presentation

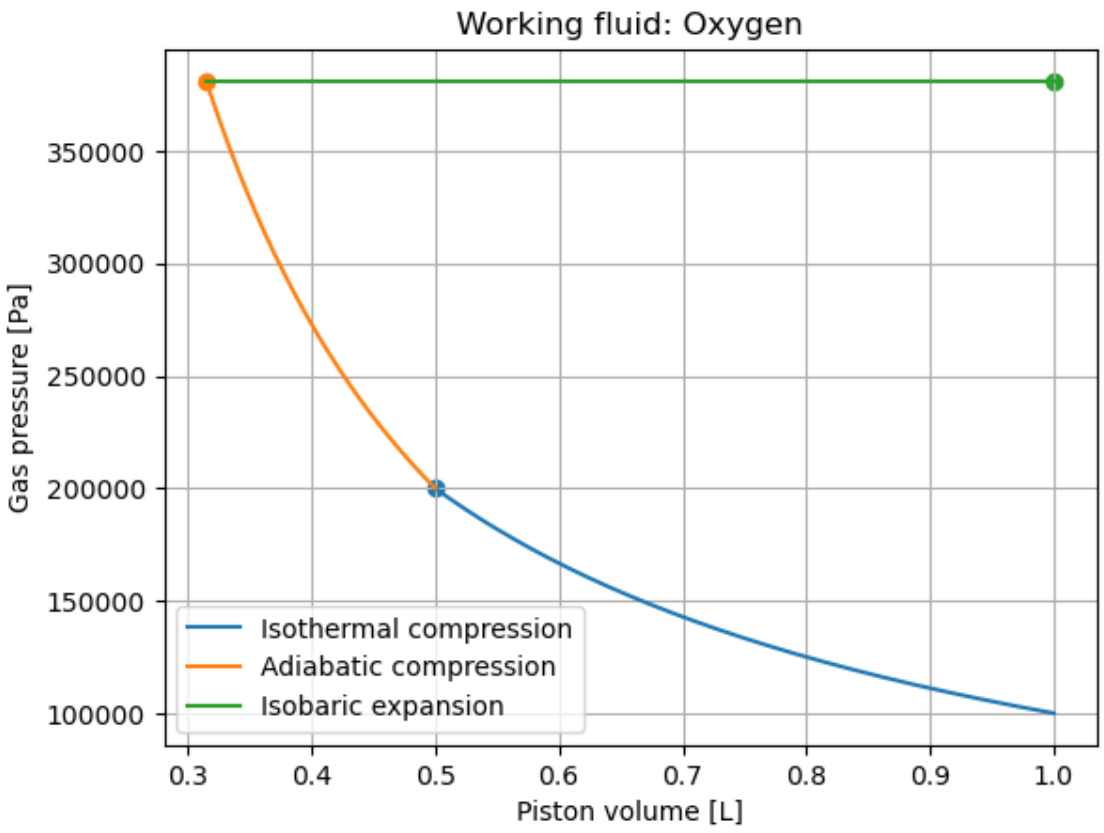
October 23, 2023

[1]:
```
import termoPy as tp

O2 = tp.Fluid(P=1e5, V=1e-3, T=500, gas='O2')

O2.isothermal(P=2e5)
O2.adiabatic(T=600)
O2.isobaric(V=1e-3)

tp.plot(O2, display="VP")
tp.show()
```

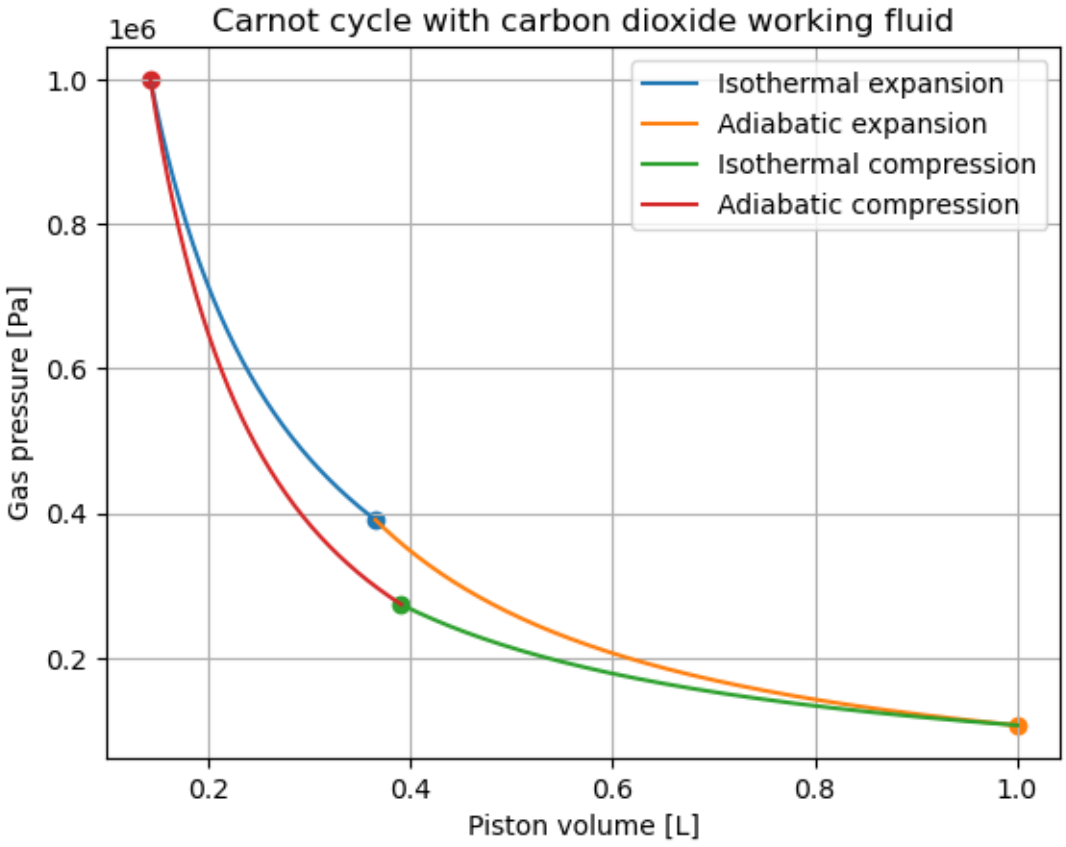


[11]:
```
carnot = tp.
  ↪Carnot(T_hot=400,T_cold=300,compression_ratio=7,P=1e6,V=1e-3,gas='CO2')

print(carnot.efficiency)

tp.plot(carnot,display="VP")
tp.show()
```

```
0.25000000045599013
```

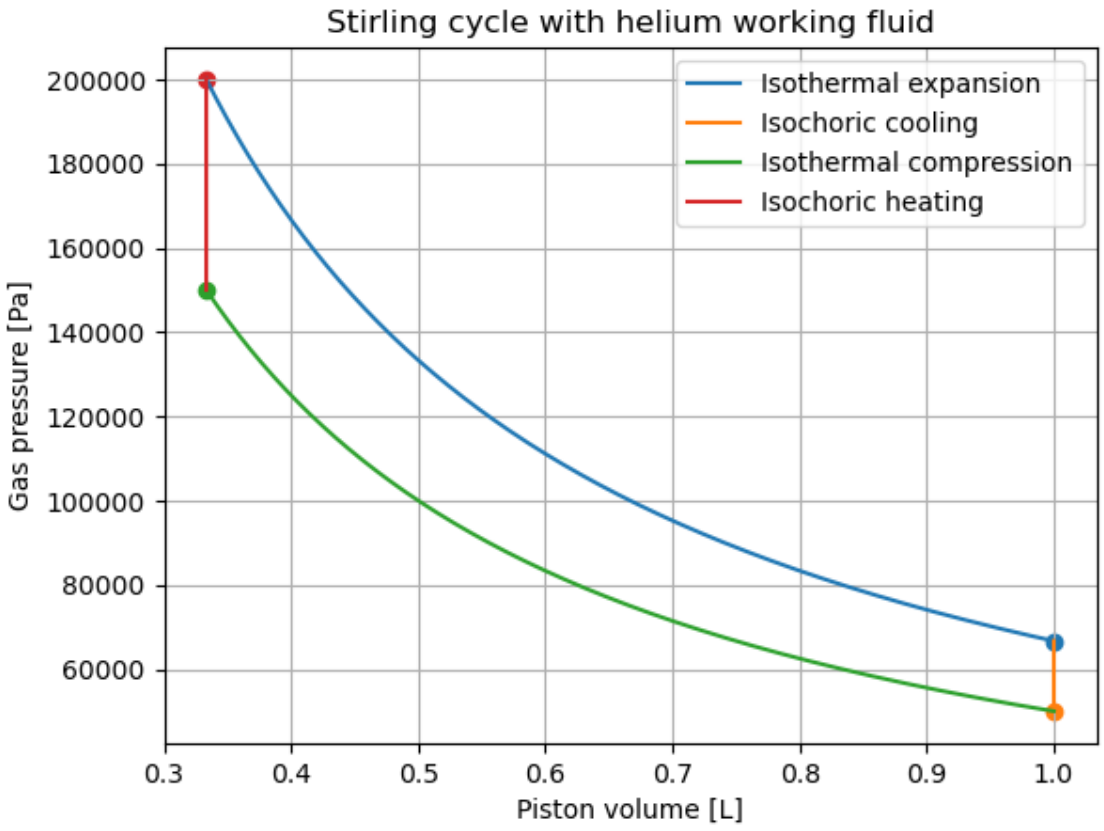


[3]:
```
stirling = tp.
  ↪Stirling(T_hot=400,T_cold=300,compression_ratio=3,P=2e5,V=1e-3,gas='Nitrogen')

print(stirling.efficiency)
print(stirling.work)

tp.plot(stirling,display="VP")
tp.show(save=True, name="stirling")
```

```
0.18634660177452889
18.31020486052776
```



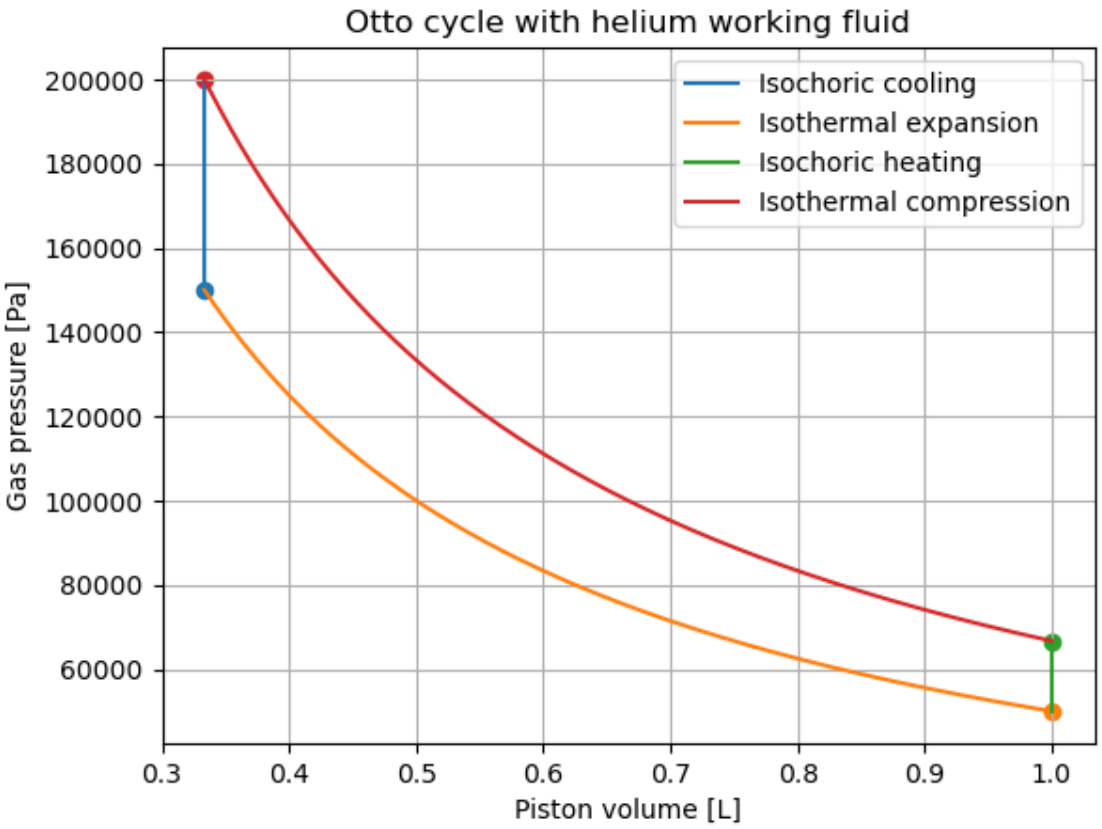
[4]:
```
otto = tp.
  ↪Otto(T_hot=400,T_cold=300,compression_ratio=3,P=2e5,V=1e-3,gas='Helium')

tp.plot(otto,display="VP")

print(otto.efficiency)
print(otto.work)

tp.show()
```

```
0.2290245478797407
-18.310204860527755
```


Otto cycle with helium working fluid
Isochoric cooling
Isothermal expansion
Isochoric heating
Isothermal compression
Gas pressure [Pa]
200000
180000
160000
140000
120000
100000
80000
60000
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
Piston volume [L]