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# NUCLEAR POWER

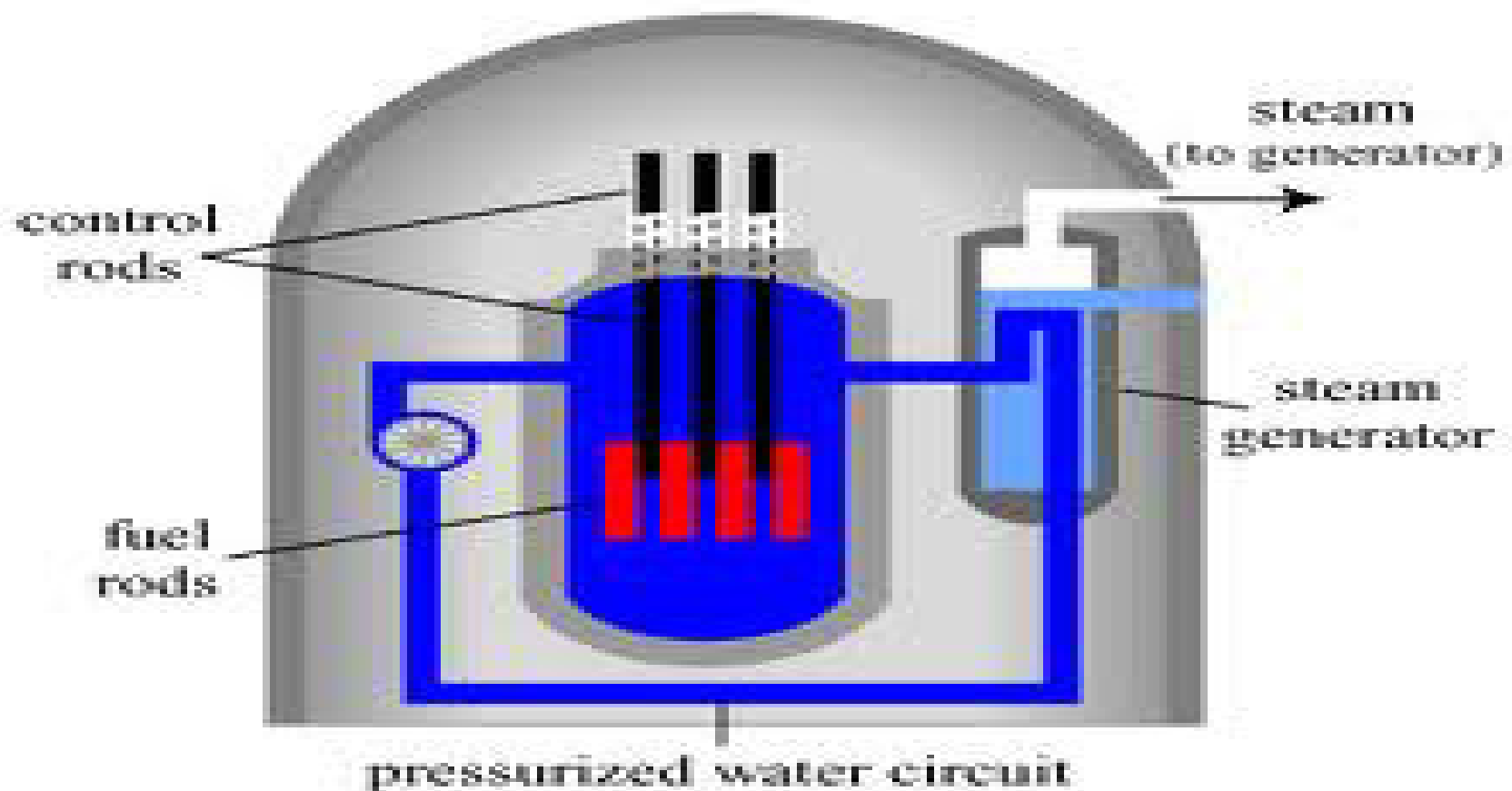
**Energy** from splitting Uranium atoms

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# How it works

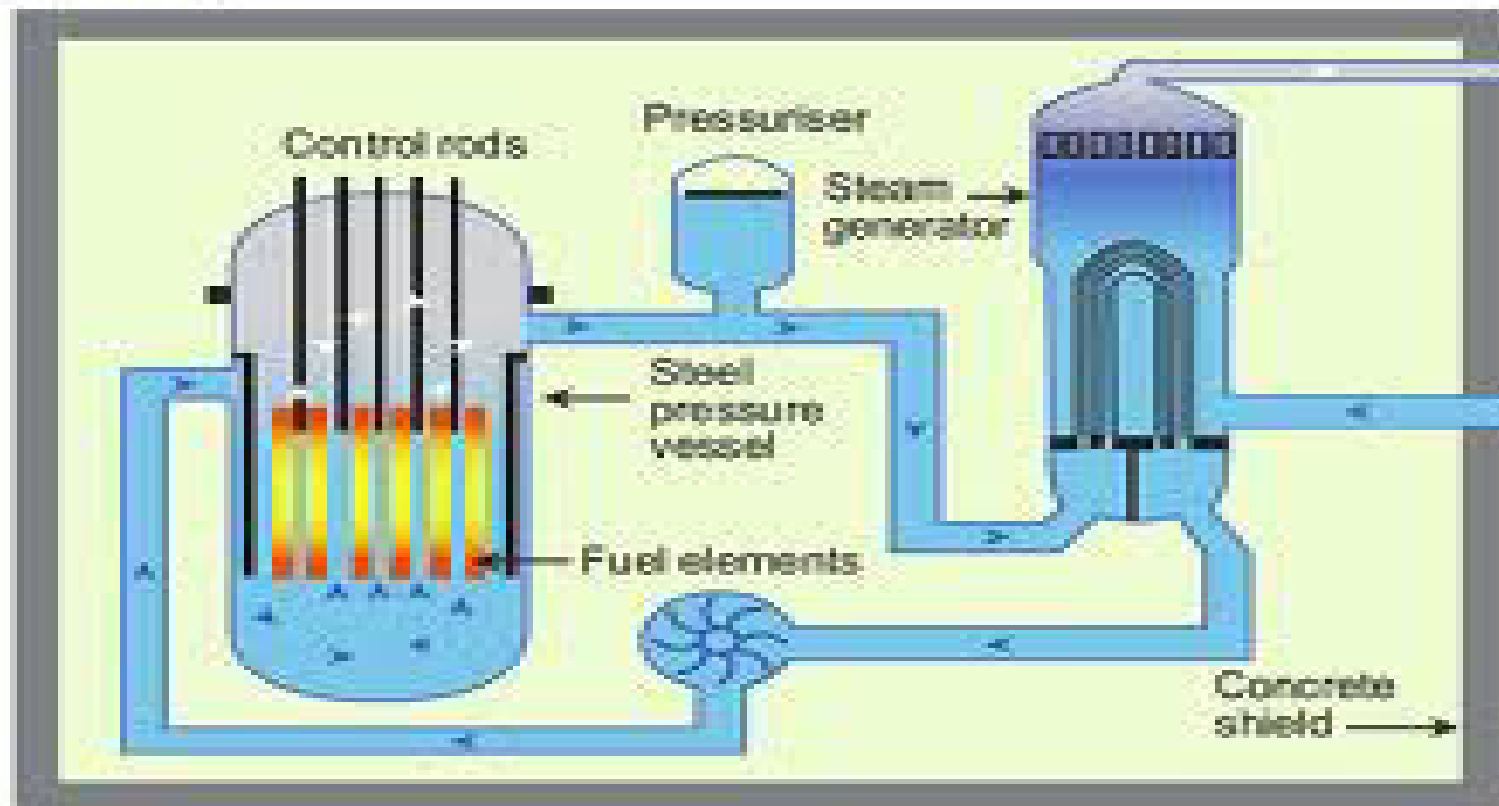
In Nuclear power stations

a "chain reaction" inside a nuclear reactor makes the heat

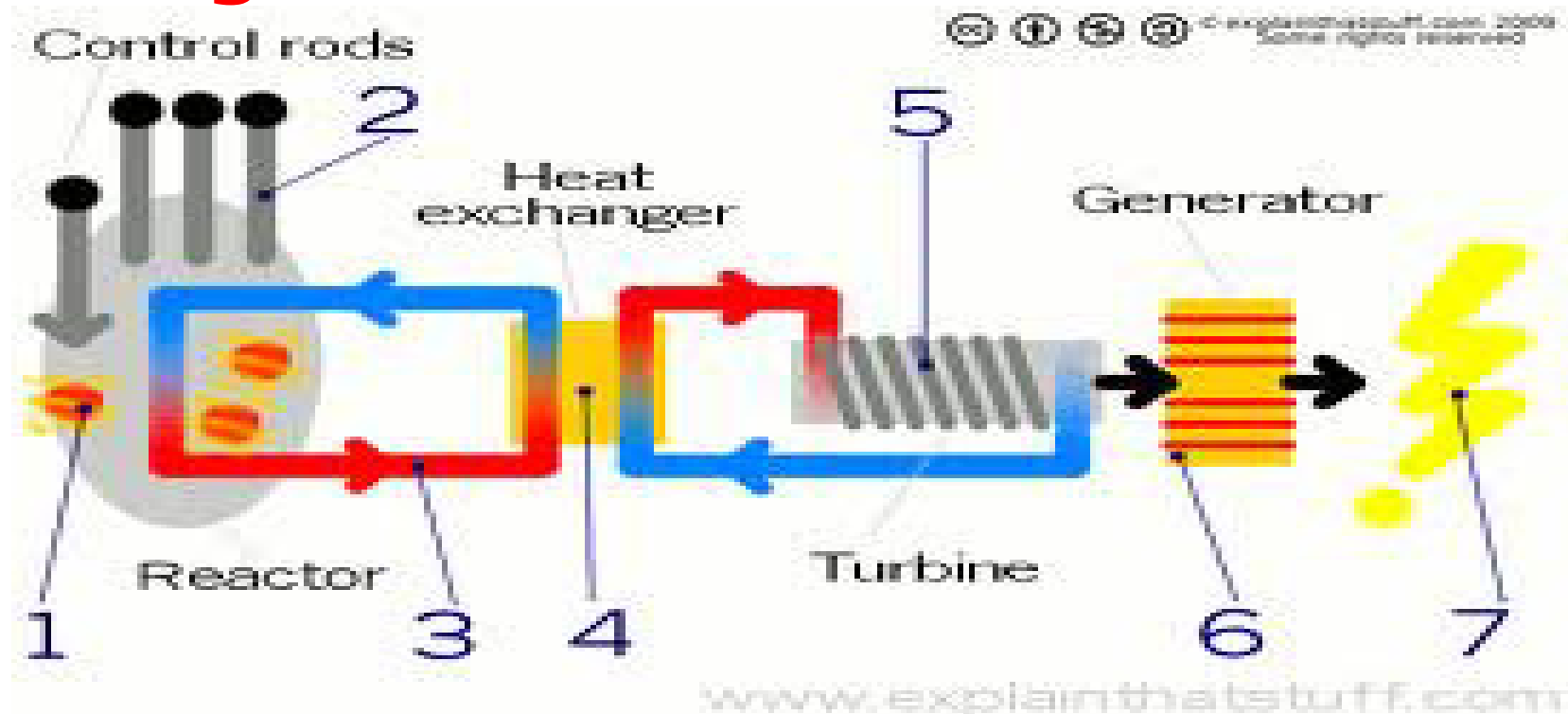


**The reactor uses Uranium rods as fuel, and the heat is generated by nuclear fission: neutrons smash into the nucleus of the uranium atoms, which split roughly in half and release energy in the form of heat.**

A typical Pressurised Water Reactor (PWR)



- Carbon dioxide gas or water is pumped through the reactor to take the heat away, this then heats water to make steam.
- The steam drives turbines which drive generators.

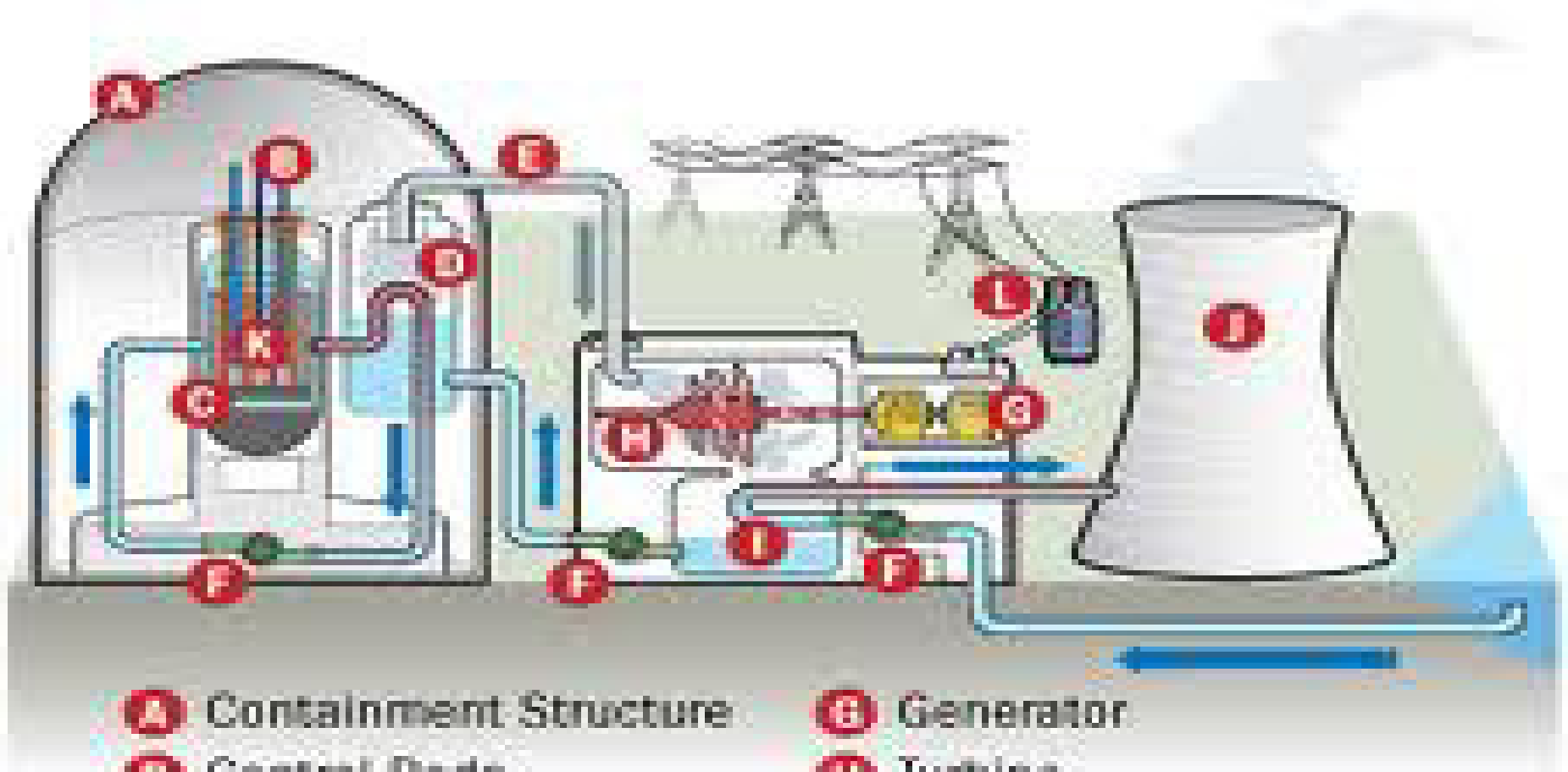


- **The reactor is controlled with "control rods", made of boron, which absorb neutrons.**
- **When the rods are lowered into the reactor, they absorb more neutrons and the fission process slows down.**
- **To generate more power, the rods are raised and more neutrons can crash into uranium atoms.**



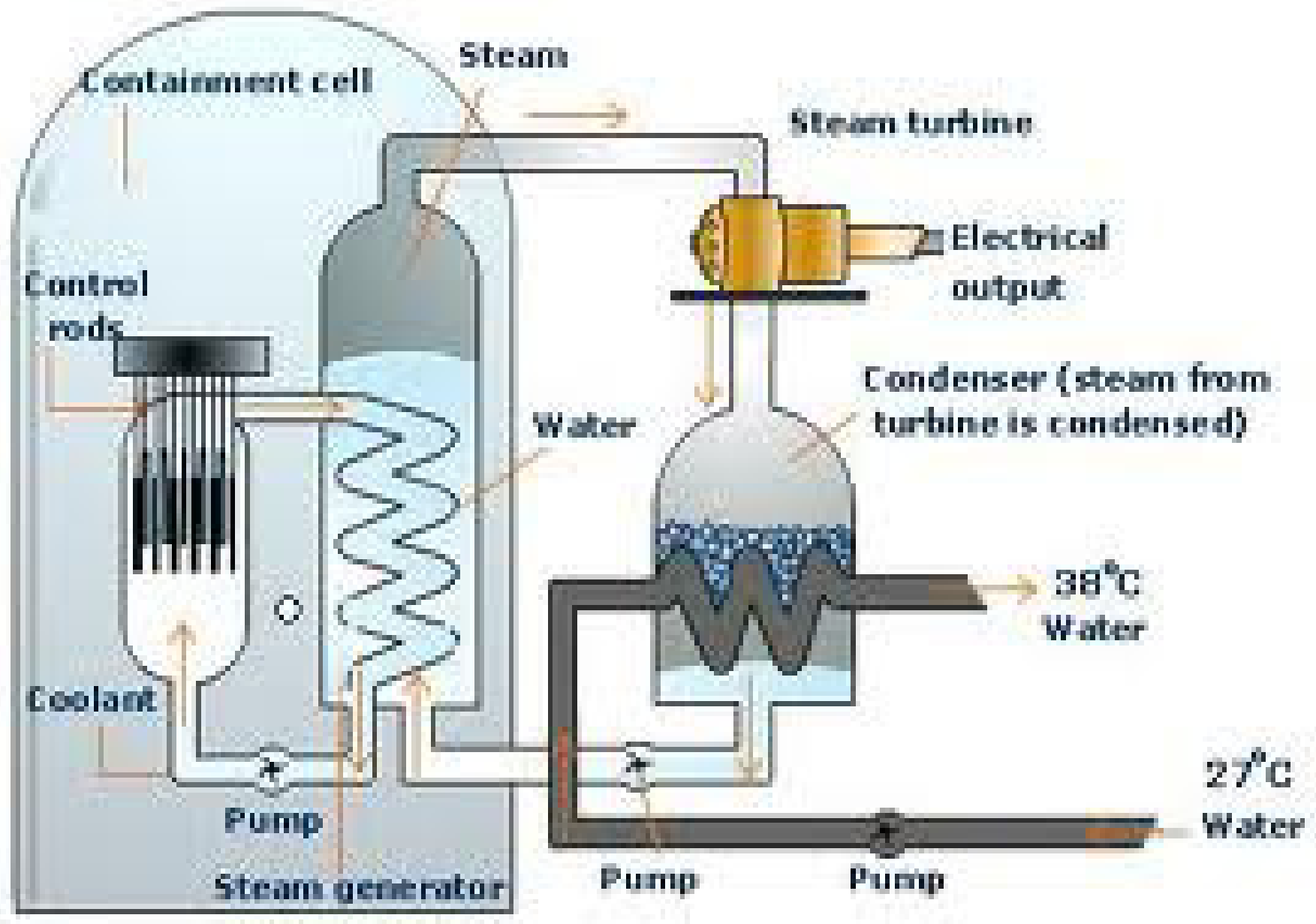
# Inside a Nuclear Power Plant

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- A** Containment Structure
- B** Control Rods
- C** Reactor
- D** Steam Generator
- E** Steam Line
- F** Pump

- G** Generator
- H** Turbine
- I** Cooling Water Condenser
- J** Cooling Tower
- K** Fuel Rods
- L** Transformer



## In Britain

**nuclear power stations** are often built on the coast, and use sea water for cooling the steam ready to be pumped round again. This means that they don't have the huge "cooling towers".







- **Disadvantages**

- **Radioactivity is very, very dangerous.**  
**It must be kept safe from earthquakes, flooding, terrorists and everything else. This is difficult.**

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- Nuclear power is reliable, but a lot of money has to be spent on safety - if it **does** go wrong, a nuclear accident can be a major disaster.



**The real 'generation gap.'**

THE END

