Run title	-->	Michael's test file
PROCESS Version	-->	409.0
Date:	-->	07/12/2015
Time:	-->	10:12
User:	-->	mkovari
Optimising:	-->	Plasma major radius

Plasma composition:
Number densities relative to electron density:

D + T	= 0.8425
He	= 0.06709
Xe	= 0.0003635
W	= 5e-05

Geometry:

R_0	= 9.124 m
a	= 2.943 m
A	= 3.1
κ_{95}	= 1.59
δ_{95}	= 0.3333
Surface area	= 1444 m^2
Plasma volume	= 2545 m^3
No. of TF coils	= 18
inboard blanket+shield	= 1.055 m
ouboard blanket+shield	= 2.075 m
Fusion power	= 1933 MW

Physics:

I_p	= 18.47 MA
Vacuum B_T at R_0	= 4.906 T
q_{95}	= 3
β_N, thermal	= 2.464 % m T MA^{-1}
β_N, total	= 2.913 % m T MA^{-1}
β_P, thermal	= 0.9774
β_P, total	= 1.155
$<t_e>$	= 12.42 keV
$<n_e>$	= 7.562e+19 m^{-3}
$<n_{\mathrm{e,line}}>/n_G$	= 1.2
$T_{e0}/<T_e>$	= 2.06
$n_{e0}/<n_{\mathrm{e,vol}}>$	= 1.215
Z_{eff}	= 2.445
$Z_{\mathrm{eff,SoL}}$	=ERROR! Var missing
$n_Z/<n_{\mathrm{e,vol}}>$	= 0.0004135
τ_e	= 3.768 s
H-factor	= 1.1
Scaling law	= IPB98(y,2)

Coil currents etc:

PF 1	= 19.33 MA
PF 3	= -8.519 MA
PF 5	= -4.793 MA
Startup flux swing	= 358.6 Wb
Available flux swing	= -781.9 Wb
Burn time	= 2 hrs

TF coil type is ITER Nb3Sn

Peak field at conductor (w. rip.)	= 11.5 T
I/I$_{\mathrm{crit}}$	= 0.5
Temperature margin	= 2.329 K
Conduit Von Mises stress	= 4.189e+08 Pa
Case Von Mises stress	= 5.5e+08 Pa
Allowable stress	= 5.5e+08 Pa

Costs

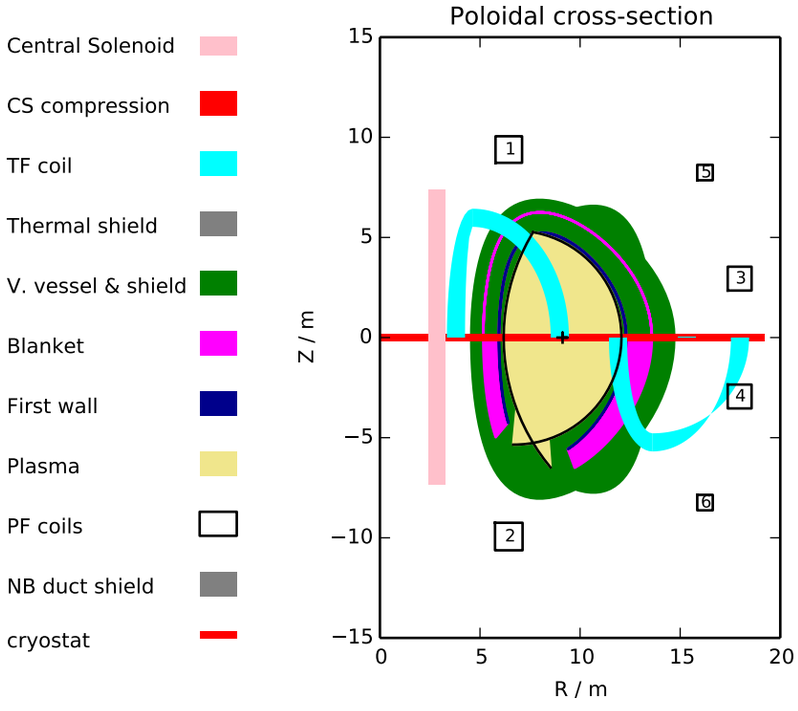
Cost of electricity	=ERROR! Var missing

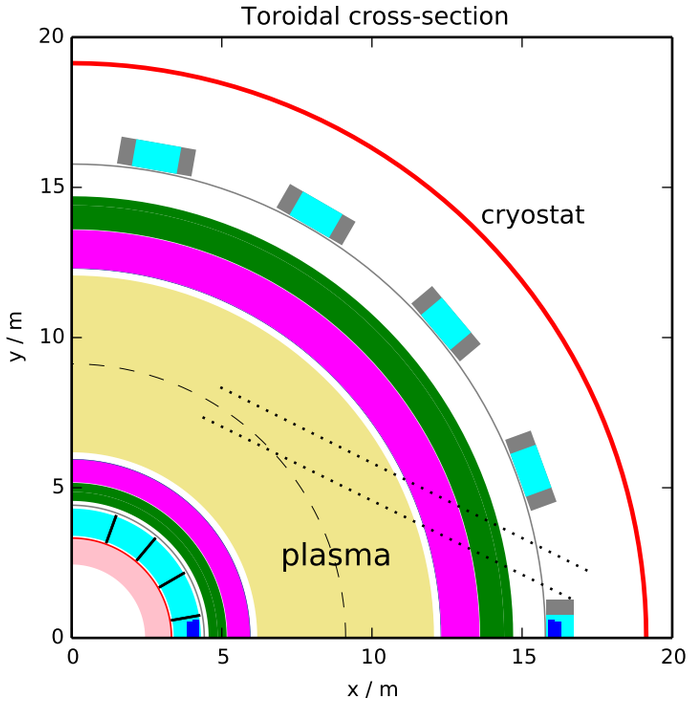
Power flows:

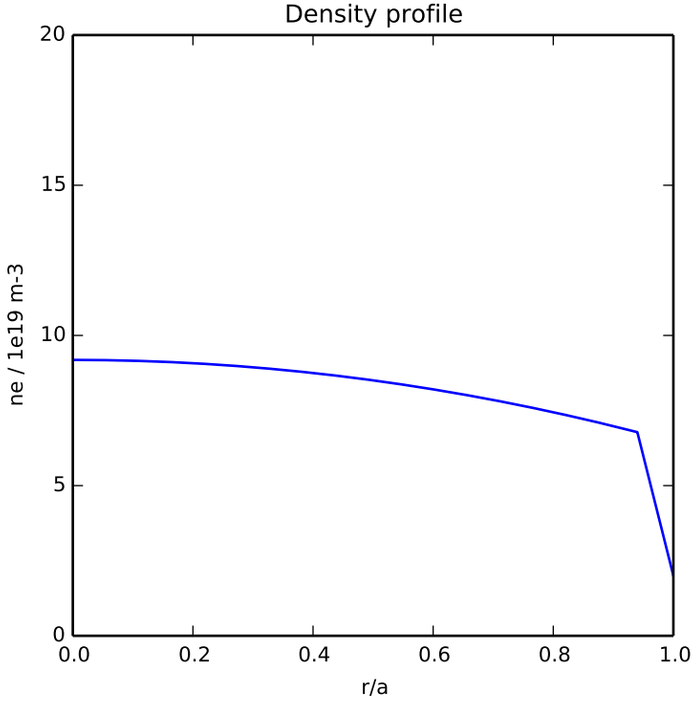
Nominal neutron wall load	= 0.9845 MW m^{-2}
Normalised radius of 'core' region	= 0.6
Electron density at pedestal	= 6.78e+19 m^{-3}
r/a at density pedestal	= 0.94
Helium fraction	= 0.06709
Core radiation	= 103.5 MW
Total radiation	= 264.2 MW
Nuclear heating in blanket	= 1523 MW
Nuclear heating in shield	= 0.5114 MW
Power to divertor	= 155.1 MW
H-mode threshold	= 106.4 MW
Divertor life	= 6.21 years
Primary (high grade) heat	= 2384 MW
Gross cycle efficiency	= 35 %
Net cycle efficiency	= 34.1 %
Gross electric power	= 834.5 MW
Net electric power	= 500 MW
Fusion-to-electric efficiency $\frac{P_{\mathrm{e,net}}}{P_{\mathrm{fus}}}$	= 25.87 %

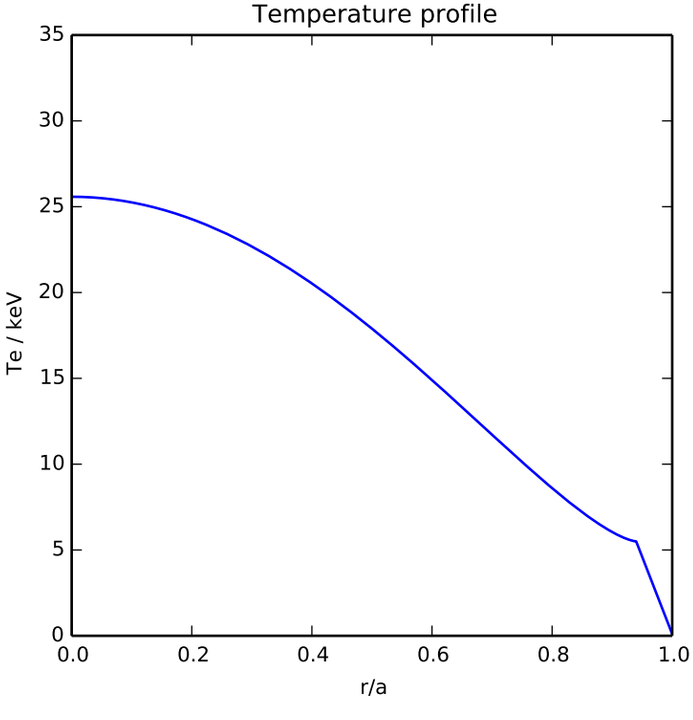
Neutral Beam Current Drive:

Steady state auxiliary power	= 50 MW
Power for heating only	= 0 MW
Bootstrap fraction	= 0.3569
Auxiliary fraction	= 0.1014
Inductive fraction	= 0.5417
NB gamma	= 0.2583 10^{20} A W^{-1} m^{-2}
NB energy	= 1000 keV
Plasma heating used for H factor	= 315.9 MW
$\frac{P_{\mathrm{div}}}{R_0}$	= 17 MW m^{-1}
$\frac{P_{\mathrm{div}}}{<n>R_0}$	= 224.8 $\times 10^{-20}$ MW m^2
$\frac{P_{\mathrm{div}}}{P_{\mathrm{LH}}}$	= 1.458
H* (non-rad. corr.)	= 0.9968


Central Solenoid
CS compression
TF coil
Thermal shield
V. vessel & shield
Blanket
First wall
Plasma
PF coils
NB duct shield
cryostat
Poloidal cross-section
Z / m
R / m
1
2
3
4
5
6


Toroidal cross-section
cryostat
plasma
y / m
x / m


Density profile
ne / 1e19 m-3
r/a


Temperature profile
Te / keV
r/a