Run title	-->	Run Title (change this line using input variable 'runtitle')
PROCESS Version	-->	1.0.17
Date:	-->	27/07/2020
Time:	-->	15:48
User:	-->	apearce
Optimising:	-->	Plasma major radius

Plasma composition:

Number densities relative to electron density:

D + T	= 0.7427
He	= 0.09405
Xe	= 0.001309
W	= 5e-05

Colour Legend:

ITR

OP

Geometry:

R_0	= 8.784 m
a	= 3.668 m
A	= 2.395
κ_{95}	= 1.65
δ_{95}	= 0.3333
Surface area	= 1758 m^2
Plasma volume	= 3896 m^3
No. of TF coils	= 16
inboard blanket+shield	= 1.055 m
ouboard blanket+shield	= 1.782 m
Fusion power	= 3073 MW

Physics:

I_p	= 25.02 MA
Vacuum B_T at R_0	= 4.125 T
q_{95}	= 3.5
β_N, thermal	= 3.447 % m T MA^{-1}
β_N, total	= 4.053 % m T MA^{-1}
β_P, thermal	= 1.132
β_P, total	= 1.331
$< t_e >$	= 19.2 keV
$< n_e >$	= 6.415e+19 m^{-3}
$< n_{e,\,line} > / n_G$	= 1.2
$T_{e0} / < T_e >$	= 2.258
$n_{e0} / < n_{e,\,vol} >$	= 1.315
Z_{eff}	= 4.652
$n_Z / < n_{e,\,vol} >$	= 0.001359
τ_e	= 4.319 s
H-factor	= 1.4
H-mode threshold	= 94.52 MW
Scaling law	= IPB98(y,2)

Coil currents etc:

PF 1	= 12.43 MA
PF 3	= -11.5 MA
PF 5	= -7.031 MA
Startup flux swing	= 401.4 Wb
Available flux swing	= -401.4 Wb
Burn time	= 2.778 hrs

TF coil type is WST Nb3Sn

Peak field at conductor (w. rip.)	= 11.72 T
I/I_{crit}	= 0.6551
TF Temperature margin	= 1.5 K
CS Temperature margin	= 1.5 K
TF Cond max TRESCA stress	= 580 MPa
TF Case max TRESCA stress	= 548.3 MPa
Allowable stress	= 580 Pa
Mass per TF coil	= 1.465e+06 kg

Power flows:

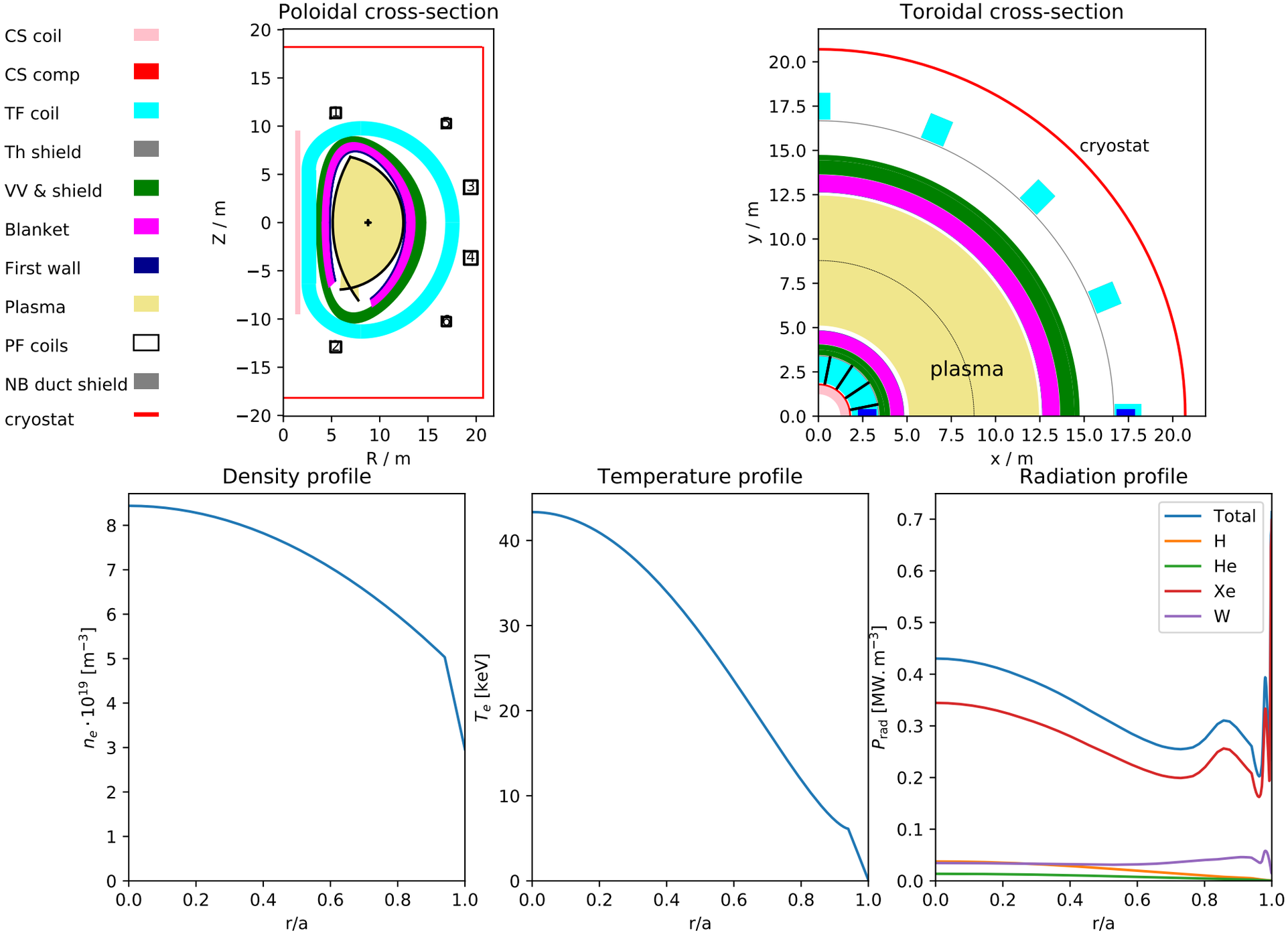
Nominal neutron wall load	= 1.286 MW m^{-2}
Normalised radius of 'core' region	= 0.75
Electron density at pedestal	= 5.032e+19 m^{-3}
r/a at density pedestal	= 0.94
Helium fraction	= 0.09405
Core radiation	= 261.1 MW
Total radiation	= 646.9 MW
Nuclear heating in blanket	= 2340 MW
Nuclear heating in shield	= 2.526 MW
TF cryogenic power	= 38.45 MW
Power to divertor	= 164.2 MW
Divertor life	= 3.601 years
Primary (high grade) heat	= 4215 MW
Gross cycle efficiency	= 37.5 %
Net cycle efficiency	= 31.27 %
Gross electric power	= 1581 MW
Net electric power	= 500 MW
Fusion-to-electric efficiency $\frac{P_{e,\,net}}{P_{fus}}$	= 16.27 %

Electron Cyclotron Current Drive:

Steady state auxiliary power	= 225 MW
Power for heating only	= 1.748 MW
Bootstrap fraction	= 0.525
Auxiliary fraction	= 0.475
Inductive fraction	= 1e-10
Plasma heating used for H factor	= 550 MW
$\frac{P_{div}}{R_0}$	= 18.69 MW m^{-1}
$\frac{P_{div}}{< n > R_0}$	= 29.14 $\times 10^{-20}$ MW m^2
$\frac{P_{div}}{P_{LH}}$	= 1.737
H* (non-rad. corr.)	= 1.218

Costs

Cost output not selected


CS coil
CS comp
TF coil
Th shield
VV & shield
Blanket
First wall
Plasma
PF coils
NB duct shield
cryostat
Poloidal cross-section
Z / m
R / m
Toroidal cross-section
cryostat
plasma
y / m
x / m
Density profile
$n_e \cdot 10^{19}$ [m^{-3}]
r/a
Temperature profile
T_e [keV]
r/a
Radiation profile
P_{rad} [MW. m^{-3}]
Total
H
He
Xe
W
r/a