



Chemwork

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Contraction, Expansion pressure drop

Question Mark
Student

I've been having a look at your article on Chemwork website. I'm having difficulty matching your K values with the formulae. Some seem to be based on 100% of fitting length e.g. 2x1 reducer, while others seem for longer lengths.

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Comments

5 comments



Saeid R. Mofrad
Principal Process Engineer at Petrofac (P.E.)
Top Contributor

Most of people get stuck in angle calculation (deg and radian business).
Check your calculations to see if you have correctly calculated theta.
Please let me know if you don't get the same results.
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Question Mark
Student

Question

I did some spot checks and found most were similar to the values in your table; but some look suspect, for example for 1.5x1 and 2x1, I get bigger K values than what you have shown in the paper. For bigger sizes, the differences are small and probably due to slightly different pipe schedules used, etc. Add a comment..
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Saeid R. Mofrad
Principal Process Engineer at Petrofac (P.E.)
Top Contributor

I checked the calculation I made for preparing the table presented in the mentioned paper and I found out that I had used external diameters in reducer/expander K value calculations at different sizes (a simplification assumption to produce single table for K value regardless of piping schedule).

Neglecting the effect of thickness (pipe schedule) on internal diameter is the reason for the difference you have observed between your calculations and my paper. This assumption results in some errors in very small sizes (below 2").

In conclusion, the presented table provides estimated K for reducers/expanders. However, if you need the exact K value, it should be calculated using internal diameter based on the actual piping schedule.

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