

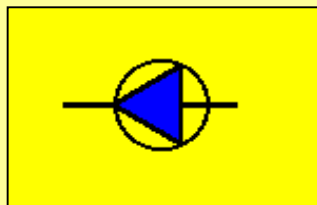
## Pump

This document shows how **Thermo Utilities, MS Excel Add-ins** can be used for calculation of feed-pump.

Saturated water is supplied to a feed-pump at 0.035 bar. The outlet pressure is 12 bar.

1-Calculate the input power to the feed-pump if the mass flow of the water is 2 kg/s and the isentropic efficiency of the pump is 0.9

2-Calculate specific enthalpy, specific entropy, specific volume and temperature of the water before and after the pumping process



Inputs		Units	Error ?
Inlet Pressure	0.035	bar	
Saturated Water	0		
Outlet Pressure	12	bar	
Isentropic Efficiency	0.9		
Mass Flow	2	kg/s	
Outputs			
Inlet Enthalpy	111.85	kJ/kg	
Inlet Entropy	0.3907	kJ/(kg.K)	
Inlet Temperature	26.69	C	
Enthalpy of Isentropic Compression	113.20	kJ/kg	
Outlet Enthalpy	113.35	kJ/kg	
Input Power	3.01	kW	
Outlet Temperature	26.79	C	
Outlet Entropy	0.3912	kJ/kg	
Outlet Specific Volume	1.0029	m3/ton	
Inlet Specific Volume	1.0033	m3/ton	
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