

Eligible Technology and Equipment List

(For JICA-sponsored Energy Efficiency Conservation & Promotion Fund)

Industry/ Commercial Sector		
Code no	Sub-sector and items	Specification / Production Capacity
Chemical fertilizer		
1.1	Heat exchanger replacement of urea fertilizer plant	Heat exchanger (waste heat recovery system), whose capacity is equal to 10,000 kJ/h or more
Paper & pulp		
2.1	Black liquor boiler	Boiler which burns black liquor and recovers agents such as soda
2.2	De-inking plant	50 TPD or more
Textile and garment		
3.1 (1) (2) (3) (4)	Spinning machine	Roving frames with pneuma-less waste collection system Ring spinning frames with permanent magnet motor Automatic winder with balloon controller Air jet spinning
3.2 (1) (2)	Loom (weaving machine) and warper & sizer	Air-jet loom with technology for reducing both air consumption and air pressure. Warper & sizer with inverter control (motor should meet the standard which is stipulated in item 9.7.1).
3.3	Sewing machine	Sewing machine driven by directly connected motor. Main driving motor type is to be a servomotor (motor should meet the standard which is stipulated in item 9.7.1)
3.4	Stenter	Stenter controlled by inverter, whose air volume and width of nozzle are adjustable.
3.5	Heat exchanger	Heat exchanger (waste heat recovery system), whose capacity is equal to 10,000 kJ/h or more.
Glass		
4.1	Combustion control of glass melting furnace	Combustion control unit controlled by air ratio in exhaust gas.
Cement & Clinker grinding		
5.1	Vertical roller grinding mill for cement clinker and slag	A mill is to be equipped with main rollers for grinding materials and sub-rollers for stabilizing materials. Having delivery record of mill with power consumption of less than 29 kWh/ton (mill + separator + fan) at 3,300 cm ² /g OPC basis.
5.2	Vertical roller grinding mill for pre-grinding	Having delivery record of mill facility with power consumption of less than 33kWh/ton (pre-grinding mill + ball mill + separator + fan) at 3,300 cm ² /g OPC basis.
Iron & steel (rerolling mills)		
6.1	Induction furnace	Induction furnace
6.2	Combustion control unit of reheating furnace	Combustion control unit controlled by air ratio in exhaust gas
Foods and beverages (cold storage)		
7.1	Screw compressor refrigeration unit	Screw compressor with motor whose capacity is equal to 10 kW or more, including chiller, condensing unit, and cold storage capital machineries (Insulation panel, cooling tower, control panel, pumps, and pressure vessels) COP>=4.0 @ +3°C (e.g. potato cold storage) COP>=1.9 @ -25°C (e.g. cold storage in general) COP>=1.4 @ -35°C (e.g. cold storage in general) COP>=1.1 @ -40°C (e.g. ice cream factory)
Telecommunication		
8.1	Lithium ion battery	When replacing lead/acid battery + captive power generation combination to lithium ion battery

Common technology		
Power receiving and distribution		
9.1.1	Transformer	Transformer with amorphous metal core
Water pump		
9.2.1	Pump with inverter	Pump with inverter control, whose motor output is 10 kW or more (motor should meet the standard which is stipulated in item 9.7.1).
Fan and blower		
9.3.1	Fan and blower with Inverter	Fan and blower with inverter control, whose motor output is 10 kW or more (motor should meet the standard which is stipulated in item 9.7.1)
Air compressor		
9.4.1 (1) (2)	Air compressor	Screw compressor with inverter control, or centrifugal compressor, whose motor output is 10 kW or more.
9.4.2 (1) (2)	Multi air compressor control unit	Numbers of air compressor is 2 sets or more, equipped with an optimum control system.
Inverter		
9.5.1	Inverter	Inverter whose connected motor output is 10 kW or more.
Boiler and steam system		
9.6.1	Once-through steam boiler	Steam generation capacity is between 1 ton/h to 4 ton/h. Boiler efficiency is to be 90% or more at rated load.
9.6.2	Multiple installation system of once-through steam boilers	Steam generating capacity of a single boiler is from 1 ton/h to 4 ton/h. Efficiency of a single boiler is to be 90% or more at rated load and the efficiency of total system is to be 80 % or more at 50% load. Total steam generating capacity is 2 ton /h or more by multiple numbers of boilers.
9.6.3	Economizer for boiler	Exhaust gas economizer
Motor		
9.7.1	Motor	Efficiency is IE2 or IE3 specified in IEC 60034
Air conditioner		
9.8.1	Air conditioner	1) Centrifugal chiller; 2) Absorption chiller; 3) Variable Refrigerant Flow (VRF) air conditioner whose COP is 4.2 or more; 4) Air cooled chiller, whose COP is 3.0 or more, without using R22 or R123; 5) Water cooled chiller, whose COP is 4.0 or more, without using R22 or R123.
Heat pump		
9.9.1	CO2 Heat pump	Motor Capacity is 10 kW or more COP \geq 3.5 (Hot water supply : heat source=air) COP \geq 5.0 (Cooling + Heating supply)
Lighting		
9.10.1	LED lamp	LED lamp with 100 lm/W or more, life time: 40,000 hours or more, number of lamps is 500 or more, and with LED patent license certificate.
Co-generation, tri-generation		
9.11.1	Gas engine	Conversion from existing gas engine power generation to gas engine co-generation / tri-generation by utilizing waste heat, whose total rated thermal efficiency is more than 60%. Maximum capacity per sub-project is 10 MW.
9.11.2	Gas turbine	Gas turbine co-generation / tri-generation, whose total rated thermal efficiency is more than 80%. Maximum capacity per sub-project is 10 MW.
Waste heat recovery		

9.12.1	Once-through steam boiler	Once-through boiler with automatic gas bypass device
9.12.2	Waste heat recovery system	Exhausted heat recovery system, whose capacity is equal to 10,000 kJ/h or more.

Note:

COP: Coefficient of Performance

IEC: International Electrotechnical Commission

LED: Light Emitting Diode

OPC: Ordinary Portland Cement

Note: Fuel oils may apply as the energy source in lieu of gas in some of the cases.

Building sector (Green Buildings will be prioritized)		
Code no	Items	Specification
2AZ00	Heat reflective glass	Low-e pair glass and solar reflective glass (solar heat reflective ratio is 50% or more)
2BZ00	Elevator	Elevator with PM motor and LED lighting
2CZ00	BEMS	BEMS, which visualizes a real-time energy consumption of the building and controls energy consumption for air conditioning and lighting
2DZ00	Others	Equipment listed in Component I and III are also eligible

Residential sector (To be provided via Participating Distributors)		
Code no	Home Appliance	Specification
3AZ00	Refrigerator	Inverter controlled (energy efficiency label: 3 stars or more, when the program is established)
3BZ00	Air conditioner	Inverter controlled (energy efficiency label: 3 stars or more, when the program is established)
3CZ00	Others	Further additions are expected in accordance with the establishment of energy efficiency labelling program