

Steady-State Flow Devices – Le 01

$$\frac{dE_{sys}}{dt} = 0 = \dot{Q}_{in} + \dot{W}_{in} + \dot{m}_{in} \left(h + \frac{V^2}{2} + gz \right)_{in} - \dot{m}_{out} \left(h + \frac{V^2}{2} + gz \right)_{out}$$

Device Name(s)	Turbines	
Purpose		
What it “consumes”		
Typical Operating Conditions		

Device Name(s)	Pumps, Compressors, Blowers, and Fans	
Purpose	Pump → Liquids Compressors → gases, large ΔP Blowers → gases, small ΔP Fans → gases, very small ΔP	
What it “consumes”		
Typical Operating Conditions		

Device Name(s)	Nozzles	
Purpose		
What it “consumes”		
Typical Operating Conditions		

Device Name(s)	Diffusers	
Purpose		
What it "consumes"		
Typical Operating Conditions		

Device Name(s)	Throttling Devices	
Purpose		
What it "consumes"		
Typical Operating Conditions		

Device Name(s)	Heat Exchangers without Mixing	
Purpose		
What it "consumes"		
Typical Operating Conditions		

Device Name(s)	Heat Exchangers with Mixing	
Purpose		
What it "consumes"		
Typical Operating Conditions		