

INDONESIA MBG LAST-MILE MEAL LOGISTICS

DA6200-XR NUTRILIFT

EXTENDED-RANGE HYBRID eVTOL DELIVERY

SISTEM PENGIRIMAN MAKANAN BERGIZI

A hydrogen fuel-cell or generator-hybrid aircraft for scheduled delivery from SPPG kitchens to remote schools, islands, highlands and traffic-constrained communities.

Pesawat hibrida fuel-cell hidrogen atau generator untuk pengiriman terjadwal dari dapur SPPG ke sekolah terpencil, pulau, dataran tinggi, dan wilayah dengan akses terbatas.

50+

MEALS / FLIGHT

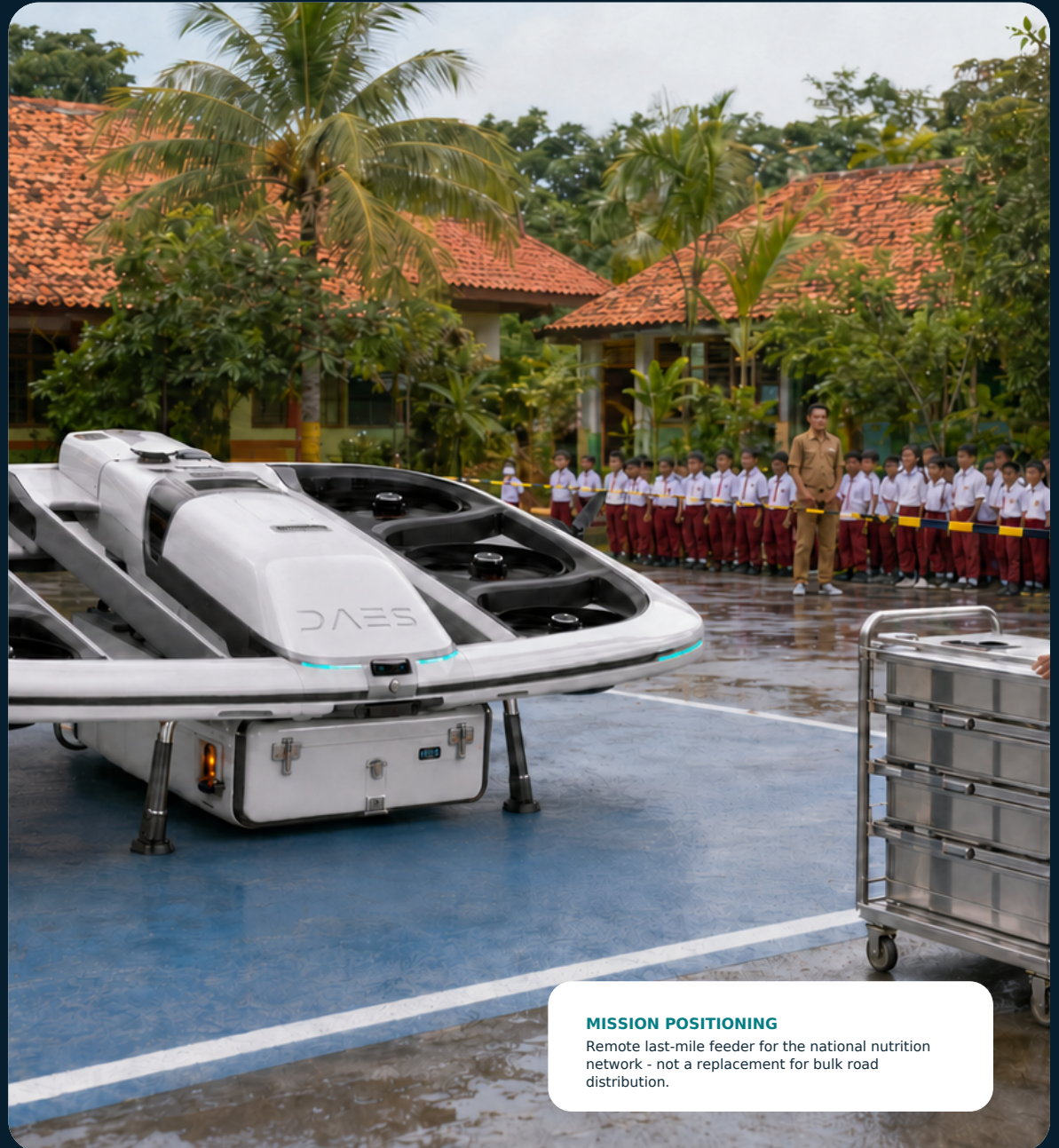
40 KG

FOOD PAYLOAD

35-50 KM

ROUTE RADIUS

ENGLISH + BAHASA INDONESIA | PRELIMINARY CONCEPT | 2026.07



MISSION POSITIONING

Remote last-mile feeder for the national nutrition network - not a replacement for bulk road distribution.

A NEW AIRCRAFT FOR NUTRITION LOGISTICS

The DA6200-XR combines vertical take-off, protected distributed propulsion and efficient wing-borne cruise with an interchangeable hydrogen fuel-cell or generator-hybrid energy module and an enlarged sealed MealPod.



MODULAR EXTENDED-RANGE ENERGY SPINE

Hydrogen PEM fuel-cell primary module or generator-hybrid range extender; 50-meal minimum MealPod.

CORE MISSION METRICS / METRIK MISI

50+**MEALS PER FLIGHT**

Porsi per penerbangan

40 kg**FOOD PAYLOAD**

Muatan makanan

175 L**SEALED MEALPOD**

Kotak makanan tertutup

35-50 km**ROUTE RADIUS**

Radius rute

MISSION LOGIC / LOGIKA MISI

SPPG -> secure route -> controlled school MealPort.

The aircraft serves remote or time-sensitive spokes while trucks retain high-volume trunk routes.

Pesawat melayani rute terpencil atau sensitif waktu, sementara kendaraan darat tetap menangani distribusi massal.

50-MEAL CAPACITY

Minimum 50 standard meal boxes per flight with a 40 kg food-payload ceiling.

Minimum 50 kotak makanan per penerbangan dengan batas muatan 40 kg.

SCHOOL SAFETY

Controlled 5 x 5 m receiving pad; no flight over student assemblies.

Area penerimaan terkendali; tidak terbang di atas kerumunan siswa.

TROPICAL DUTY

0-45 C target, high humidity and IP55-class weather protection.

Target 0-45 C, kelembapan tinggi, dan perlindungan cuaca kelas IP55.

ENERGY FLEXIBILITY

Hydrogen fuel-cell primary module or generator-hybrid module for infrastructure readiness.

Modul fuel-cell hidrogen atau generator-hibrida sesuai kesiapan infrastruktur.

TECHNICAL SPECIFICATIONS

3,450 x 3,650 x 1,180 mm

MISSION-READY L X W X H

Dimensi operasional

75 / 78 kg

H2 / HYBRID BASIC MASS*

Massa dasar H2 / hibrida

115 / 118 kg

H2 / HYBRID MTOW

MTOW H2 / hibrida

40 kg

MAXIMUM FOOD PAYLOAD

Muatan makanan maksimum

AIRCRAFT & PERFORMANCE / PESAWAT & PERFORMA

Architecture / Arsitektur	Closed box-wing hybrid eVTOL; 6 protected lift rotors + 2 rear cruise propulsors
Dimensions / Dimensi	3,450 x 3,650 x 1,180 mm mission-ready; target folded width 1,550 mm
Food payload / Muatan	40 kg maximum; minimum 50 standard meal boxes at up to 0.75 kg each
Energy bay / Modul energi	Interchangeable dorsal H2 fuel-cell or liquid-fuel generator-hybrid module
H2 power / Daya H2	16 kW PEM fuel cell + 4 kWh dual battery buffer; 3.0 kg usable H2 at 350 bar target
H2 performance	90 min full-payload endurance; 80 km route range; 35 km mission radius with 20% reserve
Hybrid power / Hibrida	18 kW generator + 4 kWh dual battery buffer; 18 L liquid-fuel capacity target
Hybrid performance	120 min full-payload endurance; 120 km route range; 50 km mission radius with 20% reserve
Speed / Kecepatan	65 km/h nominal cruise; 90 km/h target maximum
Environment / Lingkungan	0-45 C; up to 95% RH; IP55 target; 12 m/s sustained wind target

MEALPOD & FOOD CHAIN / RANTAI MAKANAN

Usable volume / Volume	175 L sealed volume; five removable food-grade rack modules
Meal capacity / Kapasitas	Minimum 50 boxes: 5 racks x 10 boxes, design basis 0.65-0.75 kg each
Interior / Interior	304 stainless-steel liners, removable dividers and washable drainage design
Thermal target / Suhu	Hot >=60 C or chilled <=5 C for 45 min at 35 C ambient; validation required
Traceability / Pelacakan	1-minute temperature log, QR manifest, electronic seal and door-open sensor
Turnaround / Waktu putar	MealPod swap under 5 min; H2 refuel under 10 min or hybrid refuel under 5 min target

MEALPOD CAPACITY / KAPASITAS MEALPOD

50+

MEAL BOXES MINIMUM

5 racks x 10 boxes

40 kg payload ceiling

NAVIGATION, SENSING & SAFETY / NAVIGASI & KESELAMATAN

Navigation / Navigasi	Triple GNSS + RTK, visual-inertial navigation and radar altitude hold
Obstacle sensing	77-81 GHz surround radar, stereo vision and forward/downward solid-state LiDAR
Cameras / Kamera	4K HDR forward camera + 12 MP landing/receiving-zone camera
C2 links / Tautan	4G/5G primary plus redundant local C2; spectrum subject to Indonesian approval
Safety / Keselamatan	Dual flight computers and power buses, Remote ID, ADS-B In, geofence, flight recorder
Recovery / Pemulihan	Ballistic parachute target, lost-link logic, controlled single-motor-out landing target

* Basic mass includes the stated energy module, buffer batteries and standard MealPod but excludes food payload. H2 / hybrid targets are separate configurations. All values require detailed engineering, hydrogen or fuel-system safety analysis, thermal validation, prototype testing and Indonesian regulatory approval.

SPPG-TO-SCHOOL PILOT CONCEPT

RIGHT-SIZED FOR REMOTE SPOKES, NOT BULK TRUNK DELIVERY

BGN states that a standard SPPG is designed for up to 2,500 portions per day and can reach 3,000 under specified conditions. DA6200-XR fleets should therefore serve selected remote, island, highland or congestion-sensitive schools while road vehicles retain the main high-volume routes.

Armada DA6200-XR ditujukan untuk sekolah yang sulit dijangkau; distribusi massal tetap menggunakan kendaraan darat.

PILOT ROUTE WORKFLOW / ALUR RUTE UJI COBA

01 PACK & SEAL

SPPG packs, checks temperature, seals and scans the manifest.

02 LOAD & DISPATCH

MealPod locks into aircraft; weather and route are verified.

03 AUTONOMOUS FLIGHT

Supervised route with geofence, reserve energy and live telemetry.

04 SECURE HANDOVER

Land at controlled MealPort; authorized staff scan and receive.

05 RETURN & RESET

Aircraft returns, packs swap, logs upload and MealPod is sanitized.



PHASE 1 PILOT CELL / SEL UJI TAHAP 1

400 MEALS / DAY

2 OPERATING AIRCRAFT x 4 SORTIES x 50 MEALS

Starter cell: 2 operating aircraft + 1 reserve, 1 approved H2 or hybrid refuelling station, 1 RTK/weather station and 2 MealPorts. Phase 2: 5 + 1 aircraft, up to 1,000 meals/day.

PILOT ACCEPTANCE KPIS / KPI PENERIMAAN

>=97%

On-time arrival / Tepat waktu

>=99%

Temperature compliance / Kepatuhan suhu

>=98%

Mission completion / Misi selesai

100%

QR custody record / Rekam serah-terima

0

Assembly overflight / Di atas kerumunan

<=15 min

Ground turnaround / Waktu putar darat

FROM CONCEPT TO A CONTROLLED PILOT

DA6200-XR has target MTOW values of 115 kg (H2) and 118 kg (generator hybrid), so both are outside Indonesia's small-UAS category of no more than 25 kg. The certification and operating pathway must be confirmed with the Directorate General of Civil Aviation before prototype flight or service.

01 ROUTE & AIRSPACE

Select SPPG-school corridors, map people/roads/airspace, verify local spectrum and define emergency sites.

02 DETAILED ENGINEERING

Freeze loads, propulsion, H2 or liquid-fuel containment, software assurance, interfaces and FMEA.

03 GROUND & TETHER TEST

Validate structure, energy module, leak/fire detection, EMI/EMC, parachute, MealPod and thermal hold.

04 DGCA PRE-APPLICATION

Confirm the Part 22 airworthiness and operating-approval path, registrations and pilot/operator requirements.

05 CONTROLLED FLIGHT TEST

Progress from closed test area to representative route, including lost-link and contingency demonstrations.

06 FOOD-SAFETY VALIDATION

Approve local tray geometry, loading SOP, hot/cold time-temperature envelope, cleaning and chain of custody.

07 SUPERVISED CITY PILOT

Operate limited routes with observers, school safety zones, daily review, incident reporting and independent audit.

08 SCALE DECISION

Use verified cost, reliability, safety and food-quality data to decide fleet size and additional SPPG locations.

OFFICIAL REFERENCE BASELINE / REFERENSI RESMI

1. Indonesia Ministry of Transportation - PM 37/2020, UAS operations in Indonesian-served airspace
2. Indonesia Ministry of Transportation - PM 63/2021, Civil Aviation Safety Regulation Part 107 (small UAS)
3. Indonesia Ministry of Transportation - PM 34/2021, Civil Aviation Safety Regulation Part 22 (RPAS airworthiness)
4. Badan Gizi Nasional - Standard 2,500 portions per SPPG; up to 3,000 under specified conditions
5. Badan Gizi Nasional - Remote regions prioritized in the 2026 SPPG expansion
6. U.S. Department of Energy - PEM fuel-cell characteristics and transportation suitability
7. Intelligent Energy - current UAV hydrogen fuel-cell energy-density and refuelling reference

CONCEPT DESIGN | NO GOVERNMENT ENDORSEMENT IMPLIED | FINAL VALUES SUBJECT TO VALIDATION