



Overall mass balance:

$$\begin{aligned}
 \dot{m}_{\text{benzene, in}} + \dot{m}_{\text{propylene, in}} &= \dot{m}_{\text{benzene, fuel gas}} + \dot{m}_{\text{propylene, fuel gas}} + \dot{m}_{\text{benzene, fuel gas}} + \dot{m}_{\text{benzene product}} + \dot{m}_{\text{PDIB, limerene product}} + \dot{m}_{\text{PDIB, limerene}} \\
 &+ \dot{m}_{\text{benzene, PDIB stream}} + \dot{m}_{\text{PDIB, PDIB stream}}
 \end{aligned}$$