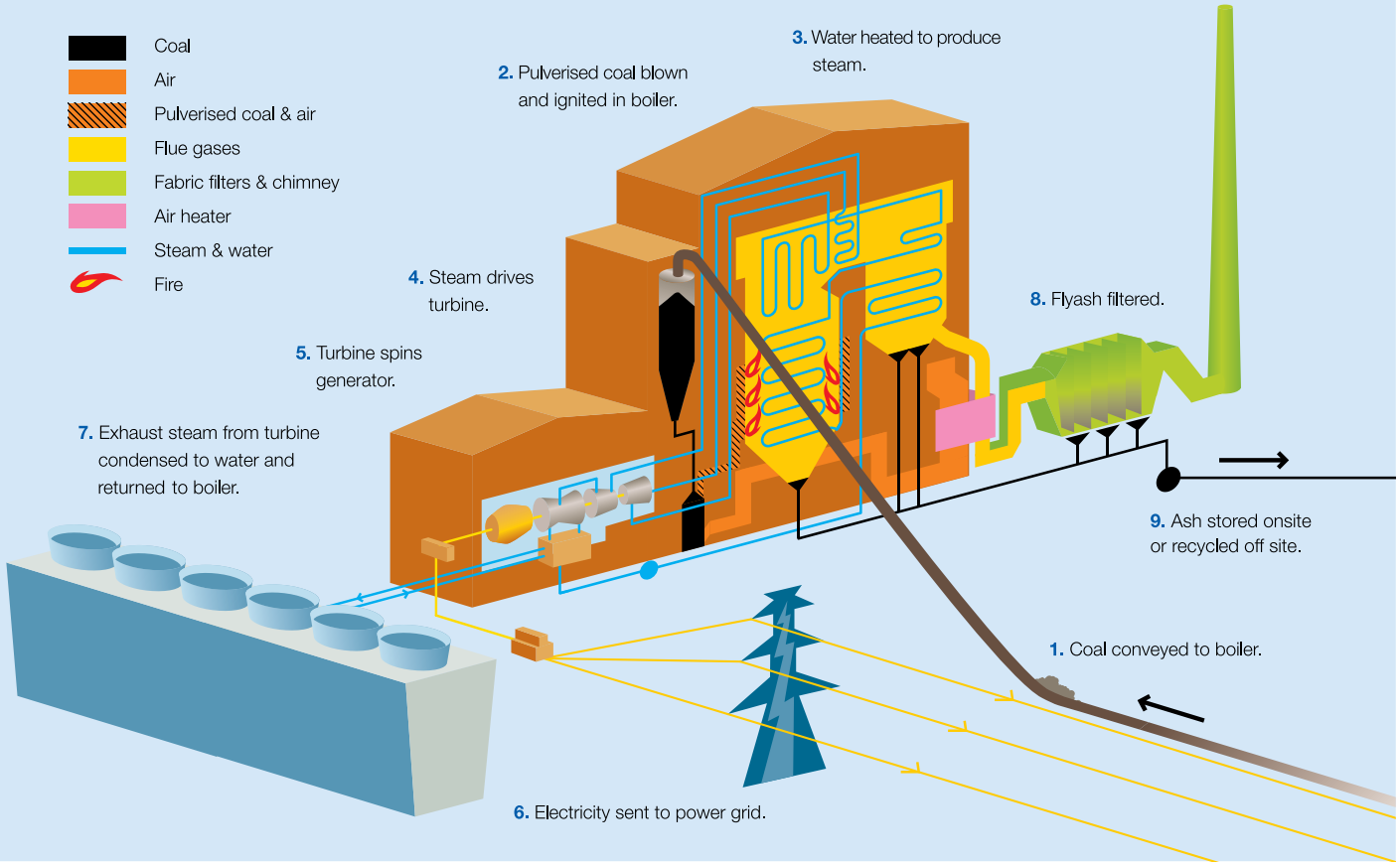
Electricity generation at Callide Power Station

The electricity generation process

Electricity is generated at Callide C Power Station using the following process:

1. Coal from the stockpile is fed to the power station.
2. The coal is ground to a fine powder and mixed with hot air so it can be blown into the burners of the boiler and ignited.
3. The boiler is a large box with walls containing many thin steel tubes filled with water that is pumped under high pressure. The fire in the boiler heats the water, converting it to steam as it rises though the tubes to the top of the boiler.
4. The steam is further heated to very high temperatures before being piped to the turbine. The turbine is made up of many blades and acts like a windmill, with the high pressure steam driving the turbine blades.
5. A generator is attached to the turbine shaft. A powerful electromagnet is mounted on the generator shaft and when it rotates produces electricity in the surrounding generator windings.
6. Electricity is transported to customers via high voltage transmission lines.
7. Steam from the turbine is condensed into water, using water from the cooling tower, before returning to the boiler as part of a continuous cycle. Callide C uses cooling towers like the one in the graphic and Callide B has a natural draft cooling tower.
8. The combustion of coal in the boiler produces ash. The exhaust gases carry the ash to a high efficiency filtration system, which removes ash from the flue gas before it goes up the chimney.
9. Ash is stored onsite or recycled offsite.



Technical Information

General

Permanent Workforce	260
Site Capacity	1,544 MW
Fuel	Black coal, conveyed from the adjacent Callide Coalfields
Quantity of coal burnt per year	5.8 million tonnes
Ash recycled per year	~15%

Generator Information

	Callide B	Callide C
General		
Commissioned	1988	2001, C4 recommissioned 2024
Capacity	700 MW	844 MW
Units	2 x 350 MW (B1, B2)	1 x 424 MW (C3), 1 x 420 MW (C4)
Transmission	275kv	275kv
Turbine		
Type	Steam	Steam
Manufacturer	Hitachi	GE (C3), Toshiba (C4)

	Callide B	Callide C
Boiler		
Manufacturer	Babcock Hitachi	IHI
Height	42m	42m
Furnace operating temperature	1,400ºC	1,400ºC
Steam pressure	17,700 kPa	25,100 kPa
Main steam temperature	539ºC	566ºC
Chimneys		
Height	210m	230m
Flue Gas	135ºC	135ºC

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