# Section 4: Metal Products, Machinery and Transport Equipment

| Activities | Conditions | Incentives |
|---|---|---|
| 4.1 Manufacture of metal products including metal parts | | |
| 4.1.1 Products from metal or alloy powder | Project must have sintering process. | A 3 |
| 4.1.2 Metal products or metal parts | Project must have metal forming process continuing from iron/steel casting process (using induction furnace) or iron/steel forging process, i.e. machining and stamping within the same project. | A 3 |
| 4.1.3 Other metal products including other metal parts | 1. Continuous forming process from pressing, pulling casting or forging of non-ferrous metal within the same project.<br>2. Forming process, i.e. machining and stamping. | A 4<br>B 1 |
| 4.2 Surface treatment or anodized surface treatment (except coating or coloring treatment for decoration purpose) | For anodized surface treatment, project must have the following process, e.g. anodizing, etching and engraving. | B 1 |
| 4.3 Heat Treatment | Cyanide is prohibited in the process of heat treatment. | A 4 |
| 4.4 Manufacture of multi-purpose engines and equipment | 1. Project must have forming process of main engine parts, e.g. cylinder head, crank case, crankshaft, camshaft, connecting rod, piston and flywheel.<br>2. Assembling of multipurpose engine or equipment. | A 4<br>B 1 |
| 4.5 Manufacture of machinery, equipment and parts | | |
| 4.5.1 Automation machinery and/or automation equipment with engineering design | Projects must design control system using an embedded system. | A 2 |
| 4.5.2 Machinery, equipment and parts and/or repair of mould and die | Projects must have part forming process and/or with engineering design. | A 3 |
| 4.5.3 Assembling of machinery and machinery equipment | Projects must have assembling process as approved by the Board. | A 4 |
| 4.5.4 Assembling of Robots or Automation Equipment and/or Automation Parts | | A 3 |

| Activities | Conditions | Incentives |
|---|---|---|
| 4.6 Manufacture of general automobile | Not eligible for merit-based incentives. | B 1 |
| 4.7 Manufacture of automobile engines | 1. Project must have part forming, not less than 4 out of 5 parts, as follows: Cylinder Head, Cylinder Block, Crankshaft, Camshaft and Connecting Rod.<br>2. Assembling of engine. | A 3<br>A 4 |
| 4.8 Manufacture of vehicle parts | | |
| 4.8.1 Manufacture of vehicle parts using high technology including: | | A 2 |
| 4.8.1.1 Substrate for Catalytic Converter | | |
| 4.8.1.2 Electronic Fuel Injection System | | |
| 4.8.1.3 Automotive Transmission | | |
| 4.8.1.4 Electronic Control Unit (ECU) | | |
| 4.8.2 Manufacture of automobile safety and energy-saving parts | | A 2 |
| 4.8.2.1 Anti-Lock Brake System (ABS) or Electronic Brake Force Distribution (EBD) | | |
| 4.8.2.2 Electronic Stability Control (ESC) | | |
| 4.8.2.3 Regenerative Braking System | | |
| 4.8.2.4 Idling Stop System | | |
| 4.8.2.5 Autonomous Emergency Braking System | | |
| 4.8.3 Manufacture of parts for Hybrid, Electric Vehicle (EV) and Plug-in Hybrid Electric Vehicles (PHEV) | | A 2 |
| 4.8.3.1 Battery | | |

| Activities | Conditions | Incentives |
|---|---|---|
| 4.8.3.2 Traction Motor | | |
| 4.8.3.3 Air-condition system | | |
| 4.8.4 Manufacture of rubber tires for vehicles | | A 2 |
| 4.8.5 Manufacture of Fuel System Parts including | Projects must have part forming process and assembling process as approved by the Board. | A 3 |
| 4.8.5.1 Fuel Pump | | |
| 4.8.5.2 Injection Pump | | |
| 4.8.5.3 Injector | | |
| 4.8.5.4 Fuel Pipe/Tube | | A 4 |
| 4.8.6 Manufacture of Transmission System Parts including | | A 3 |
| 4.8.6.1 Sun Gear | | |
| 4.8.6.2 Ring Gear | | |
| 4.8.6.3 Shift Gear | | |
| 4.8.6.4 Transfer Case | Projects must have part forming process and assembling process as approved by the Board. | |
| 4.8.6.5 Torque Converter | Projects must have part forming process and assembling process as approved by the Board. | |
| 4.8.6.6 Carrier | Projects must have part forming process and assembling process as approved by the Board. | |
| 4.8.6.7 Propeller Shaft | Projects must have part forming process and assembling process as approved by the Board. | |
| 4.8.6.8 Driver Shaft | Projects must have part forming process and assembling process as approved by the Board. | |
| 4.8.6.9 Universal Join | Projects must have part forming process and assembling process as approved by the Board. | |

| Activities | Conditions | Incentives |
|---|---|---|
| 4.8.6.10 Differential | Projects must have part forming process and assembling process as approved by the Board. | |
| 4.8.6.11 Transmission Case | | |
| 4.8.7 Manufacture of Engine System Parts including | | |
| 4.8.7.1 Turbocharger | Projects must have part forming process and assembling process as approved by the Board. | A 3 |
| 4.8.7.2 Turbocharger Parts including Turbine Blade, Turbine Housing and Bearing Housing | | A 4 |
| 4.8.7.3 Cylinder Head | | A 4 |
| 4.8.7.4 Cylinder Block | | A 4 |
| 4.8.7.5 Crankshaft | | A 4 |
| 4.8.7.6 Camshaft | | A 4 |
| 4.8.7.7 Connecting Rod | | A 4 |
| 4.8.7.8 Valve | | A 4 |
| 4.8.7.9 Piston | | A 4 |
| 4.8.7.10 Gear | | A 4 |
| 4.8.8 Manufacture of Safety Parts including | | |
| 4.8.8.1 Air Bags/Safety Belts | | A 4 |
| 4.8.8.2 Air Bags Inflator, Gas Generators, Gas Generant | | A 3 |
| 4.8.8.3 Parts for Air Bags, i.e. Initiators and Coolant Filters | | A 4 |

| Activities | Conditions | Incentives |
|---|---|---|
| 4.8.8.4 Parts for Safety Belts, i.e. Interlock and Retractor | | A 4 |
| 4.8.9 Manufacture of Brake System Parts including | | |
| 4.8.9.1 Brake Booster | | A 4 |
| 4.8.9.2 Brake Caliper | | A 4 |
| 4.8.9.3 Brake Master Cylinder | | A 4 |
| 4.8.9.4 Brake Wheel Cylinder | | A 4 |
| 4.8.9.5 Wheel Hub | | A 4 |
| 4.8.9.6 Brake Pipe Tube | | A 4 |
| 4.8.9.7 Brake Set | | A 4 |
| 4.8.10 Manufacture of Suspension System Parts including | | |
| 4.8.10.1 Shock Absorber | Projects must have part forming process and assembling process as approved by the Board. | A 4 |
| 4.8.10.2 Ball Joint | Projects must have part forming process and assembling process as approved by the Board. | A 4 |
| 4.8.11 Manufacture of Steering System Parts including | Projects must have part forming process and assembling process as approved by the Board. | A 4 |
| 4.8.11.1 Power Steering Pump | | |
| 4.8.11.2 Rack and Pinion Steering | | |
| 4.8.12 Manufacture of Cooling System Parts including | Projects must have part forming process and assembling process as approved by the Board. | A 4 |
| 4.8.12.1 Water Pump | | |
| 4.8.13 Manufacture of Exhaust System Parts including | Projects must have part forming process and assembling process as approved by the Board. | A 4 |
| 4.8.13.1 Catalytic Convertor | | |
| 4.8.13.2 Exhaust Catalyst | | |

| Activities | Conditions | Incentives |
|---|---|---|
| 4.8.14 Manufacture of Air Conditioning System Parts including<br>4.8.14.1 Air Compressor | Projects must have part forming process and assembling process as approved by the Board. | A 4 |
| 4.8.15 Manufacture of Ultimate Tensile Strength Steel | Projects must use Ultimate Tensile Strength (UTS) Steel higher than 700 MPa. | A 4 |
| 4.8.16 Manufacture of Ball Bearing for Vehicles | Projects must manufacture steel ball. | A 4 |
| 4.8.17 Manufacture of other vehicle parts | | B 1 |
| 4.9 Building or repair of ships<br>4.9.1 Building or repair of ships not less than 500 tons gross | Projects must obtain ISO 14000 within 2 years from starting date of operation. | A 2 |
| 4.9.2 Building or repair of ships less than 500 tons gross (only steel or fiber glass ships with installed engine and equipment) | | A 2 |
| 4.10 Manufacture of trains or electric trains or equipment or parts (only rail system) | | A 2 |
| 4.11 Manufacture or repair of Aircraft, or Aerospace Devices and Equipment<br>4.11.1 Manufacture of Aircraft or Aircraft Parts such as airframe, critical parts (e.g. Engine and parts, Propeller), appliance (e.g. Flight recorder, Radar), equipment and other components | | A 1 |
| 4.11.2 Manufacture of Onboard devices and equipment (except disposable and reusable aircraft utilities and supplies) such as seats, life vests, trolley, galley, etc. | | A 3 |
| 4.11.3 Repair of Aircraft or Aircraft parts. | | A2 |

| Activities | Conditions | Incentives |
|---|---|---|
| 4.11.4 Repair of Onboard Devices and Equipment (except disposable and reusable aircraft utilities and supplies) | | A 4 |
| 4.11.5 Manufacture of Aerospace Devices and Equipment such as devices or equipment related to rockets/spacecraft/ space vehicles/propulsion units and auxiliary equipment, etc. | Must be approved by related agencies such as Geo-Informatics and the Space Technology Development Agency (Public Organization). | A 1 |
| 4.11.6 Aerospace Operating Systems such as search, detection, navigation, guidance, aeronautical, nautical systems and instruments, etc. | Must be approved by related agencies such as Geo-Informatics and the Space Technology Development Agency (Public Organization). | A 1 |
| 4.12 Manufacture of motorcycles (except less than 248 cc engine displacement) | 1. Project must have forming process of engine parts, as follows: Cylinder Head, Cylinder Block, Crankshaft, Crankcase, Camshaft and Connecting Rod<br>1.1 For manufacturing motorcycles with more than 248 cc engine displacement but less than 500 cc, project must have forming of not less than 4 out of 6 parts.<br>1.2 For manufacturing of motorcycles with more than 500 cc engine displacement, project must have forming of 2 out of 6 parts.<br>2. Project must have structural welding process and spray painting process.<br>3. Investment plan for manufacturing and utilization of parts must be submitted and approved by the Board of Investment. | A3 (must follow conditions 1-3)<br>B1 (must follow conditions 2-3) |
| 4.13 Manufacture of Fuel Cells | | A 2 |
| 4.14 Fabrication industry or platform repair for petroleum industry<br>4.14.1 Fabrication industry or platform repair with engineering design | | A 3 |

| Activities | Conditions | Incentives |
|---|---|---|
| 4.14.2 Fabrication industry or platform repair for petroleum industry | | A 4 |
| 4.15 Manufacture of science equipment | | |
| 4.15.1 Scientific equipment using high technology | Scientific equipment must be able to measure parameter value, process data and self-report the result or automatically measure and control the parameter. | A 2 |
| 4.15.2 Other scientific equipment | | A 3 |