**Table 9.** Optimized parameters and corresponding costs for a pipe diameter of 80 mm

(Pipe length range: 800 to 3000 mm).

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Pipe Diameter  (mm) | Inlet concentration (mol/m3) | Optimization objective | Optimization results | | | | | |
| Length (mm) | Temperature (°C) | Velocity (m/s) | *P*  (CNY/h) | | *P'* (CNY/kg) |
|
| 80 | 0.02 | Minimizing *P* | 944.51 | 150 | 3.0862 | 13.9148 | - | |
| Minimizing *P'* | 952.89 | 150 | 3.1600 | - | 0.1903 | |
| 0.04 | Minimizing *P* | 1358.25 | 149.9932 | 3.0625 | 19.0581 | - | |
| Minimizing *P'* | 1726.92 | 148.6192 | 4.8412 | - | 0.2193 | |