**Thermodynamics of making Coffee**

**Lab 5**

**Arjun Singh Vadehra #20037164**

**Hamayun Aziz #62064167**

**Ratthamnoon Prakitpong #63205165**

**Summary**

The objective of this lab was to analyze the performance of a coffee machine by applying the second law of thermodynamics to two separate coffee maker cycles (namely water and milk cycles). Our analysis demonstrated the validity of the second law of thermodynamics and provided insight as to the improvement of the process. In particular our results indicate that...

**Procedure**

See mech 2 Lab manual

**Results**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Substance | Mass | Temperature | Table enthalpy | Enthalpy |
| Water |  |  |  |  |
|  |  |  |  |  |

Table 1: Initial data for part A

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Substance | Mass (kg) | Temperature (C) | Table enthalpy (KJ/ | Enthalpy |
| Water | 0.250 | 87 | 364.35 |  |
| Milk | 0.120 | 15.5 | 65.07829 |  |

Table 2: Initial data for part B

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Water case |  | Milk case | Mass |  |
| Coffee |  | Coffee |  |  |
| Leftover water (boiler) |  | Leftover water (boiler) |  |  |
| water |  | Milk |  |  |
| Steam |  | Steam |  |  |
| Total mass |  |  | 369 |  |

Table 3: After coffee making process

Coffee maker power output = 713 Watts

At current of 6.2 A, 115 V

Total time taken for process 2:55 mins

Irreversibilities present

Assumptions for calculations

* Final steam in boiler is assumed to saturated
* Steam left in boiler is assumed to be

Improvements to procedure

* Better insulation for coffee machine boiler

**Conclusions**

**Appendix**