

Status of "clean coal" technologies in Japan

In order of most to least adopted

Technology	Appeared in policies	Status
Efficient coal [ultra-supercritical (USC), advanced USC]	2003-2021	In wide use in Japan. Currently represents close to half of its coal fleet. However, USC technology only emits 15-30% less than earlier generation of coal plants.
Co-firing (biomass)	2010	In wide use in Japan. In operation or approved for Feed-in Tariff scheme for at least 30-40 coal power units across Japan. Among major utilities' power plants, only few surpass 3% blend rates, while small units may use higher shares of biomass. Lifecycle climate impacts are debated.
Coal gasification	2003-2021	In very limited use. Three plants are in operation Japan (Nakoso, Hirono, Osaki CoolGen); one new facility announced and under planning (Matsushima Genesis).
Co-firing (ammonia)	2021	One demonstration project with 20% blend rate of ammonia achieved in 2024 (Hekinan). Current policies do not rule out use of ammonia produced through high-emission methods.
CCS / CCUS	2007-2021	No commercial operation nor finished demonstrations in coal plants in Japan. JOGMEC is supporting nine CCS-related projects, some of which may include coal power.
Coal-to-H2	2003, 2007, 2018	Not in commercial operation; Japan is working with Australia on a demonstration project.
Coal-to-Liquid	2007	No known projects in Japan, excluding Coal-to-H2 involving liquified hydrogen.
Hyper coal	2007	I.e. deashed coal, to improve operation of coal gasification. Does not appear in recent documents, unclear whether elements of the technology has been implemented.