

A. LOADER (Cargo Loader)

- **Primary Function:** Lifting and transferring cargo containers and pallets into or out of aircraft holds.
- **Types Required (Please specify your offering, considering aircraft commonly served at international airports):**
 - Main Deck Loader (for wide-body aircraft such as B747, B767, B777, B787, A330, A340, A350, A380)
 - Lower Deck Loader (for narrow-body aircraft and lower holds of wide-body aircraft)
- **Key Specifications:**
 - **Lift Capacity:** Must meet typical international airport demands for both passenger and freighter aircraft. Proposers should specify the exact lift capacity of their proposed models for both main deck and lower deck applications.
 - **Maximum Lift Height:** Must be compatible with the full range of aircraft types serviced at major international airports. Proposers should specify the maximum lift height of their proposed models.
 - **Operating Speed:** Adjustable for precise aircraft docking and efficient operation.
 - **Power Type:** Diesel (with latest emission standards), Electric (highly preferred for sustainability), or Hybrid. Proposers must specify the power type and provide efficiency data.
 - **Safety Features:** Comprehensive safety features including, but not limited to, emergency braking system, anti-collision sensors, interlocking systems, warning lights, and alarms.
 - **Supported Pallet/Container Types:** Must be compatible with common Unit Load Devices (ULDs) used in international aviation (e.g., LD1, LD2, LD3, LD4, LD6, LD8, LD11, LD29, M6, M10 pallets, etc.). Proposers must list all supported ULDs.

B. GPU (Ground Power Unit)

- **Primary Function:** Providing electrical power to aircraft on the ground when aircraft engines are off, to operate onboard systems (lighting, avionics, environmental control, etc.) without requiring aircraft's Auxiliary Power Unit (APU) operation.
- **Types Required:** Mobile GPU (trailer-mounted or self-propelled).
- **Key Specifications:**
 - **Power Output:**
 - **AC (Alternating Current):** 115V, 400 Hz. Proposers should specify the kVA output of their proposed models, indicating their suitability for various aircraft types from narrow-body to wide-body.
 - **DC (Direct Current):** 28V. Proposers should specify the Amperage output, suitable for smaller aircraft or engine starts.
 - **Power Type:** Diesel (with latest emission standards), Battery-Electric, or Hybrid. Proposers must specify the power type and provide efficiency data.
 - **Features:** Overload protection, stable voltage output, efficient cooling system, noise isolation (for diesel units), low voltage start capability, and advanced diagnostic capabilities.
 - **Connectors:** Compatible with standard aircraft connectors (e.g., 6-pin and 3-pin).

C. ACU (Air Conditioning Unit)

- **Primary Function:** Supplying cooled or heated air to the aircraft cabin on the ground to maintain passenger and crew comfort, and to cool avionics.
- **Types Required:** Mobile ACU (trailer-mounted or self-propelled).
- **Key Specifications:**
 - **Cooling/Heating Capacity:** Must be sufficient to provide comfortable cabin conditions for a wide range of aircraft types, from narrow-body to large wide-body aircraft, under demanding tropical climate conditions. Proposers should specify the cooling capacity (in TR or BTU/hour) and heating capacity of their proposed models.
 - **Air Flow:** Must provide adequate air circulation for various aircraft cabin sizes. Proposers should specify the air flow rate (in CFM or m³/hour).
 - **Outlet Air Temperature:** Adjustable to meet aircraft specific requirements (typically 4-15°C for cooling, higher for heating).
 - **Refrigerant Type:** Environmentally friendly refrigerants (e.g., R134a, R407C) are required.

- **Power Type:** Diesel (with latest emission standards) or Electric. Proposers must specify the power type.
 - **Connectors:** Compatible with aircraft AC ports.
 - **Features:** Efficient air filtration system, automatic temperature control, robust safety systems, and durable construction for continuous operation.
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D. ASU (Air Start Unit)

- **Primary Function:** Providing high-pressure air to aircraft engines for starting on the ground, especially when the aircraft's APU is inoperative or to conserve APU fuel.
 - **Types Required:** Mobile ASU (trailer-mounted or self-propelled).
 - **Key Specifications:**
 - **Air Flow:** Must provide sufficient air flow for starting a wide range of aircraft engines, from smaller regional jets to large wide-body aircraft. Proposers should specify the air flow rate (in PPM or kg/second) of their proposed models.
 - **Air Pressure:** Must provide standard operating pressure (typically 35-45 PSI).
 - **Compressor Type:** Proposers should specify the type of compressor used (e.g., rotary screw compressor or turbine).
 - **Power Type:** Diesel (with latest emission standards). Proposers must specify the power type.
 - **Features:** Automatic pressure control system, overpressure protection, efficient air filtration, and safety interlocks for aircraft connection.
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4. General Requirements for All GSE

- **Reliability & Durability:** Equipment must be designed for continuous 24/7 operation in diverse and challenging weather conditions, specifically engineered for the high humidity, high temperatures, and heavy rainfall typical of Indonesia's tropical climate.
- **Fuel/Power Efficiency:** Proposers must provide comprehensive data on fuel consumption (for diesel units) or power consumption (for electric units) to demonstrate operational efficiency.
- **Emissions:** All equipment, particularly diesel-powered units, must comply with the latest international emission standards (e.g., EU Stage V / US EPA Tier 4 Final). Preference will be given to low-emission or zero-emission solutions to align with environmental initiatives at Angkasa Pura airports.
- **Safety Features:** Comprehensive safety features are mandatory, including, but not limited to, robust braking systems, proximity sensors, emergency stops, warning lights, horns, fire suppression systems (where applicable), and strict compliance with international airport operational safety protocols.
- **Ease of Operation & Maintenance:** Equipment design must be ergonomic, ensuring ease of operation and maintenance. This includes easy access for servicing, integrated diagnostics, intuitive control panels, and readily available local technical support in Indonesia.
- **Compatibility:** Equipment must be capable of servicing a wide range of aircraft types commonly found at major international airports managed by Angkasa Pura.
- **Certifications:** All proposed equipment must comply with relevant international aviation standards (e.g., IATA AHM - Airport Handling Manual, SAE, ISO, CE, etc.). Proposers must provide copies of applicable certifications.
- **Training:** Proposer must include details on comprehensive operator and maintenance training programs for Angkasa Pura personnel, preferably conducted on-site in Indonesia.
- **After-Sales Support:** A detailed plan for comprehensive after-sales service is required, including warranty terms, guaranteed spare parts availability (with recommended local stock in Indonesia), efficient technical support, and the presence of a robust service network within Indonesia to ensure minimal downtime for Angkasa Pura operations.