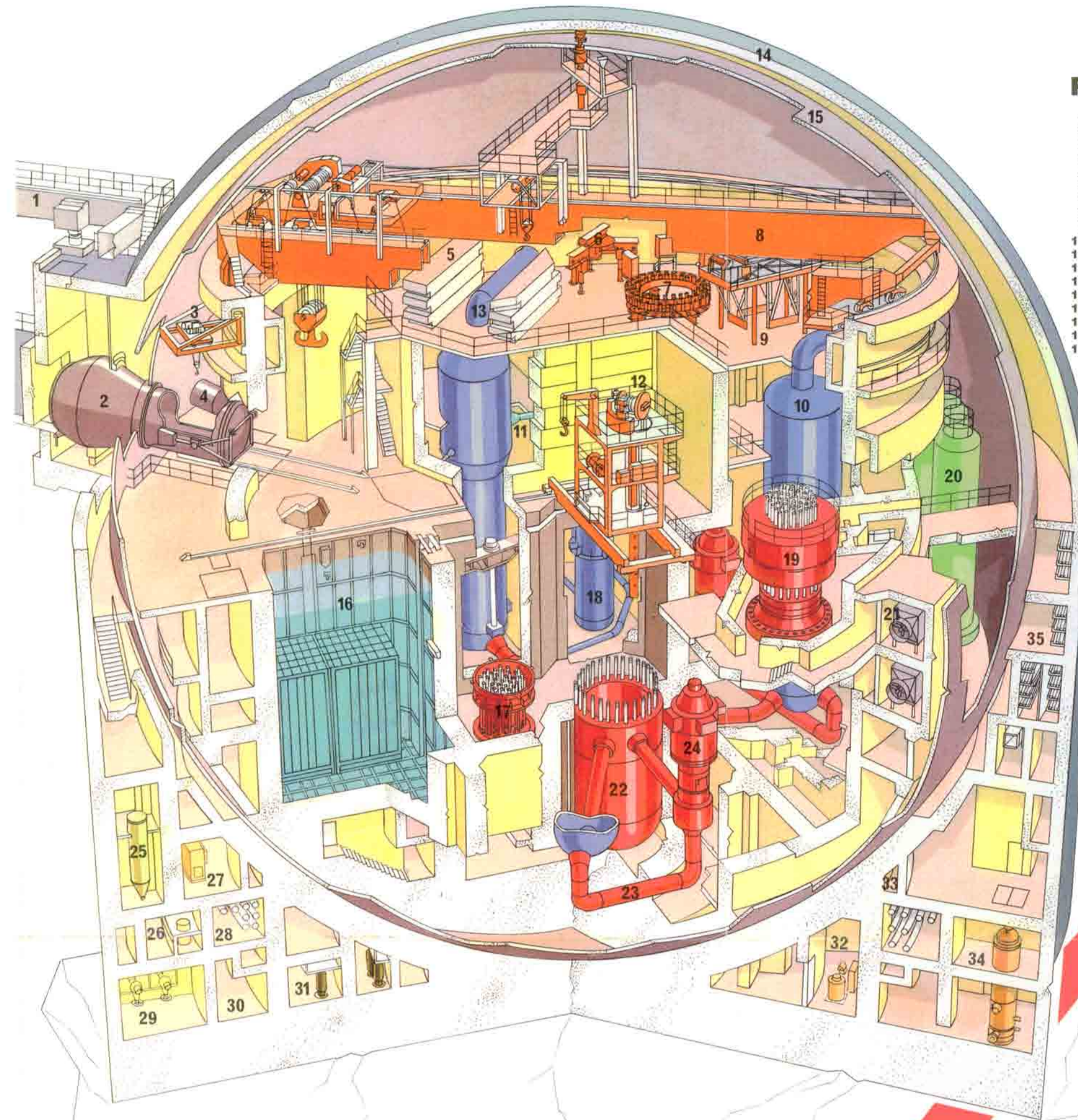


# KWU PWR 1000

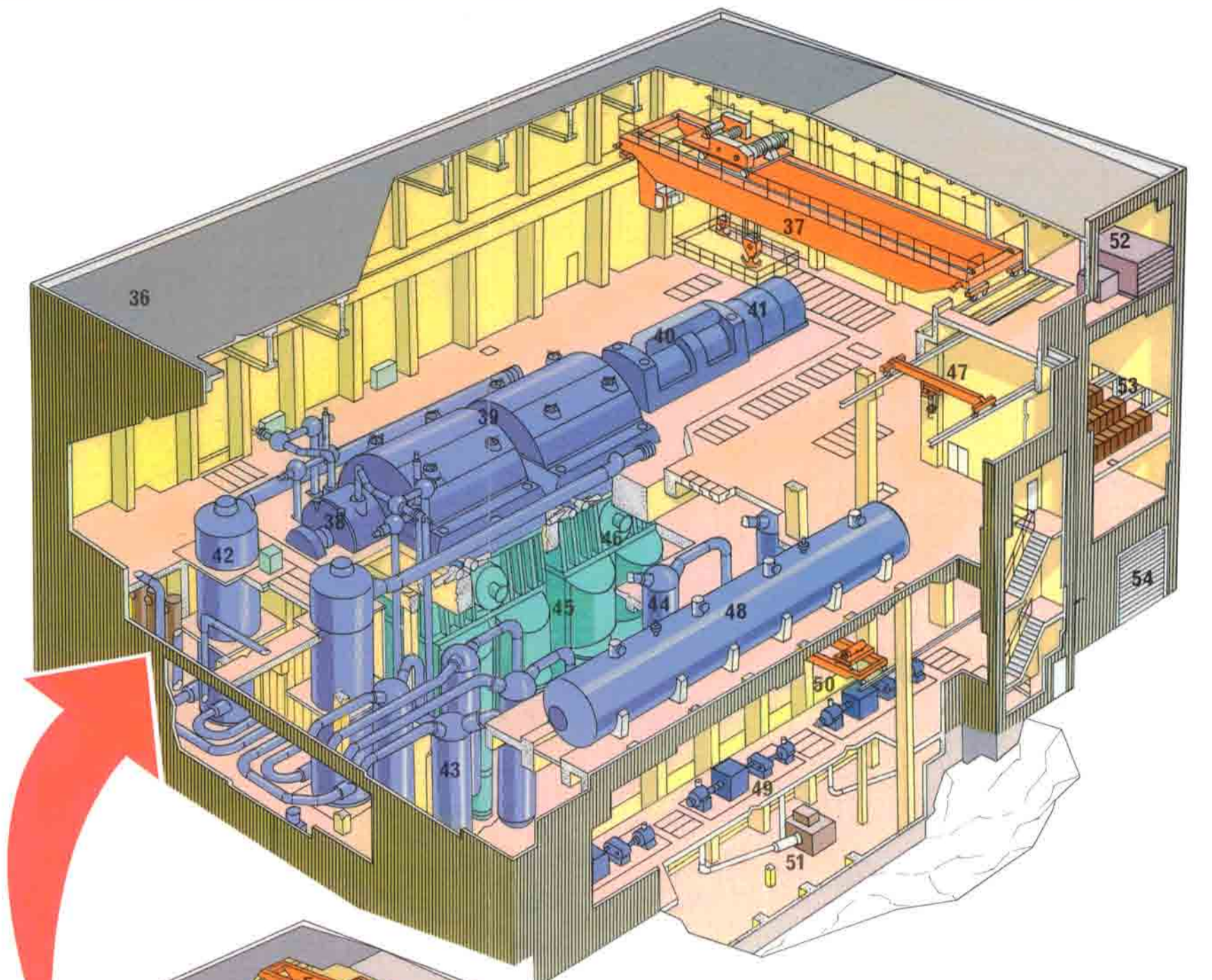
## Technical data

<b>Power</b>	
Reactor thermal output	3086 MW
Steam generator thermal output	3103 MW
Gross electrical output	1133 MW
<b>Reactor core</b>	
Core diameter (equivalent)	3450 mm
Core height (active)	3400 mm
Total quantity of uranium (first core)	82 000 kg
Enrichment levels (first core), per cent U-235 by weight	3.2, 2.5, 1.9
<b>Fuel assemblies</b>	
Number of fuel assemblies	177
Weight of one fuel assembly	730 kg
Number of fuel rods	300
Fuel rod outside diameter	9.5 mm
Fuel material	UO <sub>2</sub>
Cladding material	Zircaloy 4
<b>Control assemblies</b>	
Neutron absorber material	Ag80In15Cd5
Number of control assemblies	48
Number of control rods per assembly	24
<b>Reactor coolant system</b>	
Number of coolant loops	3
Total coolant flow rate	15 780 kg/s
Reactor pressure vessel inlet temperature	294.0°C
Reactor pressure vessel outlet temperature	327.6°C
Operating pressure	157 bar
<b>Reactor pressure vessel</b>	
Inside diameter of cylindrical shell	4880 mm
Total height	11 040 mm
Material	20MnMoNi55
Design pressure	175 bar
Design temperature	350°C
Dry weight (without internals)	432 000 kg
<b>Steam generator</b>	
Heat transfer surface	5400 m <sup>2</sup>
Heat transfer tube material	Incoloy 800
Outer diameter of tube sheet	3670 mm
Total height	21 500 mm
Dry weight	420 000 kg
<b>Pressurizer</b>	
Volume	45 m <sup>3</sup>
Installed heater power	1600 kW
<b>Steel containment shell</b>	
Inside diameter	53 m
Wall thickness	32 mm
Design pressure	4.9 bar
Design temperature	145°C
<b>Turbine</b>	
Type	Saturated steam condensing turbine
Speed*	1500 rpm
Main steam inlet pressure at 100 per cent steam generator output	62.9 bar
<b>Generator</b>	
Apparent power output	1300 MVA
Frequency*	50 Hz
Terminal voltage	27 kV±10%
*Turbine generator speed of 1800 rpm is also available for 60 Hz.	



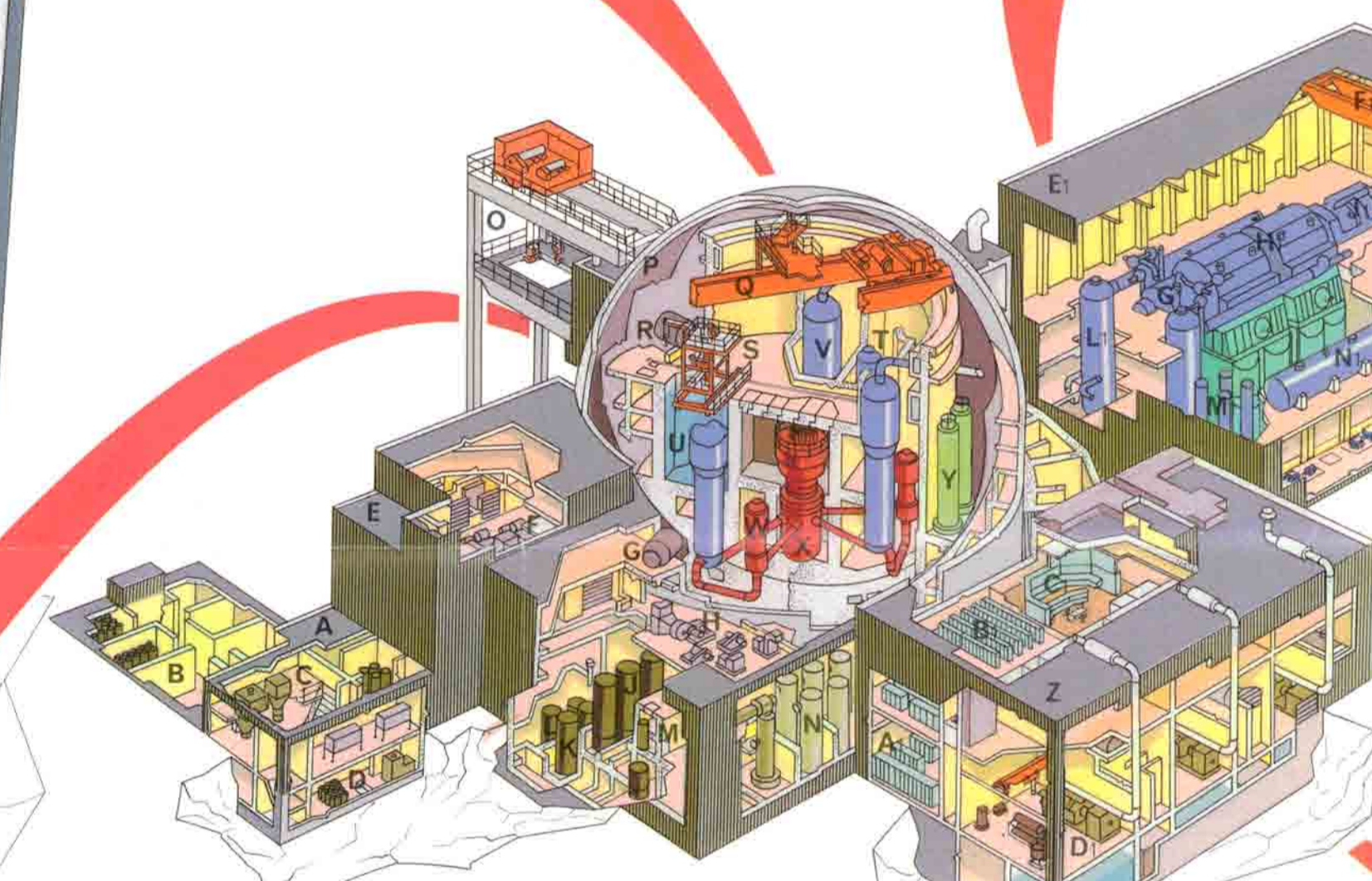
## Reactor building

1. Gantry
2. Equipment air lock
3. Bracket crane
4. Emergency air lock
5. Shielding slabs
6. Reactor closing head lifting beam
7. Nut transporting stud tensioner
8. Polar crane
9. Cable bridge
10. Steam generator
11. Feedwater
12. Refuelling machine
13. Main steam
14. Containment
15. Reactor building annulus
16. Fuel pool
17. Upper core support
18. Pressurizer
19. Reactor pressure vessel closure head
20. Accumulator
21. Air recirculation system
22. Reactor pressure vessel
23. Reactor coolant pipe
24. Reactor coolant pump
25. Delay bed
26. Recombiner
27. Gas measuring equipment
28. Pipe duct
29. Valve compartment
30. Passage way
31. Sealing liquid tank
32. Filter change equipment
33. Air duct
34. Component cooling heat exchanger
35. Cable distributor



## Turbine building

36. Turbine building
37. Crane
38. High pressure turbine
39. Low pressure turbine
40. Generator
41. Exciter
42. Moisture separator/reheater
43. HP feedwater heater
44. LP feedwater heater (third stage)
45. Condenser
46. Duplex feedwater heater (first and second stages)
47. Feedwater tank bay crane
48. Feedwater tank
49. Feedwater pump
50. Feedwater pump bay crane
51. Lubricating oil unit for feedwater pumps
52. Ventilation unit
53. Switchgear
54. Vehicle entrance



## Power station

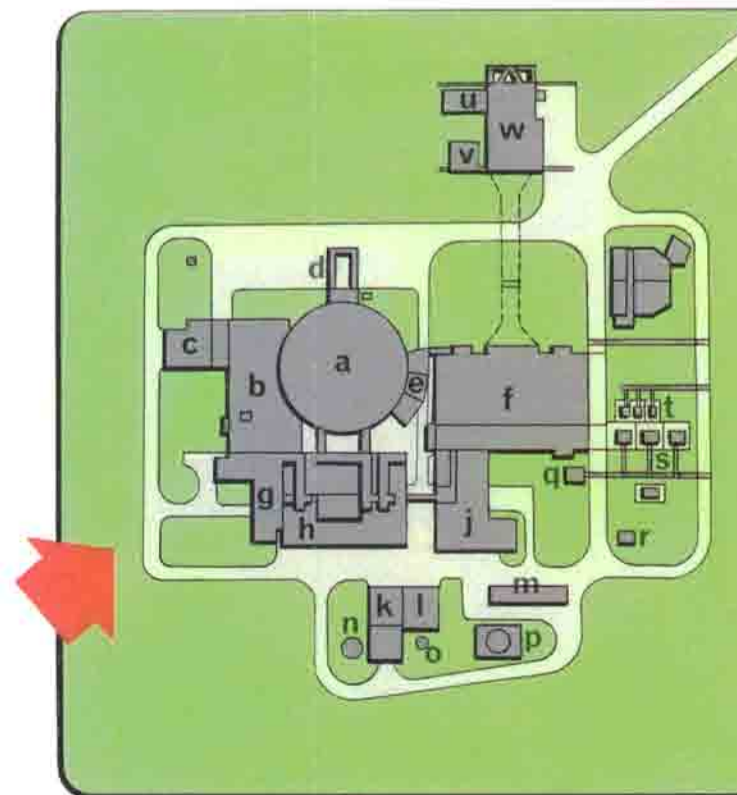
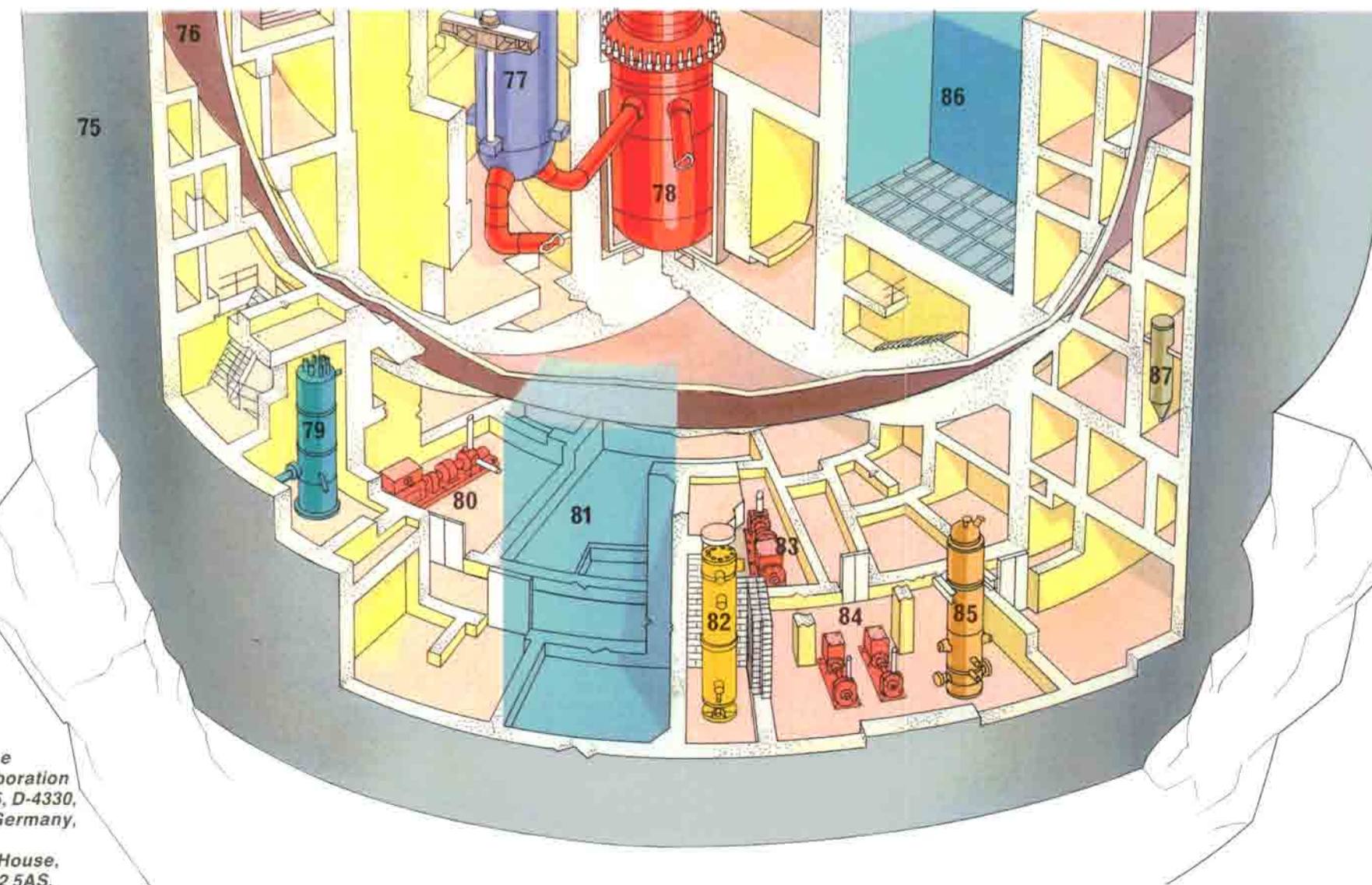
- |  |                              |   |
|--|------------------------------|---|
| A. Radioactive waste processing building | K. Liquid waste storage tank | V. Steam generator                          |
| B. Low level waste drum store            | L. Concentrate tank          | W. Reactor coolant pumps                    |
| C. Cement silo                           | M. Mixed bed filter          | X. Reactor pressure vessel                  |
| D. Empty drum store                      | N. Coolant storage tank      | Y. Accumulator                              |
| E. Auxiliary building                    | O. Gantry                    | Z. Switchgear and emergency supply building |
| F. Exhaust air fan                       | P. Reactor building          | A1. Switchgear                              |
| G. Air lock                              | Q. Polar crane               | B1. Equipment compartment                   |
| H. Subatmospheric pressure air system    | R. Equipment air lock        | C1. Control room                            |
| I. Monitoring tank                       | S. Refuelling machine        | D1. Emergency diesel generator compartment  |
|  | T. Pressurizer               |   |
|  | U. Fuel pool                 |   |

## Switchgear and emergency supply building

55. Switchgear and emergency supply building
56. Equipment compartment
57. Control room
58. Exhaust air fan room
59. Diesel generator exhaust pipe
60. Air recirculation system
61. Electronic equipment room
62. Switchgear compartment
63. Air intake system
64. Cooling water system cooler
65. Refrigeration unit
66. Surge tank
67. Diesel generator
68. Diesel generator crane
69. Demineralized water storage basin
70. Diesel fuel storage tank
71. Diesel engine compartment fan
72. Cable spreading room
73. Battery room (220V)
74. Exhaust air duct

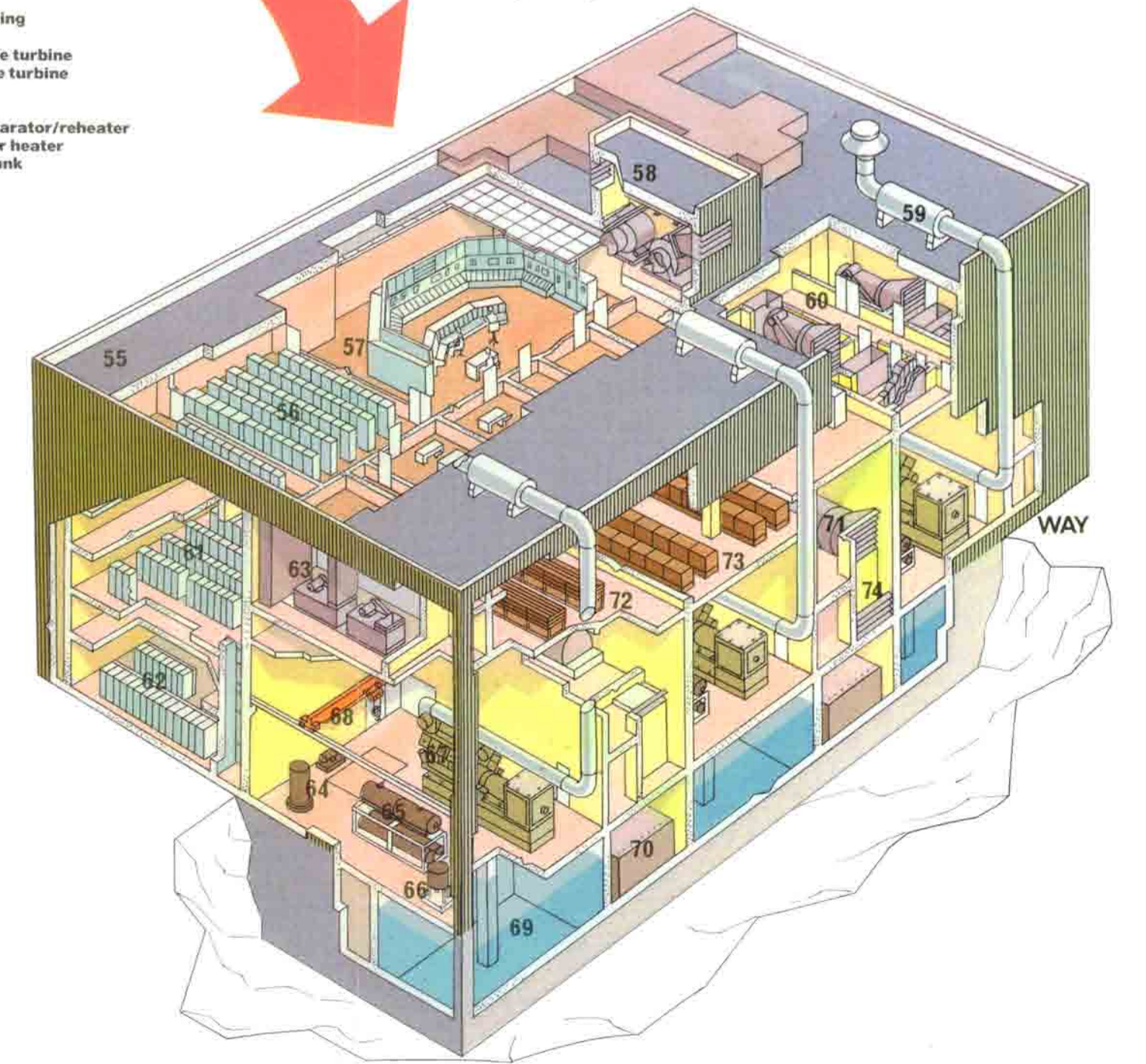
## Auxiliary systems and engineered safety features (in reactor building annulus)

75. Reactor building annulus
76. Containment
77. Steam generator
78. Reactor pressure vessel
79. Volume control surge tank
80. Safety injection pump
81. Borated water storage pool
82. Residual heat exchanger
83. Residual heat removal pump
84. Component cooling pump
85. Component cooling heat exchanger
86. Fuel pool
87. Delay bed



## Site plan

- |   |                                     |
|---|-------------------------------------|
| a. Reactor building                           | n. Demineralized water tank         |
| b. Reactor auxiliary building                 | o. Auxiliary boiler stack           |
| c. Radioactive waste processing building      | p. Fuel oil tank pit                |
| d. Gantry                                     | q. Standby offsite transformer      |
| e. Main steam and feedwater valve compartment | r. Service water collecting pit     |
| f. Turbine building                           | s. Generator transformer            |
| g. Operations building                        | t. HV unit auxiliary transformer    |
| h. Switchgear and emergency supplies building | u. Biocide treatment building       |
| i. Workshop and stores building               | v. Service water pump building      |
| j. Supplies systems building                  | w. Circulating water pump structure |
| k. Demineralizing system building             | x. Circulating water seal pit       |
| l. Gas cylinders store                        |                                     |



The world's reactors No 88