

# Preparing Systems Codes for Power Plant Conceptual Design

J. Morris, M. Coleman, S. Kahn, S.I. Muldrew, A. J. Pearce, D. Short,  
J. E. Cook, S. Desai, L. Humprey, M. Kovari, J. Maddock, D. Vaccaro

PROCESS and BLUEPRINT currently used in EU-DEMO and STEP pre-conceptual design.

Aim is to develop systems codes to cover the middle of the design cycle.

Evolve PROCESS to be modern python package library for 0-D, 1-D modelling. Other recent additions to PROCESS:

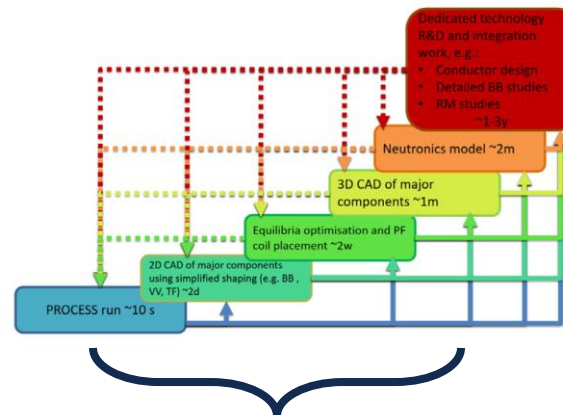
- Spherical tokamak models – plasma current scalings, plasma geometry, magnet options (e.g. centrepost).
- Expanded sensitivity tools – Morris method
- HTS REBCO model

Key BLUEPRINT features:

- Free-boundary equilibrium solver
- Automatic 3-D CAD generation
- Tritium cycle model
- Spherical tokamak geometry

EUROfusion TSVV-14 project – Multi-fidelity systems code for EU-DEMO

- Kicked off April 2021 – five year project
- Target is open-source reactor design tool
- Merging BLUEPRINT and KIT code MIRA



## BLUEPRINT

