

## 6.6 Variants of Crystallizers for Satisfying Special Product Requirements

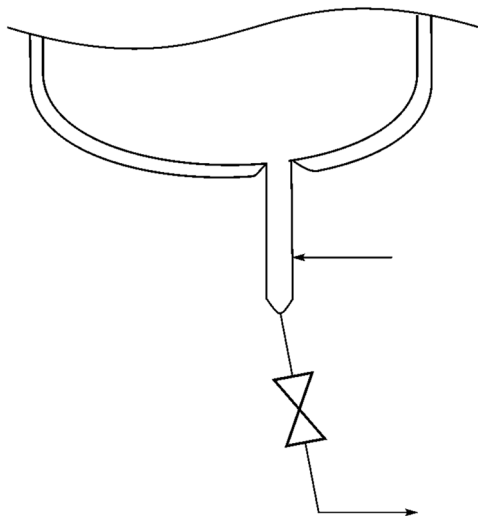
Starting from the idealized MSMPR-case the following variants of crystallizers are possible and are widely used in practice:

### 6.6.1 Classified Product Removal

An “elutriation leg” may be used in the exit line for classifying the product to be taken out from the crystallizer.<sup>46,47</sup> Such a leg is an add-on to the crystallizer, preferably a vertical cylinder. In this cylinder an upward fluid flow is induced by saturated mother liquor entering at the lower part of the cylinder. Crystals have to sediment by gravitation against this fluid flow. Only crystals above a certain particle size successfully reach the product withdrawal-line at the bottom of the leg, see Figure 6.4. The design of this “elutriation leg” follows that of a classifying thickener.<sup>48,49</sup> The effect on the particle size distribution in the crystallizer must be discussed in view of the population balance.<sup>10</sup>

### 6.6.2 Fines Dissolution

Crystallizers may possess more than one product removal line. A typical technical design is that of a draft-tube-baffled-crystallizer (DTB-), see Figure 6.5. This crystallizer is equipped with an integrated axial-symmetric classifying zone (baffle). Only fine crystals follow the upward flow in the



**Figure 6.4** “Elutriation leg” for classified product removal.