

Pipes & Fittings

Fall 2006

TO: Engineering Development Branch

FROM: Engineering Division

SUBJECT: Prediction of Friction Losses in Our Valves and Fittings

In marketing our line of valves and fittings, we want to be able to tell our customers how to predict friction losses in those products. Because of the controversy surrounding such predictions (described below), we are asking you to recommend the most correct method and values in making those predictions.

The controversy mentioned above is that prior to 1979, the Crane Company, regarded by many as the authority on valves and fittings, recommended that the "equivalent length" of a valve or fitting be considered constant for all values of Reynolds number greater than 1000. Because of the relationship between the "equivalent length" and the "resistance coefficient," the latter was felt to vary directly with the friction factor. Since 1979, however, the Crane Company has reversed their recommendation, suggesting that the "resistance coefficient" is constant for all Reynolds number and that the "equivalent length" varies inversely with the friction factor. This new recommendation is not well supported, however, and we have reason to doubt its validity. Please tell us what to recommend to our customers.

By the way, another option might be to use the two-K method described by Hooper in the attached article. What do you think?