"Turbo"
"HW3 P4"
"Zhaoyi Jiang(.1364)"

"Given"
p01=6.5[bar]
t01=800[k]
p03=1.3[bar]
psi=1.1
phi=0.58
alpha_1=-5[degree]

"R"
alpha_3=alpha_1
psi=2*(1-R-phi***tan**(alpha_3))

"Angles"
psi=phi*(**tan**(alpha_2)-**tan**(alpha_3))
beta_1=beta_3
beta_2=**arctan**(-(R-psi/2)/phi)
beta_3=**arctan**(-(R+psi/2)/phi)

"Work in normail stage"
eta_tt=0.94
h01=**enthalpy**(***Air***,***T***=t01)
s01=**entropy**(***Air***,***P***=p01,***T***=t01)
h03ss=**enthalpy**(***Air***,***P***=p03,***s***=s01)
eta_tt=(h01-h03)/(h01-h03ss)
W=h01-h03
psi=W/u^2***convert**(km,m)
phi=cz/u

"Velocities"
c1=c3
w1=w3
c2=cz/**cos**(alpha_2)
w2=((c2***sin**(alpha_2)-u)^2+cz^2)^.5
c3=cz/**cos**(alpha_3)
w3=((c3***sin**(alpha_3)-u)^2+cz^2)^.5

SOLUTION
Unit Settings: SI K bar kJ mass deg

α_1 = -5 [Degree]	α_2 = 61.07 [degree]	α_3 = -5 [degree]
β_1 = -61.1 [degree]	β_2 = 4.854 [degree]	β_3 = -61.1 [degree]
c1 = 295 [m/s]	c2 = 607.5 [m/s]	c3 = 295 [m/s]
cz = 293.9 [m/s]	η_{tt} = 0.94	h01 = 822.3 [kj/kg]
h03 = 539.9 [kj/kg]	h03ss = 521.9 [kj/kg]	p01 = 6.5 [bar]
p03 = 1.3 [bar]	ϕ = 0.58	ψ = 1.1
R = 0.5007	s01 = 6.184 [kj/kg-k]	t01 = 800 [K]
u = 506.7 [m/s]	W = 282.4 [kj/kg]	w1 = 608.1 [m/s]
w2 = 294.9 [m/s]	w3 = 608.1 [m/s]	

No unit problems were detected.