYRIDINE AND WATER AT 500 KPa AND 101.325 KPa ARE SHOWN:

PRESSURE (KPa)	MOLE FRACTION OF PYRIDINE	MOLE FRACTION OF WATER
500	0.98	0.02
101.325	0.03	0.97

PARAMETER AND DEVICES USED ARE: CAPE OPEN UNIT OPERATION CLOUMN,VALVE,RECYCLER Etc.

***REFERENCES*: 1.IDEAS FROM COMPLETED FLOWSHEET ON FOSSEE DWSIM. 2.WIKIPEDIA.**