**Table 7.** Optimized parameters and corresponding costs for a pipe diameter of 80 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* | 2100 | 127.8182 | 3.1341 | 27.8594 | - | |
| Minimizing *P'* | 2100 | 142.0124 | 4.9529 | - | 0.2534 | |
| 0.04 | Minimizing *P* | 2100 | 136.2247 | 3.0049 | 27.9679 | - | |
| Minimizing *P'* | 2100 | 145.8478 | 4.9301 | - | 0.2555 | |