| Batch | Agent1 | Agent2 | | t-Test: Paired Two Sample for Means | | |
|---|---|---|---|---|---|---|
| 1 | 7.7 | 8.5 | | | | |
| 2 | 9.2 | 9.6 | | | Agent1 | Agent2 |
| 3 | 6.8 | 6.4 | | Mean | 8.25 | 8.683333 |
| 4 | 9.5 | 9.8 | | Variance | 1.059091 | 1.077879 |
| 5 | 8.7 | 9.3 | | Observations | 12 | 12 |
| 6 | 6.9 | 7.6 | | Pearson Correlation | 0.901056 | |
| 7 | 7.5 | 8.2 | | Hypothesized Mean Difference | 0 | |
| 8 | 7.1 | 7.7 | | df | 11 | |
| 9 | 8.7 | 9.4 | | t Stat | -3.26394 | |
| 10 | 9.4 | 8.9 | | P(T<=t) one-tail | 0.003773 | |
| 11 | 9.4 | 9.7 | | t Critical one-tail | 1.795885 | |
| 12 | 8.1 | 9.1 | | P(T<=t) two-tail | 0.007546 | |
| | | | | t Critical two-tail | 2.200985 | |
| | | | | | | |
| | | | | Difference in Means | -0.43333 | |

**Interpretation Exercise 8.4**
There is a small difference in Means between the two agents, Agent 2 being slightly larger then Agent 1 by 0.43.
As the two tailed P value of 0.007 is less  than the significance value of 0.01 it cannot be proven that the population mean impurity differs between the two filtration agents.

**Interpretation Exercise 8.5**
The one-tail test shows a P value of 0.003 and would not change the conclusion of the two tailed test; the Agents produce similar results.