and $D$ is the hydraulic diameter or pipe diameter. For a passage $D$ is given by

$$D = \frac{4 \times \text{Passage cross-sectional area}}{\text{Passage perimeter}}$$

The loss coefficients, $K$, in equation (3.1) are provided as a function of the Reynolds number. The coefficients can be found from Part 2 or from additional sources.

The overall system head loss, $H$, or pressure loss, $P$, is found by summing the head and pressure losses for individual components. For a system with $n$ components

$$\sum_{i=1}^{i=n}$$

instance, if the mean velocity is constant throughout the system, the individual loss coefficients could be summed and multiplied by the velocity head to obtain the overall head loss.

Complexities arise mainly from interaction between closely spaced components involving a departure from simple summing of individual component losses. For systems consisting mainly of straight pipes or passages, interaction effects are seldom important as regards pressure losses. If the distance between components is more than four diameters, neglecting interaction effects will usually result in the loss being slightly overestimated.

As an example of one calculation procedure, consider the simplified system in Fig. 3.1. For calculation purposes the components are best represented connected together at nodes as in Fig. 3.2, pipes being treated in the same manner as components. This type of system representation has advantages when carrying out computer solutions of complex systems and pipe networks.

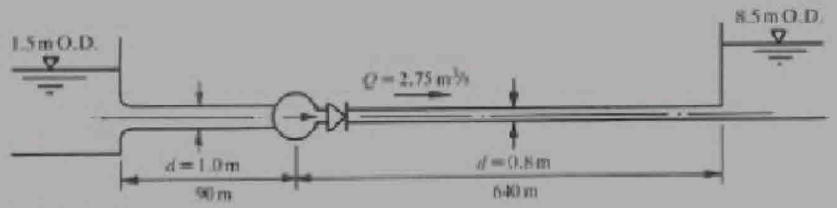


Fig. 3.1. Simple system

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