# Section 4: Metal Products, Machinery and Transport Equipment

| Activities | Conditions | Incentives | Division |
|---|---|---|---|
| 4.1 Manufacture of metal products including metal parts<br>4.1.1 Products from metal or alloy powder | Project must have sintering process. | A 3 | 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 | 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 | 3 |
| 4.2 Surface treatment or anodized surface treatment (except coating or coloring treatment for decoration purpose)<br>4.2.1 Plating, Coating, modifying or changing the surface using Advanced Technologies | | A 4 | 3 |
| 4.2.2 Plating, Coating, modifying or changing the surface using Basic Technologies | | B 1 | 3 |
| 4.3 Heat Treatment | Cyanide is prohibited in the process of heat treatment. | A 4 | 3 |
| 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 | 2 |
| 4.5 Manufacture of machinery, equipment and parts<br>4.5.1 Automation machinery and/ or automation equipment with engineering design | | | 2 |

| Activities | Conditions | Incentives | Division |
|---|---|---|---|
| 4.5.1.1 Automation machinery and/or automation equipment with engineering design, including automation system integration and control system configuration | | A 1 | 2 |
| 4.5.1.2 Automation machinery and/or automation equipment with engineering design, including control system configuration | | A 2 | 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 | 2 |
| 4.5.3 Assembling of machinery and machinery equipment | Projects must have assembling process as approved by the Board. | A 4 | 2 |
| 4.5.4 Assembling of Robots or Automation Equipment and/or Automation Parts | | A 3 | 2 |
| 4.6 Manufacture of general automobile | Not eligible for merit-based incentives. | B 1 | 2 |
| 4.7 Manufacture of automobile engines | | | |
| 4.7.1 Manufacture of automobile engines | 1. Must have forming process of not less than 4 out of 5 parts as follows: Cylinder Head, Cylinder Block, Crankshaft, Camshaft and Connecting Rod.<br>2. Must have engine assembly process | A 3<br>A 4 | 2<br>2 |
| 4.7.2 Manufacture of motorcycle engines | 1. Must have forming process of not less than 4 out of 5 parts, as follows: Cylinder Head, Cylinder Block, Crankshaft, Camshaft and Connecting Rod.<br>1.1 Must have forming process of not less than 4 out of 6 parts for manufacturing engine that have a cylinder capacity starting from 248 cc. but not exceeding 500 cc. | A 3 | 2 |

| Activities | Conditions | Incentives | Division |
|---|---|---|---|
| | 1.2 Must have forming process of not less than 2 out of 6 parts for manufacturing of engine that have a cylinder capacity of 500 cc. or more.<br>2. Must have engine assembly process. | A 4 | |
| 4.8 Manufacture of vehicle parts | | | |
| 4.8.1 Manufacture of vehicle parts using high technology including: | | A 2 | 2 |
| 4.8.1.1 Substrate for Catalytic Converter | | A 2 | 2 |
| 4.8.1.2 Electronic Fuel Injection System | | A 2 | 2 |
| 4.8.1.3 Automotive Transmission | | A 2 | 2 |
| 4.8.1.4 Electronic Control Unit (ECU) | | A 2 | 2 |
| 4.8.2 Manufacture of automobile safety and energy-saving parts | | | 2 |
| 4.8.2.1 Anti-Lock Brake System (ABS) or Electronic Brake Force Distribution (EBD) | | A 2 | 2 |
| 4.8.2.2 Electronic Stability Control (ESC) | | A 2 | 2 |
| 4.8.2.3 Regenerative Braking System | | A 2 | 2 |
| 4.8.2.4 Idling Stop System | | A 2 | 2 |
| 4.8.2.5 Autonomous Emergency Braking System | | A 2 | 2 |
| 4.8.3 Manufacture of parts for Hybrid, Electric Vehicle (EV) and Plug-in Hybrid Electric Vehicles (PHEV) | | | |
| 4.8.3.1 Battery | | A 2 | 2 |
| 4.8.3.2 Traction Motor | | A 2 | 2 |

| Activities | Conditions | Incentives | Division |
|---|---|---|---|
| 4.8.3.3 Air-condition system | | A 2 | 2 |
| 4.8.3.4 Battery Management Systems (BMS) | | A 2 | 2 |
| 4.8.3.5 Drive Control Units (DCU) | | A 2 | 2 |
| 4.8.3.6 On-Board Charger | | A 2 | 2 |
| 4.8.3.7 EV Connector with plug and socket | | A 2 | 2 |
| 4.8.3.8 DC/DC Converter | | A 2 | 2 |
| 4.8.3.9 Inverter | | A 2 | 2 |
| 4.8.3.10 Portable Electric Vehicle Charger | | A 2 | 2 |
| 4.8.3.11 Electrical Circuit Breaker | | A 2 | 2 |
| 4.8.3.12 EV Smart Charging System Development | | A 2 | 2 |
| 4.8.3.13 Front/rear axle for battery electric bus | | A 2 | 2 |
| 4.8.4 Manufacture of rubber tire for vehicle | | A 2 | 2 |
| 4.8.5 Manufacture of Fuel System Parts including | Projects must have part forming process and assembling process as approved by the Board. | | |
| 4.8.5.1 Fuel Pump | | A 3 | 2 |
| 4.8.5.2 Injection Pump | | A 3 | 2 |
| 4.8.5.3 Injector | | A 3 | 2 |
| 4.8.5.4 Fuel Pipe/Tube | | A 4 | 2 |
| 4.8.6 Manufacture of Transmission System Parts including | | | |
| 4.8.6.1 Sun Gear | | A 3 | 2 |
| 4.8.6.2 Ring Gear | | A 3 | 2 |
| 4.8.6.3 Shift Gear | | A 3 | 2 |

| Activities | Conditions | Incentives | Division |
|---|---|---|---|
| 4.8.6.4 Transfer Case | Projects must have part forming process and assembling process as approved by the Board. | A 3 | 2 |
| 4.8.6.5 Torque Converter | Projects must have part forming process and assembling process as approved by the Board. | A 3 | 2 |
| 4.8.6.6 Carrier | Projects must have part forming process and assembling process as approved by the Board. | A 3 | 2 |
| 4.8.6.7 Propeller Shaft | Projects must have part forming process and assembling process as approved by the Board. | A 3 | 2 |
| 4.8.6.8 Driver Shaft | Projects must have part forming process and assembling process as approved by the Board. | A 3 | 2 |
| 4.8.6.9 Universal Join | Projects must have part forming process and assembling process as approved by the Board. | A 3 | 2 |
| 4.8.6.10 Differential | Projects must have part forming process and assembling process as approved by the Board. | A 3 | 2 |
| 4.8.6.11 Transmission Case | | A 3 | 2 |
| 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 | 2 |
| 4.8.7.2 Turbocharger Parts including Turbine Blade, Turbine Housing and Bearing Housing | | A 4 | 2 |
| 4.8.7.3 Cylinder Head | | A 4 | 2 |
| 4.8.7.4 Cylinder Block | | A 4 | 2 |
| 4.8.7.5 Crankshaft | | A 4 | 2 |
| 4.8.7.6 Camshaft | | A 4 | 2 |
| 4.8.7.7 Connecting Rod | | A 4 | 2 |

| Activities | Conditions | Incentives | Division |
|---|---|---|---|
| 4.8.7.8 Valve | | A 4 | 2 |
| 4.8.7.9 Piston | | A 4 | 2 |
| 4.8.7.10 Gear | | A 4 | 2 |
| 4.8.7.11 Starting Motor or Parts | | A 4 | 2 |
| 4.8.7.12 Alternator or parts | | A 4 | 2 |
| 4.8.7.13 Rocker Arm | | A 4 | 2 |
| 4.8.7.14 Waste Gate Actuator | | A 4 | 2 |
| 4.8.8 Manufacture of Safety Parts including | | | |
| 4.8.8.1 Air Bag/Safety Belt | | A 4 | 2 |
| 4.8.8.2 Air Bag Inflator, Gas Generator, Gas Generant | | A 3 | 2 |
| 4.8.8.3 Parts for Air Bag, i.e. Initiator and Coolant Filter | | A 4 | 2 |
| 4.8.8.4 Parts for Safety Belt, i.e. Interlock and Retractor | | A 4 | 2 |
| 4.8.9 Manufacture of Brake System Parts including | Project must have part forming process and assembling process as approved by the Board | | |
| 4.8.9.1 Brake Booster | | A 4 | 2 |
| 4.8.9.2 Brake Caliper | | A 4 | 2 |
| 4.8.9.3 Brake Master Cylinder | | A 4 | 2 |
| 4.8.9.4 Brake Wheel Cylinder | | A 4 | 2 |
| 4.8.9.5 Wheel Hub | | A 4 | 2 |
| 4.8.9.6 Brake Pipe Tube | | A 4 | 2 |
| 4.8.9.7 Brake Set | | A 4 | 2 |
| 4.8.9.8 Brake Drum | | A 4 | 2 |

| Activities | Conditions | Incentives | Division |
|---|---|---|---|
| 4.8.10 Manufacture of Suspension System Parts including<br>4.8.10.1 Shock Absorber | Projects must have part forming process and assembling process as approved by the Board. | A 4 | 2 |
| 4.8.10.2 Ball Joint | | A 4 | 2 |
| 4.8.10.3 Leaf / Coil Spring | | A 4 | 2 |
| 4.8.11 Manufacture of Steering System Parts including<br>4.8.11.1 Power Steering Pump / Motor | | A 4 | 2 |
| 4.8.11.2 Rack and Pinion Steering | | A 4 | 2 |
| 4.8.12 Manufacture of Cooling System Parts including<br>4.8.12.1 Water Pump | Projects must have part forming process and assembling process as approved by the Board. | A 4 | 2 |
| 4.8.13 Manufacture of Exhaust System Parts including<br>4.8.13.1 Catalytic Convertor | Projects must have part forming process and assembling process as approved by the Board. | A 4 | 2<br>2 |
| 4.8.13.2 Exhaust Catalyst | | A 4 | 2 |
| 4.8.13.3 Exhaust Manifold | | A 4 | 2 |
| 4.8.14 Manufacture of Air Conditioning System Parts including | Projects must have part forming process and assembling process as approved by the Board. | | |
| 4.8.14.1 Air Compressor | | A 4 | 2 |
| 4.8.15 Manufacture of Body Parts Using Ultimate Tensile Strength Steel | Projects must use Ultimate Tensile Strength (UTS) Steel higher than 700 MPa. | A 4 | 2 |
| 4.8.16 Manufacture of Bearing for Vehicles | | A 4 | 2 |
| 4.8.17 Manufacture of other vehicle parts | | B 1 | 2 |

| Activities | Conditions | Incentives | Division |
|---|---|---|---|
| 4.9 Building or repair of ships<br>4.9.1 Building or repair of ships not less than 500 tons gross<br>4.9.2 Building or repair of ships less than 500 tons gross (only steel or fiber glass ships with installed engine and equipment) | Projects must obtain ISO 14000 within 2 years from starting date of operation. | A 2<br>A 2 | 2<br>2 |
| 4.10 Manufacture of train or electric train or equipment or parts (only rail system)<br>4.10.1 Manufacture of train, electric train or equipment or parts (only rail systems)<br>4.10.2 Restoration of train, electric train or equipment or parts (only rail systems) | Overhaul and repair using advanced technology | A 2<br>A 3 | 2<br>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<br>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.<br>4.11.3 Repair of Aircraft or Aircraft parts.<br>4.11.4 Repair of Onboard Devices and Equipment (except disposable and reusable aircraft utilities and supplies) | | A 1<br>A 3<br>A 2<br>A 4 | 2<br>2<br>2<br>2 |

| Activities | Conditions | Incentives | Division |
|---|---|---|---|
| 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 | 2 |
| 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 | 2 |
| 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. | A3 (must follow conditions 1-3)<br>B1 (must follow conditions 2-3) | 2 |
| 4.13 Manufacture of Fuel Cells | | A 2 | 2 |
| 4.14 Fabrication industry or platform repair for petroleum industry | | | |
| 4.14.1 Fabrication industry or platform repair with engineering design | | A 3 | 3 |
| 4.14.2 Fabrication industry or platform repair for petroleum industry | | A 4 | 3 |
| 4.15 Manufacture of science equipment | Scientific equipment must be able to measure parameter value, process data and self-report the result or automatically measure and control the parameter. | | |
| 4.15.1 Scientific equipment using high technology | | A 2 | 2 |
| 4.15.2 Other scientific equipment | | A 3 | 2 |

| Activities | Conditions | Incentives | Division |
|---|---|---|---|
| 4.16 Manufacture of Hybrid Electric Vehicle (HEV) and parts | 1. Must propose an integrated package consisting of vehicle assembly and key parts production or sourcing project, the import and installation plan for machinery, a vehicle assembly plan in the 1st – 3rd years, general parts production and sourcing plan, waste management plan for used batteries and technical training and support plan for local suppliers with not less than 51 percent of Thai shareholders.<br>2. At least 1 out of the following 4 key parts must be manufactured or used e.g. Battery, Traction Motor, Battery Management Systems (BMS) or Drive Control Unit (DCU), etc.<br>3. Manufactured vehicles must comply with UN Regulation Type Approval standard in categories L, M or N.<br>4. Vehicle Assembly and key parts production or usage of at least one key part within three years from the issuance date of the BOI Promotion Certificate. Furthermore, the machinery importation period shall not be extended, except deem it appropriate.<br>5. Application must be submitted by December 31, 2017.<br>6. Additional incentives<br>- For an Eco-car project, the investor is allowed to count the production of Hybrid Electric Vehicle (HEV) produced as the actual production<br>of the Eco-car. For the domestic market, the manufactured vehicles must comply with the environmental specifications in the Eco-car announcement. | B 1 | 2 |
| 4.17 Manufacture of Plug-In Hybrid Electric Vehicles (PHEV) and parts | 1. Must propose an integrated package consisting of vehicle assembly and key parts production or sourcing project, the import and installation plan of machinery, vehicle assembly plan in the 1st – 3rd year, general parts production and sourcing plan, waste management plan for used batteries and technical training and support plan for local suppliers with not less than 51 percent of Thai shareholders. | A 4 | 2 |

| Activities | Conditions | Incentives | Division |
|---|---|---|---|
| | 2. At least 1 out of the following 4 key parts must be manufactured or used, e.g., Battery, Traction Motor, Battery Management Systems (BMS) or Drive Control Unit (DCU).<br>3. Manufactured vehicles must comply with UN Regulation Type Approval standard in categories L, M or N.<br>4. Vehicle Assembly and key parts production or sourcing of at least one part must commence within three years from the issuance date of the BOI Promotion Certificate. Nonetheless, the machinery importation period shall not be extended, except deem it appropriate.<br>5. Application must be submitted by December 31, 2018.<br>6. Additional incentives<br>6.1 For project which produces more than one key part, one additional year of the corporate income tax exemption shall be received for each additional production of key part annually but the total exemption period must not exceed 6 years.<br>6.2 For an Eco-car project, the investor is allowed to count the production of Plug-In Hybrid Electric Vehicle (PHEV) produced as the actual production of the Eco-car. For the domestic market, the manufactured vehicles must comply with the environmental specifications in the Eco-car announcement. | | |
| 4.18 Manufacture of Battery Electric Vehicle (BEV) and parts | 1. Must submit an integrated package consisting of vehicle assembly and key parts production or sourcing project, the import and installation plan of machinery, vehicle assembly plan in the 1st – 3rd years, general parts production and sourcing plan, waste management plan for used batteries and technical training, and support plan for local suppliers with not less than 51 percent of Thai shareholders. | A 3 | 2 |

| Activities | Conditions | Incentives | Division |
|---|---|---|---|
| | 2. At least 1 out of the following parts must be manufactured or used, e.g., Batteries, Traction Motors, Battery Management Systems (BMS) or Drive Control Units (DCU).<br>3. Manufactured vehicles must comply with UN Regulations Type Approval standards in categories L, M or N.<br>4. Schedules are as follows:<br>4.1 Within two years from the issuance date of the BOI Promotion Certificate, the import of CBU with the exemption of import duties is allowed for market testing under the board's decision. The machinery importing period will not be extended without a valid reason and reasonable prospects of acceptance of the change.<br>4.2 Within three years from the issuance date of the BOI Promotion Certificate, the assembling of the Battery Electric Vehicles (BEVs) must commence.<br>4.3 Within six years from the issuance date of the BOI Promotion Certificate, the manufacturing of at least one key part must be commenced.<br>5. Application must be submitted by December 31, 2018.<br>6. Additional incentives<br>6.1 An additional corporate income tax exemption for three years for project that manufacture or use at least one key part within three years from the issuance date of the BOI Promotion Certificate.<br>6.2 An additional corporate income tax exemption for two years for project that manufacture or use at least one more keys part in the fourth year from the issuance date of the BOI Promotion Certificate.<br>6.3 An additional corporate income tax exemption of one year for project that manufacture or use at least one more key part in the fifth year from the issuance date of the BOI Promotion Certificate | | |

| Activities | Conditions | Incentives | Division |
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| | 6.4 For project that manufacture or use more than one key part, the corporate income tax exemption will increase one-year per each key part. However, the total corporate income tax exemption period shall not exceed ten years. In case the corporate income tax exemption period exceeds eight years, the project must be engaged in technology transfer by cooperating with educational/research | | |
| 4.19 Manufacture of Battery Electric Bus and parts | 1. Must submit an integrated package consisting of project vehicle assembly and key parts production or sourcing project, the import and installation plan for machinery, vehicle assembly plan in the 1st – 3rd years, general parts production and sourcing plan, waste management plan for used batteries and technical training and support plan for local suppliers with not less than 51 percent of Thai shareholders.<br>2. At least 1 out of following parts must be manufactured or used, e.g., Battery, Traction Motor, Battery Management Systems (BMS) or Drive Control Unit (DCU).<br>3. Vehicle Assembly and key parts production or sourcing must proceed within three years from the issuance date of the BOI Promotion Certificate. In addition, the machinery importation period shall not be extended, unless otherwise deemed necessary.<br>4. Application must be submitted by December 31, 2018.<br>5. Additional incentive: Projects which produce or utilize more than one essential parts shall be granted one year of CIT exemption per part. However, the total exemption period must not exceed 6 years | A 4 | 2 |