C-00 Dehydration Column Analysis Report

Analysis Period: 2025-09-03 00:00:00 to 2025-09-30 00:00:00

Report Generated: 2025-10-15 14:24:48

# 1. Executive Summary

The column achieved an \*\*average moisture removal efficiency of 101.57%\*\*. This average \*excludes\* outlier points above 200% where the light-ends removal overwhelmed the simple moisture-in-feed estimate. An overall material balance error of \*\*4.50%\*\* was observed, which is typically within acceptable limits for noisy process data.

# 2. Key Performance Indicators (KPIs)

All values presented are \*\*averages\*\* over the analysis period.

• Average Feed Flow (FT-01): 2164.11 kg/h

• Average Top Product Flow (FT-61): 15.36 kg/h

• Average Bottom Product Flow (FT-62): 2051.27 kg/h

• Overall Material Balance Error (%): 4.50 %

• Average Moisture Content in Feed (%): 0.20 %

• Average Moisture Removal Efficiency (%): 101.57 %

• Average Differential Pressure: 44.60 mmHg

• Maximum Differential Pressure: 548.75 mmHg

• Average Reboiler Heat Duty: 55.58 kW

• Average Condenser Heat Duty: 46.47 kW

# 3. Performance Analysis

This section correlates key operational factors with column performance.

## 3.1 Moisture Removal

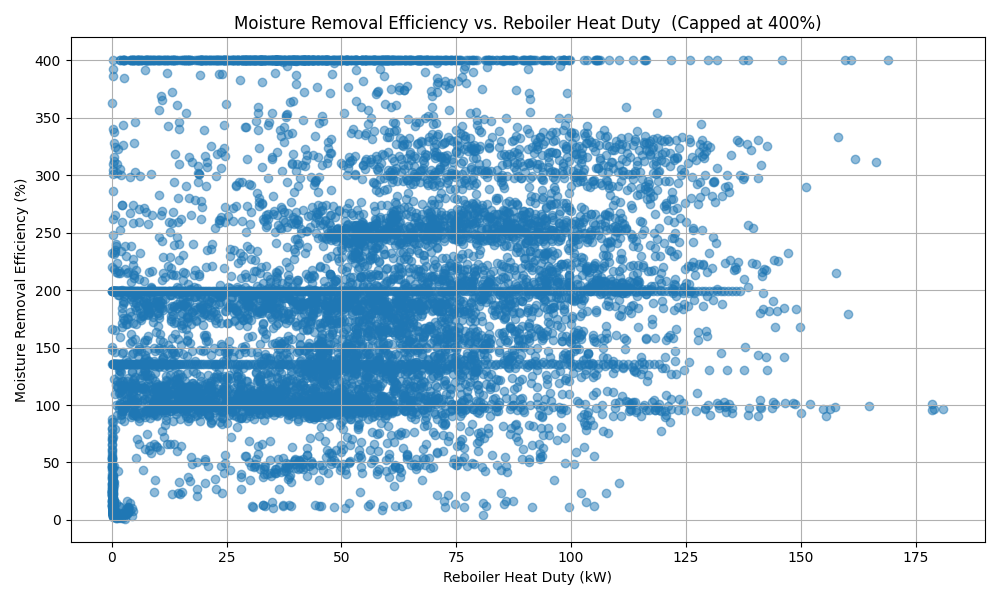
• Average Moisture Content in Feed: 0.20%

• Average Moisture Removal Efficiency: 101.57%

NOTE: Efficiency above 100% is typical as the top product (FT-61) removes light ends in addition to the estimated moisture. Outliers greater than 200% were excluded from the average calculation.

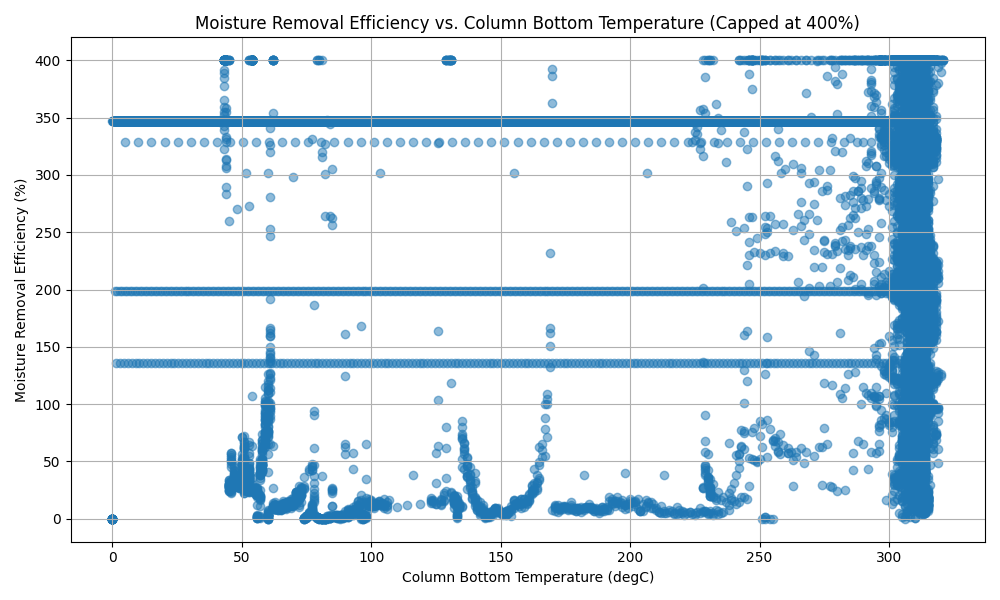
### Moisture Removal vs. Reboiler Heat Duty

This plot shows how increasing the energy input to the reboiler influences vaporization and thus moisture removal.



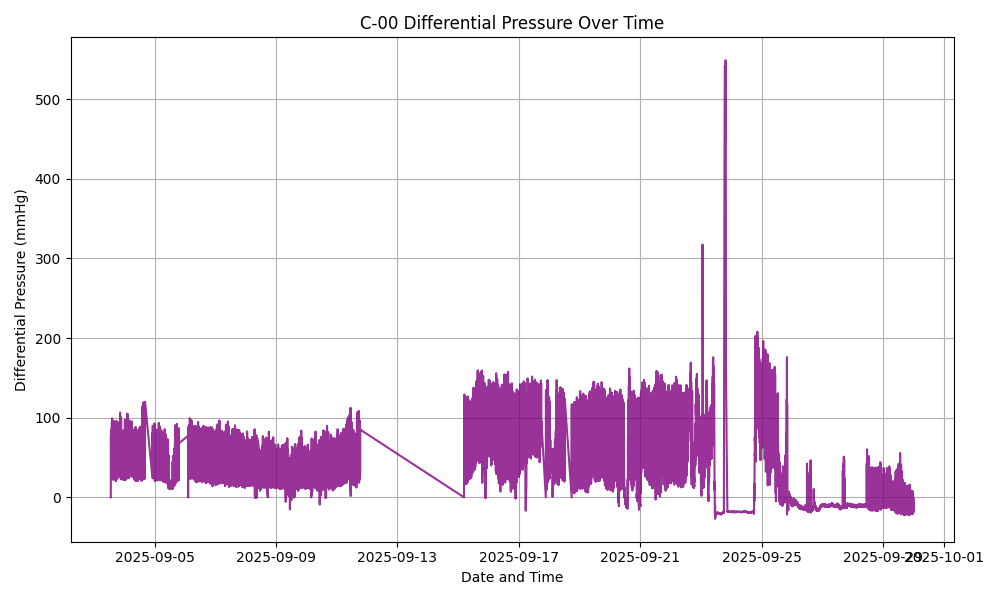
### Moisture Removal vs. Column Bottom Temperature

The bottom temperature (TI-04) is critical for driving the separation.



## 3.2 Differential Pressure

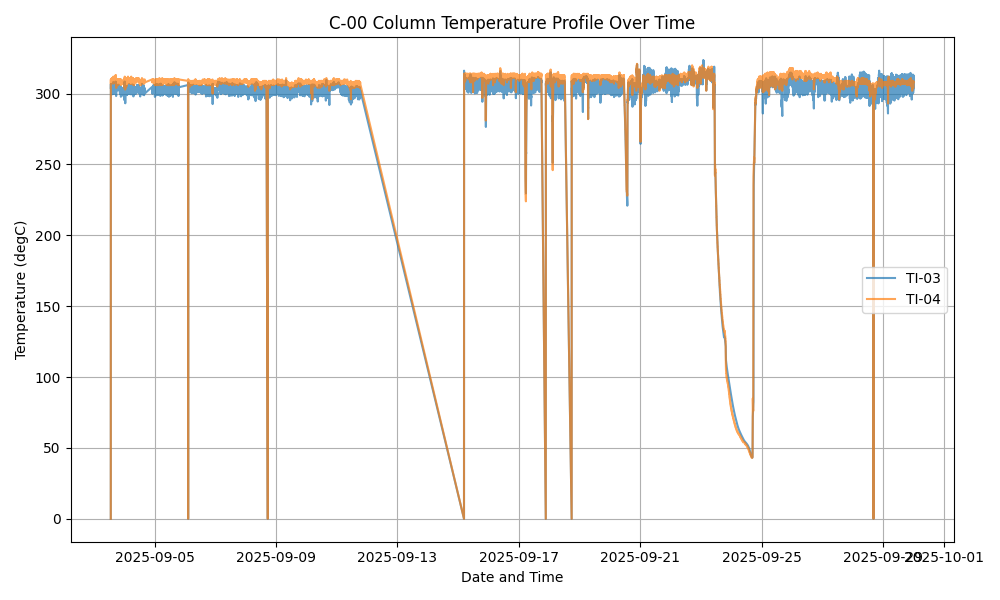
Differential pressure is a key indicator of flooding, foaming, or fouling inside the column.



# 4. General Performance Plots

## 4.1 Temperature Profile

The temperature profile plot shows the gradient across the column. A consistent gradient indicates stable operation.



## 4.2 Daily Trends

This plot shows the daily average trends of key variables, helping to visualize long-term shifts in performance.

