Numerical prediction of the particle separation rate $T(x)$

by definition the particle separation rate $T(x)$ is given by :

$$T(x) = 1 - \frac{\dot{N}_{clean\ gas}(x)}{\dot{N}_{feed}(x)}$$

The following particle separation criteria were used in numerical investigations.

Strong criterion :

A particle is assumed to be separated in the cyclone, if :

1. The particle sticks to the wall of the cyclone (that means the wall normal velocity of the particle after a particle–wall collision is less than $10^{-5}\ m/s$).

2. The particle residence time inside the cyclone exceeds a given maximum residence time and the final particle location is inside the particle settling chamber.

"Relaxed" criterion :

A particle is assumed to be separated in the cyclone, if :

1. The particle sticks to the wall of the cyclone (that means the wall normal velocity of the particle after a particle–wall collision is less than $10^{-5}\ m/s$).

2. The particle trajectory reaches the inlet of the particle settling chamber.

Investigation of Particle Separation in Symmetrical Double Cyclone Separators

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