SECTION HEADING

RNEW 2120: Ethanol Separation Technology

Description

Ethanol Separation Technology covers the basic principles of ethanol distillation, evaporation and dehydration. Included will be an understanding of the operating components in a distillation system; demonstrable familiarity with startup, cleaning, operating, and shutdown procedures; and the ability to interpret both normal and abnormal operating conditions. The evaporative process and its role in processing plants will also be covered as well as the theory of molecular sieve dehydration and how it is used in the ethanol process.

Credits

2

Prerequisite

RENEW 1101

Corequisite

None

Topics to be Covered

1. Chemical and physical characteristics of ethanol

2. Ethanol and water mixtures

3. Alcohol/Water vapor diagrams

4. True percent proof tables

5. Batch distillation

6. Continuous distillation

7. Beer column

8. Side stripper

9. Rectifier column

10. Fusel oils

11. Reflux condenser

12. Reflux ratio

13. Azeotropic distillation

14. Molecular sieve dehydration

15. Three-bed molecular sieve operation and troubleshooting

16. Evaporation principles

17. Falling film evaporators

18. Multiple effect evaporation

19. Centrifuge basics and operation

Learning Outcomes

1. Use terminology as it relates to ethanol separation technologies.

2. Identify proper parameters for the distillation, dehydration and evaporation of ethanol.

3. Explain trouble shooting options for each step relating to ethanol separation.

4. Differentiate batch and continuous distillation principles.

5. Explain the process flow of an ethanol separation system.

Credit Details

Lecture: 2

Lab: 0

OJT: 0

MnTC Goal Area(s): None