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| --- | --- |
|  | (1) |
|  | (2) |
|  | (3) |
|  | (4) |
| Subbing equation (4) into (3) yields: |  |
|  | (5) |
| Integrating from the inlet to the outlet: |  |
|  | (6) |
|  | (7) |
|  | (8) |
| Subbing equations (7) & (8) into (6) yields: |  |
|  | (9) |
| Heat Exchanger 1 Analysis |  |
| This section includes the calculations of the required surface area needed to allow for the heat transfer of the first heat exchanger. First, the heat transfer coefficient is determined: | |
| First, the heat transfer coefficient is determined: |  |
|  |  |
| Assuming the overall heat transfer coefficient is found. |  |
| /Users/mikebos/Desktop/Screen Shot 2018-03-07 at 9.53.40 AM.png  The fouling factors and are assumed negligible. | |
| Find the heat transfer rate: |  |
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|  |  |
|  |  |
|  |  |
| Find using the heat transfer rate determined above. |  |
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|  |  |
| Using (9), the surface area required to induce this heat transfer is found |  |
| =98.38K |  |
|  |  |
|  |  |
| Subbing in yields: |  |
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