

# Tank\_flow

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c This program calculate P and T of a vessel during discharge
c The vessel contains air
c Calculations in English Units
  implicit real*8(a-h,o-z)
  data Vol,Area,Cd/100.00,5.454E-3,0.65/
  data P,T,Qdot/1000.00,150.00,0.00/
  data cp,R/0.24,53.35/
  data time,dt,ttt/0.0,0.1,17.00/

c
  T=T+460.00
  h=cp*T
  c=144.00/778.00
  b=144.*Cd*Area

c
  open(10,file='tank2.out')
  am=144.*P*Vol/(R*T)
  Tp=T-460.00
  write(10,4)

c
1  continue
  i=i+1
  v=R*T/(144.00*P)
  dvdh=R/(144.00*P*cp)
  dvdp=-v/P
  dhdt=(Qdot+c*vol*dPdt)/am
  anom=Qdot*dvdh-v*W
  dnom=am*dvdp+c*vol*dvdh
  dPdt=-anom/dnom
  P=P+dPdt*dt
  h=h+dhdt*dt
  am=am-W*dt
  T=h/cp
  W=b*P/sqrt(T)
  time=time+dt
  Tp=T-460.00
  if(time.lt.1.00) write(10,3) time,P,Tp,am,W
  if(time.gt.1.00.and.i.eq.10) write(10,3) time,P,Tp,am,W
  if(time.gt.1.00.and.i.eq.10) i=0
  if(time.gt.ttt) go to 2
  go to 1
2  continue
3  format(3f10.2,4x,f10.2,2x,f10.2)
4  format(5x'Time',5x,'Pressure',2x,'Temperature',5x,'Mass',6x,
1'Flow Rate',/,5x,' (s) ',3x,' (Psia)',4x,' (F) ',7x,' (lbm)',5x,
2' (lbm/s)')
  stop
end

```