HIDDEN GRADIENT

miniGEN · DRONE POWER

Fly longer on the fuel you already carry.

miniGEN for 1–2 kW drones: a compact, high-efficiency hybrid generator that runs on JP-8, Jet A or diesel.

The endurance problem

Battery drones in the 15–55 lb class typically fly well under an hour. Today's hybrid generators help, but burn a lot of gasoline mixed with oil and need frequent service.

What miniGEN is designed to deliver

- **Several times the endurance** of batteries at the same takeoff weight
- **Up to half the mission weight** of today's hybrid generators on 4+ hour missions
- **One military fuel** — no gasoline, no premixed oil
- **Lower maintenance**, by design
- **Quiet segments on battery** — engine off over the target



Concept illustration: miniGEN integrated in a VTOL drone. Not actual hardware; the 1–2 kW drone variant is in development.

Power-system mass, 4-hour mission at 2 kW

Batteries (~200 Wh/kg)	**40 kg**
Today's gasoline hybrid generator	**10.8 kg**
miniGEN (design target)	**5.1 kg**

Generator + fuel + tank. Comparison unit: 4.6 kg at 700 g/kWh. miniGEN target: 2.0 kg at 350 g/kWh.

Design targets

Continuous output	**1–2 kW**
Fuel-to-electric efficiency	**22–32%**
Fuel use	**≤350 g/kWh**
Dry mass at 2 kW	**~2 kg**
Fuels	**JP-8 · Jet A · diesel**
Interfaces	**48 V DC · CAN / MAVLink**

Modeled engineering targets, not measured ratings.

Where it fits

- Group 2 multirotor and VTOL drones for ISR, comms relay and logistics
- Field charging for drone teams, replacing battery resupply
- Long-endurance inspection, mapping, agriculture and public safety

Let's talk

We're looking for drone builders and operators to shape our requirements. A 30-minute call on where endurance, payload or fuel logistics limit you today would help us build the right unit.

Francisco Valentin, Ph.D. · Principal, Hidden Gradient francisco@hiddengradient.co · 256-945-9696 · hiddengradient.co