

1. GENERAL INFORMATION

1.1. Reactors

Experimental Fast Reactors

| Plant | Reactors |
|-----------------------------|-----------------------------------------------------|
| Rapsodie (France) | - |
| KNK-II (Germany) | Kompakte Natriumgekühlte Kernreaktoranlage |
| FBTR (India) | Fast Breeder Test Reactor |
| PEC (Italy) | Prova Elementi di Combustibile |
| JOYO (Japan) | - |
| DFR (UK) | Dounreay Fast Reactor |
| BOR-60 (Russian Federation) | Bystrij Opytnyj Reactor (Fast Experimental Reactor) |
| EBR-II (USA) | Experimental Breeder Reactor II |
| Fermi (USA) | - |
| FFTF (USA) | Fast Flux Test Facility |
| BR-10 (Russian Federation) | Bystrij Reactor (Fast Reactor) |
| CEFR (China) | China Experimental Fast Reactor |

Demonstration or Prototype Fast Reactors

| | |
|-----------------------------------|-------------------------------------------------------------------------|
| Phénix (France) | - |
| SNR-300 (Germany) | Schneller Natriumgekühlte Reaktor |
| PFBR (India) | Prototype Fast Breeder Reactor |
| MONJU (Japan) | - |
| PFR (UK) | Prototype Fast Reactor |
| CRBRP (USA) | Clinch River Breeder Reactor Plant |
| BN-350 (Kazakhstan) | Bystrie neytrony (Fast neutrons) |
| BN-600 (Russian Federation) | Bystrie neytrony (Fast neutrons) |
| ALMR (USA) | Advanced Liquid Metal Reactor |
| KALIMER-150 (Republic of Korea) | Korean Advanced Liquid METal Reactor |
| SVBR-75/100 (Russian Federation) | Svinetc-Vismuth Bystrij Reactor (Lead-Bismuth Fast Reactor) |
| BREST-OD-300 (Russian Federation) | Bystrij Reactor Estestvennoy Bezopasnosti (Fast Reactor Natural Safety) |

Commercial Size Reactors

| | |
|------------------------------------|-------------------------------------------------------------------------|
| Super-Phénix 1 (France) | - |
| Super-Phénix 2 (France) | - |
| SNR 2 (Germany) | Schneller Natriumgekühlte Reaktor |
| DFBR (Japan) | Demonstration Fast Breeder Reactor |
| CDFR (UK) | Commercial Demonstration Fast Reactor |
| BN-1600 (Russian Federation) | Bystrie neytrony (Fast neutrons) |
| BN-800 (Russian Federation) | Bystrie neytrony (Fast neutrons) |
| EFR | European Fast Reactor |
| ALMR (USA)* | Advanced Liquid Metal Reactor |
| SVBR-75/100 (Russian Federation)** | Svinetc-Vismuth Bystrij Reactor (Lead-Bismuth Fast Reactor) |
| BN-1800 (Russian Federation) | Bystrie neytrony (Fast neutrons) |
| BREST-1200 (Russian Federation) | Bystrij Reactor Estestvennoy Bezopasnosti (Fast Reactor Natural Safety) |
| JSFR-1500 (Japan) | JNC Sodium-cooled Fast Reactor |

* the commercial plant consists of 6 units, and have a breeding mission using a heterogeneous core with internal blanket

** the commercial plant consists of 16 units

1. GENERAL INFORMATION (cont.)

1.2. Location, postal address of station

Experimental Fast Reactors

| Plant | Location, postal address of station |
|-----------------------------|-------------------------------------------------------------|
| Rapsodie (France) | CEN Cadarache 13115 St. Paul les Durance |
| KNK-II (Germany) | KfK, Post Box 3640, D-76021 Karlsruhe |
| FBTR (India) | Kalpakkam, 603 102 |
| PEC (Italy) | Brasimone |
| JOYO (Japan) | Oarai, JNC; 4002, Narita, Higashi-Ibaraki; Ibaraki 311-1393 |
| DFR (UK) | Dounreay, Caithness, Scotland KW 14 7TZ |
| BOR-60 (Russian Federation) | Dimitrovgrad, U1'yanovsk region |
| EBR-II (USA) | Idaho, ANL; P.O. Box 2528; Idaho Falls, ID 83401 |
| Fermi (USA) | Lagoona Beach, Michigan |
| FFTF (USA) | Westinghouse Hanford, P.O. Box 1970 Richland, WA 99352 |
| BR-10 (Russian Federation) | Obninsk, Kaluga Region |
| CEFR (China) | China Institute of Atomic Energy (CIAE), Beijing |

Demonstration or Prototype Fast Reactors

| | |
|-----------------------------------|------------------------------------------------------|
| Phénix (France) | CEA Centre de Marcoule BP 171 30200 Bagnols sur Ceze |
| SNR-300 (Germany) | KKW Kalkar, Postfach 1220, D-4192 Kalkar |
| PFBR (India) | Kalpakkam |
| MONJU (Japan) | 1, 2-chome, Shiraki, Tsuruga-city, Fukui-Prefecture |
| PFR (UK) | Dounreay, Caithness, Scotland KW14 7TZ |
| CRBRP (USA) | P.O. U, Oak Ridge Turnpike, Oak Ridge, TN 37830 |
| BN-350 (Kazakhstan) | Mangyshlak Power Plant, Aktau |
| BN-600 (Russian Federation) | Beloyarsk Power Plant, Zarechny; Sverdlovsk region |
| ALMR (USA) | not determined |
| KALIMER-150 (Republic of Korea) | not determined |
| SVBR-75/100 (Russian Federation) | not determined |
| BREST-OD-300 (Russian Federation) | not determined |

Commercial Size Reactors

| | |
|----------------------------------|----------------------------------------------------|
| Super-Phénix 1 (France) | CNPE de Creys Malville BP63, 38510 Morestel |
| Super-Phénix 2 (France) | project subsumed into EFR |
| SNR 2 (Germany) | project subsumed into EFR |
| DFBR (Japan) | to be determined |
| CDFR (UK) | Project subsumed into EFR |
| BN-1600 (Russian Federation) | Project subsumed into BN-1800 |
| BN-800 (Russian Federation) | neloyarsk Power Plant, Zarechny, Sverdlovsk Region |
| EFR | not determined |
| ALMR (USA) | not determined |
| SVBR-75/100 (Russian Federation) | not determined |
| BN-1800 (Russian Federation) | not determined |
| BREST-1200 (Russian Federation) | not determined |
| JSFR-1500 (Japan) | not determined |

1. GENERAL INFORMATION (cont.)

1.3. Administrative and responsible authority

Experimental Fast Reactors

| Plant | Administrative and responsible authority |
|-----------------------------|---------------------------------------------------|
| | Owner |
| Rapsodie (France) | Commissariat à l'Energie Atomique (CEA) |
| KNK-II (Germany) | Kernforschungszentrum Karlsruhe |
| FBTR (India) | Department of Atomic Energy, India |
| PEC (Italy) | ENEA |
| JOYO (Japan) | JNC |
| DFR (UK) | UK Atomic Energy Authority |
| BOR-60 (Russian Federation) | Agency for Atomic Energy |
| EBR-II (USA) | U.S. Department of Energy (USDOE) |
| Fermi (USA) | Power Reactor Development Co., Detroit Edison Co. |
| FFTF (USA) | U.S. Department of Energy |
| BR-10 (Russian Federation) | Agency for Atomic Energy |
| CEFR (China) | CIAE |

Demonstration or Prototype Fast Reactors

| | |
|-----------------------------------|----------------------------------------------------|
| Phénix (France) | CEA and Electricité de France (EdF) |
| SNR-300 (Germany) | Schnellbrüter - Kernkraftwerkgesellschaft (SBK) |
| PFBR (India) | Bharatiya Nabhikiya Vidyut Nigam Limited (BHAVINI) |
| MONJU (Japan) | JNC |
| PFR (UK) | UK Atomic Energy Authority |
| CRBRP (USA) | U.S. Department of Energy (USDOE) |
| BN-350 (Kazakhstan) | Atomic Energy Agency |
| BN-600 (Russian Federation) | Agency for Atomic Energy |
| ALMR (USA) | not determined |
| KALIMER-150 (Republic of Korea) | to be determined |
| SVBR-75/100 (Russian Federation) | Agency for Atomic Energy |
| BREST-OD-300 (Russian Federation) | Agency for Atomic Energy |

Commercial Size Reactors

| | |
|----------------------------------|-------------------------------|
| Super-Phénix 1 (France) | NERSA |
| Super-Phénix 2 (France) | Project subsumed into EFR |
| SNR 2 (Germany) | Project subsumed into EFR |
| DFBR (Japan) | not determined |
| CDFR (UK) | project subsumed into EFR |
| BN-1600 (Russian Federation) | project subsumed into BN-1800 |
| BN-800 (Russian Federation) | Ministry for Atomic Energy |
| EFR | to be determined |
| ALMR (USA) | to be determined |
| SVBR-75/100 (Russian Federation) | Agency for Atomic Energy |
| BN-1800 (Russian Federation) | Agency for Atomic Energy |
| BREST-1200 (Russian Federation) | to be determined |
| JSFR-1500 (Japan) | to be determined |

1. GENERAL INFORMATION (cont.)

1.3. Administrative and responsible authority

Experimental Fast Reactors

| | Administrative and responsible authority |
|-----------------------------|---------------------------------------------------|
| Plant | Operator |
| Rapsodie (France) | CEA |
| KNK-II (Germany) | Kernkraftwerk Betriebsgesellschaft |
| FBTR (India) | Department of Atomic Energy, India |
| PEC (Italy) | ENEA |
| JOYO (Japan) | JNC |
| DFR (UK) | UK Atomic Energy Authority |
| BOR-60 (Russian Federation) | Agency for Atomic Energy |
| EBR-II (USA) | Argonne National Laboratory |
| Fermi (USA) | Power Reactor Development Co., Detroit Edison Co. |
| FFTF (USA) | Westinghouse Hanford |
| BR-10 (Russian Federation) | Agency for Atomic Energy |
| CEFR (China) | CIAE |

Demonstration or Prototype Fast Reactors

| | |
|-----------------------------------|----------------------------|
| Phénix (France) | CEA + EdF |
| SNR-300 (Germany) | SBK |
| PFBR (India) | BHAVINI |
| MONJU (Japan) | JNC |
| PFR (UK) | UK Atomic Energy Authority |
| CRBRP (USA) | Tennessee Valley Authority |
| BN-350 (Kazakhstan) | Atomic Energy Agency |
| BN-600 (Russian Federation) | Agency for Atomic Energy |
| ALMR (USA) | not determined |
| KALIMER-150 (Republic of Korea) | to be determined |
| SVBR-75/100 (Russian Federation) | Agency for Atomic Energy |
| BREST-OD-300 (Russian Federation) | Agency for Atomic Energy |

Commercial Size Reactors

| | |
|----------------------------------|---------------------------|
| Super-Phénix 1 (France) | NERSA |
| Super-Phénix 2 (France) | project subsumed into EFR |
| SNR 2 (Germany) | project subsumed into EFR |
| DFBR (Japan) | not determined |
| CDFR (UK) | project subsumed into EFR |
| BN-1600 (Russian Federation) | Agency for Atomic Energy |
| BN-800 (Russian Federation) | Agency for Atomic Energy |
| EFR | not determined |
| ALMR (USA) | not determined |
| SVBR-75/100 (Russian Federation) | Agency for Atomic Energy |
| BN-1800 (Russian Federation) | Agency for Atomic Energy |
| BREST-1200 (Russian Federation) | not determined |
| JSFR-1500 (Japan) | not determined |

1. GENERAL INFORMATION (cont.)

1.3. Administrative and responsible authority

Experimental Fast Reactors

| | Administrative and responsible authority |
|-----------------------------|--------------------------------------------------|
| Plant | Designer |
| Rapsodie (France) | Groupement Atomique Alsacienne Atlantique (GAAA) |
| KNK-II (Germany) | Interatom |
| FBTR (India) | Department of Atomic Energy |
| PEC (Italy) | ANSALDO/NIRA and ENEA |
| JOYO (Japan) | JNC/Toshiba/Hitachi/Mitsubishi/Fuji |
| DFR (UK) | UK Atomic Energy Authority |
| BOR-60 (Russian Federation) | Hydropress Design Bureau, Podolsk |
| EBR-II (USA) | Argonne National Laboratory |
| Fermi (USA) | Atomic Power Development Associates |
| FFTF (USA) | Westinghouse Advanced Reactors Division |
| BR-10 (Russian Federation) | Ministry for Atomic Energy |
| CEFR (China) | CIAE, Beijing Institute of Nuclear Energy (BINE) |

Demonstration or Prototype Fast Reactors

| | |
|-----------------------------------|-------------------------------------------------------|
| Phénix (France) | CEA + EdF + GAAA |
| SNR-300 (Germany) | Internationale Natrium - Brutreaktor - Bau GmbH (INB) |
| PFBR (India) | Indira Gandhi Centre for Atomic Research |
| MONJU (Japan) | PNC/Mitsubishi/Hitachi/Toshiba/Fuji |
| PFR (UK) | NNC (National Nuclear Corporation) |
| CRBRP (USA) | Westinghouse Electric Corporation (lead) |
| BN-350 (Kazakhstan) | Machine Building Design Bureau, Nizhny Novgorod |
| BN-600 (Russian Federation) | Machine Building Design Bureau, Nizhny Novgorod |
| ALMR(USA) | General Electric Company (lead) |
| KALIMER-150 (Russian Federation) | to be determined |
| SVBR-75/100 (Russian Federation) | EDO GIDROPRESS |
| BREST-OD-300 (Russian Federation) | RDIPE, Moscow |

Commercial Size Reactors

| | |
|----------------------------------|-------------------------------------------------|
| Super-Phénix 1 (France) | Novatome + EdF |
| Super-Phénix 2 (France) | Novatome + EdF |
| SNR 2 (Germany) | Interatom, Novatome, Ansaldo |
| DFBR (Japan) | The Japan Atomic Power Company |
| CDFR (UK) | National Nuclear Corporation |
| BN-1600 (Russian Federation) | Machine Building Design Bureau, Nizhny Novgorod |
| BN-800 (Russian Federation) | Machine Building Design Bureau, Nizhny Novgorod |
| EFR | Novatome, Siemens, NNC, EFR Associates |
| ALMR (USA) | General Electric Company (lead) |
| SVBR-75/100 (Russian Federation) | EDO GIDROPRESS |
| BN-1800 (Russian Federation) | Machine Building Design Bureau, Nizhny Novgorod |
| BREST-1200 (Russian Federation) | RDIPE, Moscow |

1. GENERAL INFORMATION (cont.)

1.3. Administrative and responsible authority

Experimental Fast Reactors

| | Administrative and responsible authority |
|-----------------------------|----------------------------------------------------------|
| Plant | Manufacturer or chief contractor |
| Rapsodie (France) | GAAA |
| KNK-II (Germany) | Interatom |
| FBTR (India) | Department of Atomic Energy, India |
| PEC (Italy) | ANSALDO/NIRA |
| JOYO (Japan) | Toshiba/Hitachi/Mitsubishi/Fuji |
| DFR (UK) | UK Atomic Energy Authority |
| BOR-60 (Russian Federation) | Podol'sk Manufacturing Plant |
| EBR-II (USA) | H.K. Ferguson Co; constructor-Diversified Builders, Inc. |
| Fermi (USA) | United Engineers and Constructors |
| FFTF (USA) | Bechtel Power Corporation |
| BR-10 (Russian Federation) | Ministry for Atomic Energy |
| CEFR (China) | First Heavy Machine Building Company |

Demonstration or Prototype Fast Reactors

| | |
|-----------------------------------|-------------------------------------------|
| Phénix (France) | CEA + EdF + GAAA |
| SNR-300 (Germany) | Interatom |
| PFBR (India) | BHAVINI |
| MONJU (Japan) | Mitsubishi/Hitachi/Toshiba/Fuji |
| PFR (UK) | TNPG/NNC (National Nuclear Corporation) |
| CRBRP (USA) | Stone and Webster Engineering Corporation |
| BN-350 (Kazakhstan) | Podol'sk Manufacturing Plant |
| BN-600 (Russian Federation) | Ministry of Energetics and MINATOM (USSR) |
| ALMR (USA) | not determined |
| KALIMER-150 (Republic of Korea) | to be determined |
| SVBR-75/100 (Russian Federation) | to be determined |
| BREST-OD-300 (Russian Federation) | Agency for Atomic Energy |

Commercial Size Reactors

| | |
|----------------------------------|------------------------------------------------------|
| Super-Phénix 1 (France) | Novatome + NIRA |
| Super-Phénix 2 (France) | not determined |
| SNR 2 (Germany) | not determined |
| DFBR (Japan) | not determined |
| CDFR (UK) | National Nuclear Corporation |
| BN-1600 (Russian Federation) | not determined |
| BN-800 (Russian Federation) | Agency for Atomic Energy |
| EFR | not determined |
| ALMR (USA) | not determined |
| SVBR-75/100 (Russian Federation) | not determined |
| BN-1800 (Russian Federation) | not determined |
| BREST-1200 (Russian Federation) | not determined |
| JSFR-1500 (Japan) | JNC/JAPC/ Mitsubishi (Hitachi/Toshiba/Fuji/Kawasaki) |

1. GENERAL INFORMATION (cont.)

1.3. Administrative and responsible authority

Experimental Fast Reactors

| | Administrative and responsible authority |
|-----------------------------|--------------------------------------------------------|
| Plant | Licensing authority |
| Rapsodie (France) | CEA |
| KNK-II (Germany) | Wirtschaftsministerium Baden - Württemberg |
| FBTR (India) | Atomic Energy Regulatory Board |
| PEC (Italy) | ENEA Nuclear Safety Direction |
| JOYO (Japan) | Ministry of Educ., Cult., Sport, Sc. and Techn. (MEXT) |
| DFR (UK) | UK Atomic Energy Authority |
| BOR-60 (Russian Federation) | Gosatomnadzor |
| EBR-II (USA) | US Atomic Energy Commission (now USDOE) |
| Fermi (USA) | US Atomic Energy Commission (now USDOE) |
| FFTF (USA) | U.S. Department of Energy |
| BR-10 (Russian Federation) | Gosatomnadzor |
| CEFR (China) | China National Nuclear Safety Administration |

Demonstration or Prototype Fast Reactors

| | |
|-----------------------------------|-------------------------------------------------------|
| Phénix (France) | French Administration |
| SNR-300 (Germany) | Wirtschaftsministerium Nordrhein - Westfalen |
| PFBR (India) | Atomic Energy Regulatory Board |
| MONJU (Japan) | STA, and Ministry of International Trade and Industry |
| PFR (UK) | UK Nuclear Installation Inspectorate |
| CRBRP (USA) | U.S. Nuclear Regulatory Commission |
| BN-350 (Kazakhstan) | Atomic Energy Agency |
| BN-600 (Russian Federation) | Gosatomnadzor |
| ALMR (USA) | U.S. Nuclear Regulatory Commission |
| KALIMER-150 (Republic of Korea) | Korea Ministry Science and Technology |
| SVBR-75/100 (Russian Federation) | Gosatomnadzor |
| BREST-OD-300 (Russian Federation) | Gosatomnadzor |

Commercial Size Reactors

| | |
|----------------------------------|----------------------------------------------|
| Super-Phénix 1 (France) | French Administration |
| Super-Phénix 2 (France) | French Administration |
| SNR 2 (Germany) | Wirtschaftsministerium Nordrhein - Westfalen |
| DFBR (Japan) | not determined |
| CDFR (UK) | Nuclear Installations Inspectorate |
| BN-1600 (Russian Federation) | Gosatomnadzor |
| BN-800 (Russian Federation) | Gosatomnadzor |
| EFR | not determined |
| ALMR (USA) | U.S. Nuclear Regulatory Commission |
| SVBR-75/100 (Russian Federation) | Gosatomnadzor |
| BN-1800 (Russian Federation) | Gosatomnadzor |
| BREST-1200 (Russian Federation) | Gosatomnadzor |
| JSFR-1500 (Japan) | to be determined |

1. GENERAL INFORMATION (cont.)

1.4. Dates of major events

Experimental Fast Reactors

| Plant | Dates of major events | | | | |
|-----------------------------|-----------------------|-------------------|------------------------------|----------------------------|----------------|
| | Start of construction | First criticality | First electricity generation | First full power operation | Final shutdown |
| Rapsodie (France) | 1962 | Jan. 1967 | | Mar. 1967 | Apr. 1983 |
| KNK-II (Germany) | | Oct. 1972 | Apr. 1978 | 1978 | Oct. 1991 |
| FBTR (India) | 1972 | Oct. 1985 | 1994 | 1996 | |
| PEC (Italy) | Jan. 1974 | project cancelled | | | |
| JOYO (Japan) | Feb. 1970 | Jul. 2003* | | Oct. 2003* | |
| DFR (UK) | 1954 | 1959 | 1962 | 1963 | 1977 |
| BOR-60 (Russian Federation) | 1964 | 1968 | 1969 | 1970 | |
| EBR-II (USA) | June 1958 | ** | Aug. 1964 | 1965 | 1998 |
| Fermi (USA) | Aug. 1956 | Aug. 1963 | Aug. 1966 | Oct. 1970 | 1975 |
| FFTF (USA) | June 1970 | Feb. 1980 | | Dec. 1980 | 1996 |
| BR-10 (Russian Federation) | 1956 | 1958 | | 1959*** | Dec. 2003 |
| CEFR (China) | May 2000 | To be determined | | | |

Demonstration or Prototype Fast Reactors

| | | | | | |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------|------------------|-----------|-----------|----------------|
| Phénix (France) | 1968 | 1973 | 1973 | Mar. 1974 | **** |
| SNR-300 (Germ.) | 1973, finished in 1985; in 1991 the Government announced that SNR-300 should not proceed to commence operation | | | | |
| PFBR (India) | 2003 | To be determined | | | |
| MONJU (Japan) | 1985 | 1994 | 1995 | | |
| PFR (UK) | 1966 | 1974 | 1975 | 1977 | Mar. 1994 |
| CRBRP (USA) | project cancelled | | | | |
| BN-350 (Kazakhstan) | 1964 | Nov. 1972 | 1973 | mid 1973 | Apr. 1999 |
| BN-600 (Russian Federation) | 1967 | Feb. 1980 | Apr. 1980 | Dec. 1981 | not determined |
| ALMR (USA) | not determined | | | | |
| KALIMER-150 (Republic of Korea) | not determined | | | | |
| SVBR-75/100 (Russian Federation) | not determined | | | | |
| BREST-OD-300 (Russian Federation) | not determined | | | | |

* MK-III; MK-I: Apr. 1977 and July 1978; Nov. 1982 - MK-II

** dry criticality: Sept. 30, 1961, Wet criticality: Nov. 11, 1963

*** at 5 MW(th) as BR-5

**** since 1993 as an irradiation facility in support of the CEA R&D programme on long-lived radioactive waste management

1. GENERAL INFORMATION (cont.)

1.4. Dates of major events

Commercial Size Reactors

| Plant | Dates of major events | | | | |
|----------------------------------|-------------------------------|-------------------|------------------------------|----------------------------|----------------|
| | Start of construction | First criticality | First electricity generation | First full power operation | Final shutdown |
| Super-Phénix 1 (France) | 1976 | 1985 | 1986 | 1986 | 1998 |
| Super-Phénix 2 (France) | project subsumed into EFR | | | | |
| SNR 2 (Germany) | project subsumed into EFR | | | | |
| DFBR (Japan) | not determined | | | | |
| CDFR (UK) | project subsumed into EFR | | | | |
| BN-1600 (Russian Federation) | project subsumed into BN-1800 | | | | |
| BN-800 (Russian Federation) | 2002* | 2012 | to be determined | | |
| EFR | not determined | | | | |
| ALMR (USA) | not determined | | | | |
| SVBR-75/100 (Russian Federation) | not determined | | | | |
| BN-1800 (Russian Federation) | not determined | | | | |
| BREST-1200 (Russian Federation) | not determined | | | | |
| JSFR-1500 (Japan) | not determined | | | | |

* In 1997 the license for renewal of the BN-800 construction was issued

1. GENERAL INFORMATION (cont.)

1.5. Nominal full power

1.6. Coolant

Experimental Fast Reactors

| Plant | Nominal full power | | Coolant | |
|-----------------------------|--------------------|-----------------------|------------------|-------------------|
| | Thermal (MWth) | Electric, Gross (MWe) | Primary circuit | Secondary circuit |
| Rapsodie (France) | 40 | 0 | sodium | sodium |
| KNK-II (Germany) | 58 | 20 | sodium | sodium |
| FBTR (India) | 40 | 13 | sodium | sodium |
| PEC (Italy) | 120 | 0 | sodium | sodium |
| JOYO (Japan) | 140* | 0 | sodium | sodium |
| DFR (UK) | 60 | 15 | sodium-potassium | |
| BOR-60 (Russian Federation) | 55 | 12 | sodium | sodium |
| EBR-II (USA) | 62.5 | 20 | sodium | sodium |
| Fermi (USA) | 200 | 61 | sodium | sodium |
| FFTF (USA) | 400 | 0 | sodium | sodium |
| BR-10 (Russian Federation) | 8 | 0 | sodium | Sodium |
| CEFR (China) | 65 | 23.4 | sodium | sodium |

Demonstration or Prototype Fast Reactors

| | | | | |
|-----------------------------------|-------|--------|--------------|--------|
| Phénix (France) | 563** | 255 | sodium | sodium |
| SNR-300 (Germany) | 762 | 327 | sodium | sodium |
| PFBR (India) | 1250 | 500 | sodium | sodium |
| MONJU (Japan) | 714 | 280 | sodium | sodium |
| PFR (UK) | 650 | 250 | sodium | sodium |
| CRBRP (USA) | 975 | 380 | sodium | sodium |
| BN-350 (Kazakhstan) | 750 | 130*** | sodium | sodium |
| BN-600 (Russian Federation) | 1470 | 600 | sodium | sodium |
| ALMR (USA) | 840 | 303 | sodium | sodium |
| KALIMER-150 (Republic of Korea) | 392.2 | 162.2 | sodium | sodium |
| SVBR-75/100 (Russian Federation) | 265 | 80 | lead-bismuth | none |
| BREST-OD-300 (Russian Federation) | 700 | 300 | lead | none |

* MK-III; 50 and 75 MWth for MK-I.; 100 MWth for MK-II

** since 1993, the reactor power has been limited to 350 MW(th), 145 MW(e) on two secondary loop operations: the role of Phénix as an irradiation facility has been emphasized, particularly in support of the CEA R&D programme in the context of line 1 of the 30 December 1991, law on long-lived radioactive waste management

*** 150 MWth used for desalination

1. GENERAL INFORMATION (cont.)

1.5. Nominal full power

1.6. Coolant

Commercial Size Reactors

| Plant | Nominal full power | | Coolant | |
|----------------------------------|--------------------|-----------------------|-----------------|-------------------|
| | Thermal (MWth) | Electric, Gross (MWe) | Primary circuit | Secondary circuit |
| Super-Phénix 1 (France) | 2990 | 1242 | sodium | sodium |
| Super-Phenix 2 (France) | 3600 | 1440 | sodium | sodium |
| SNR 2 (Germany) | 3420 | 1497 | sodium | sodium |
| DFBR (Japan) | 1600 | 660 | sodium | sodium |
| CDFR (UK) | 3800 | 1500 | sodium | sodium |
| BN-1600 (Russian Federation) | 4200 | 1600 | sodium | sodium |
| BN-800 (Russian Federation) | 2100 | 870 | sodium | sodium |
| EFR | 3600 | 1580 | sodium | sodium |
| ALMR (USA) | 840* | 303* | sodium | Sodium |
| SVBR-75/100 (Russian Federation) | 280* | 101.6* | lead-bismuth | none |
| BN-1800 (Russian Federation) | 4000 | 1800 | sodium | sodium |
| BREST-1200 (Russian Federation) | 2800 | 1200 | lead | none |
| JSFR-1500 (Japan) | 3530 | 1500 | sodium | sodium |

* one module

1. GENERAL INFORMATION (cont.)

1.7. Coolant temperature

1.8. Steam conditions

Experimental Fast Reactors

| Plant | Coolant temperature (°C) | | Steam conditions (at turbine inlet, full power) | |
|-----------------------------|--------------------------------------------------------------|---------------------------------------------------------------------------------|----------------------------------------------------|----------------|
| | Mixed coolant temperature in primary circuit at inlet to IHX | Mixed coolant temperature in secondary circuit at inlet to steam generator (SG) | Temperature (°C) | Pressure (MPa) |
| Rapsodie (France) | 510 | 498 | no SG, dump heat exchanger | |
| KNK-II (Germany) | 525 | 504 | 485 | 7.85 |
| FBTR (India) | 544 | 525 | 490 | 16.7 |
| PEC (Italy) | 550 | 495 | no SG, dump heat exchanger | |
| JOYO (Japan) | 500* | 470** | no SG, dump heat exchanger | |
| DFR (UK) | 350 | 330 | 270 | 1 |
| BOR-60 (Russian Federation) | 545 | 480 | 430 | 8 |
| EBR-II (USA) | 473 | 467 | 433 | 8.79 |
| Fermi (USA) | 427 | 408 | 407 | 4.1 |
| FFTF (USA) | 565 | 538 | no SG, dump heat exchanger | |
| BR-10 (Russian Federation) | 470 | 380 | no SG, dump heat exchanger | |
| CEFR (China) | 516 | 495 | 470 | 13.0 |

Demonstration or Prototype Fast Reactors

| | | | | |
|-----------------------------------|---------|----------------------|-----|------|
| Phénix (France) | 560*** | 550 | 510 | 16.8 |
| SNR-300 (Germany) | 546 | 520 | 495 | 16.7 |
| PFBR (India) | 544 | 525 | 490 | 16.7 |
| MONJU (Japan) | 529 | 505 | 483 | 12.5 |
| PFR (UK) | 550 | 540 | 513 | 12.8 |
| CRBRP (USA) | 535 | 494 | 482 | 9.81 |
| BN-350 (Kazakhstan) | 430 | 415 | 410 | 4.5 |
| BN-600 (Russian Federation) | 550 | 520 | 500 | 13.2 |
| ALMR (USA) | 499 | 477 | 429 | 15.2 |
| KALIMER-150 (Republic of Korea) | 530 | 511 | 483 | 15.5 |
| SVBR-75/100 (Russian Federation) | 435**** | no secondary circuit | 250 | 4.7 |
| BREST-OD-300 (Russian Federation) | 540**** | no secondary circuit | 525 | 27 |

* MK-III; (470 in MK-I, 75 MWth)

** 450 in MK-I, 75 MWth

*** the NPP Phénix has been operated for ~100000 hours at a temperature of 560°C of the reactor hot structures with thermal efficiency of 45.3%, that is the highest value in the nuclear power practice

**** mixed primary coolant temperature at inlet to Steam Generator (SG)

1. GENERAL INFORMATION (cont.)

- 1.7. Coolant temperature
- 1.8. Steam conditions

Commercial Size Reactors

| Plant | Coolant temperature (°C) | | Steam conditions (at turbine inlet, full power) | |
|----------------------------------|--------------------------------------------------------------|---------------------------------------------------------------------------------|----------------------------------------------------|----------------|
| | Mixed coolant temperature in primary circuit at inlet to IHX | Mixed coolant temperature in secondary circuit at inlet to steam generator (SG) | Temperature (°C) | Pressure (MPa) |
| Super-Phénix 1 (France) | 542 | 525 | 487 | 17.7 |
| Super-Phénix 2 (France) | 544 | 525 | 495 | 17.7 |
| SNR 2 (Germany) | 540 | 510 | 495 | 17.2 |
| DFBR (Japan) | 550 | 520 | 495 | 16.6 |
| CDFR (UK) | 540 | 510 | 490 | 17.4 |
| BN-1600 (Russian Federation) | 550 | 515 | 495 | 13.7 |
| BN-800 (Russian Federation) | 544 | 505 | 490 | 13.7 |
| EFR | 545 | 525 | 490 | 18.5 |
| ALMR (USA) | 499 | 477 | 429 | 15.2 |
| SVBR-75/100 (Russian Federation) | 482*** | no secondary circuit | 307 | 9.5 |
| BN-1800 (Russian Federation) | 575 | 540 | 525 | 26.0 |
| BREST-1200 (Russian Federation) | 540*** | no secondary circuit | 525 | 27.0 |
| JSFR-1500 (Japan) | 550 | 520 | 495 | 18.0 |

*** mixed primary coolant temperature at inlet to SG

1. GENERAL INFORMATION (cont.)

1.9. Primary circuit configuration

1.10. Drive fuel charge

Experimental Fast Reactors

| Plant | Primary circuit configuration | Drive fuel charge |
|-----------------------------|-------------------------------|-----------------------------------|
| Rapsodie (France) | loop | PuO ₂ -UO ₂ |
| KNK-II (Germany) | loop | PuO ₂ -UO ₂ |
| FBTR (India) | loop | PuC-UC |
| PEC (Italy) | loop | PuO ₂ -UO ₂ |
| JOYO (Japan) | loop | PuO ₂ -UO ₂ |
| DFR (UK) | loop | U-% Mo metal alloy |
| BOR-60 (Russian Federation) | loop | PuO ₂ -UO ₂ |
| EBR-II (USA) | pool | U-Zr metal alloys* |
| Fermi (USA) | loop | U metal with 10 wt % Mo |
| FFTF (USA) | loop | PuO ₂ -UO ₂ |
| BR-10 (Russian Federation) | loop | UN (early PuO ₂ , UC) |
| CEFR (China) | pool | UO ₂ |

Demonstration or Prototype Fast Reactors

| | | |
|-----------------------------------|------|-----------------------------------------------------------------------|
| Phénix (France) | pool | PuO ₂ -UO ₂ |
| SNR-300 (Germany) | loop | PuO ₂ -UO ₂ |
| PFBR (India) | pool | PuO ₂ -UO ₂ |
| MONJU (Japan) | loop | PuO ₂ -UO ₂ |
| PFR (UK) | pool | PuO ₂ -UO ₂ |
| CRBRP (USA) | loop | PuO ₂ -UO ₂ |
| BN-350 (Kazakhstan) | loop | UO ₂ |
| BN-600 (Russian Federation) | pool | UO ₂ first, Partly PuO ₂ -UO ₂ later |
| ALMR (USA) | pool | U-Pu-Zr Metal (PuO ₂ -UO ₂ backup) |
| KALIMER-150 (Republic of Korea) | pool | U-TRU-Zr |
| SVBR-75/100 (Russian Federation) | pool | UO ₂ first, PuO ₂ -UN later |
| BREST-OD-300 (Russian Federation) | pool | PuN-UN-MA** |

* including some recycled fission products from the pyrometallurgical fuel cycle

** minor actinides

1. GENERAL INFORMATION (cont.)

1.9. Primary circuit configuration

1.10. Drive fuel charge

Commercial Size Reactors

| Plant | Primary circuit configuration | Drive fuel charge |
|----------------------------------|-------------------------------|----------------------------------------------------------|
| Super-Phénix 1 (France) | pool | PuO ₂ -UO ₂ |
| Super-Phénix 2 (France) | pool | PuO ₂ -UO ₂ |
| SNR 2 (Germany) | pool | PuO ₂ -UO ₂ |
| DFBR (Japan) | loop | PuO ₂ -UO ₂ |
| CDFR (UK) | pool | PuO ₂ -UO ₂ |
| BN-1600 (Russian Federation) | pool | PuO ₂ -UO ₂ |
| BN-800 (Russian Federation) | pool | PuO ₂ -UO ₂ |
| EFR | pool | PuO ₂ -UO ₂ |
| ALMR (USA) | pool | U-Pu-Zr metal (PuO ₂ -UO ₂ backup) |
| SVBR-75/100 (Russian Federation) | pool | UO ₂ first; PuO ₂ , UN later |
| BN-1800 (Russian Federation) | pool | PuN-UN |
| BREST-1200 (Russian Federation) | pool | PuN-UN-MA* |
| JSFR-1500 (Japan) | loop | PuO ₂ -UO ₂ |

* minor actinides