

## A Pressure Drop Correlation for Kenics Static Mixers Based on CFD Computations

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An accurate prediction of pressure drop in a Kenics static mixer has long been an important issue. While in an empty tube, pressure drop correlation can be given as the simple relation between friction factor and Reynolds number (Re), dimensional analysis proves that the aspect ratio of a mixing element is another key parameter determining the pressure drop in the Kenics mixers but missing in most correlations reported in the literature. Although there have recently been reported a few works considering the influence of the aspect ratio on the pressure drop, the use of them is limited because of the narrow application range. In this study, a comprehensive simulation data for pressure drop in Kenics mixers have been obtained using rigorous CFD calculations. Through a graphical analysis of the CFD data, a reliable pressure drop correlation was derived in a systematic way. The comparison with a number of literature data shows that the proposed correlation here performs satisfactorily, covering a whole parameter range of interest.