



مرکز توسعه خودرو برقی و زیرساخت ها



شرکت مهندسی و ساخت برق و کنترل مپنا
(مکو)



عنوان پروژه: باتری سواپ

کد پروژه: EVR.19



MAPNA Electric & Control, Engineering & Manufacturing Co.
(MECO)

Introduction To e-Scooters



Pros



Low maintenance



Silent running



Zero Emission

Cons



Initial cost



Charging time



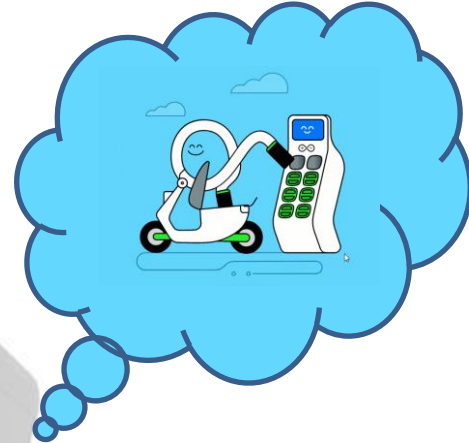
Weight

Introduction To Battery Swap System



OWN

Smart Vehicle



Smartphone
Connectivity

SmartScooter
Purchase

Battery Swapping
Subscription

Gogoro Energy Network
Infrastructure

Comercial Models



Gogoro



KYMCO + Ionex



Torrot + Swobbee



GMDU



OYIKA



Create Concept

To Change the Environment

Motto

Impossible is possible

Charging way

Go-Station

Charger

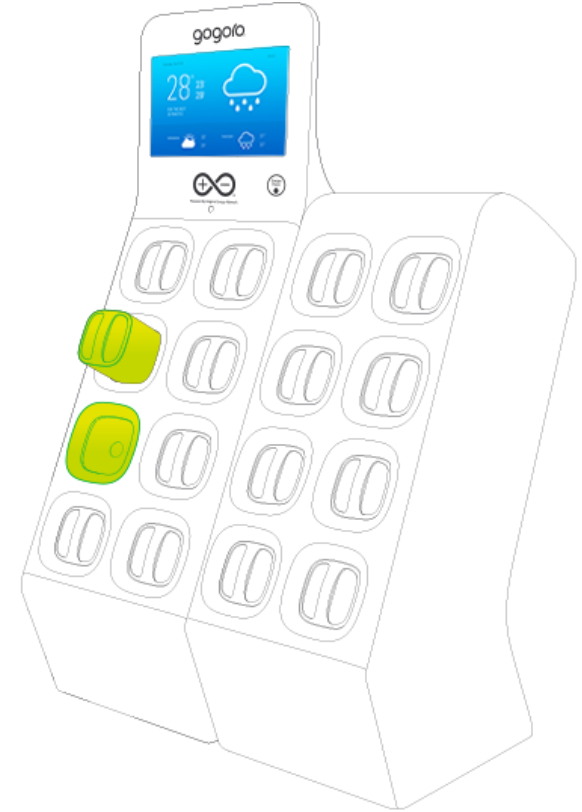
Home Charger

iQ system

Sense of Participate

CO2

Badge





	VIVA	3 Plus	S1	S2	2 Plus	1 Plus
Dimension (L x w x h)	1,680 x 630 x 1,050	1,850 x 675 x 1,105	1,730 x 690 x 1,035	1,890 x 660 x 1,080	1,880 x 670 x 1,090	1,730 x 690 x 1,035
Wheel base mm	1,164	1,298	1,230	1,306	1,306	1,230
Weight kg	71	97	94	104	104	94
Weight (with Batteries)	80	115	112	122	122	112
Max. power output	3 kW @500 rpm	6.2 kW @ 3,000 rpm	7.2kW @ 5,000 rpm	7.6kW @3,000 rpm	6.4kW@ 3,000 rpm	6.4kW @ 4,500 rpm
Max. torque (Motor / Wheel)	96 Nm @200 rpm	23 / 188 Nm @ 0-2,500 rpm	27 / 202 Nm @ 0-2,250 rpm	26 / 213 Nm @ 0-2,500 rpm	25 / 205 Nm @ 0-2,500 rpm	27/174Nm @ 0-2,250 rpm
Hill climb ability	20% (11°): 25 km/h 10% (6°): 40 km/h	30% (17°): 30 km/h 20% (11°): 40 km/h 10% (6°): 60 km/h	30% (17°): 40 km/h 20% (11°): 50 km/h 10% (6°): 70 km/h	30% (17°): 40 km/h 20% (11°): 50 km/h 10% (6°): 70 km/h	30% (17°): 30 km/h 20% (11°): 40 km/h 10% (6°): 60 km/h	30% (17°): 35 km/h 20% (11°): 45 km/h 10% (6°): 65 km/h
Max. riding range per battery swap (@ 30 km/h)	85km	170 km	150 km	170 km	170 km	150 km

GOGORO Home Charger



GoCharger

- ✓ Indoor Operating
- ✓ Connect to the internet through an RJ45 cable or via Wi-Fi
- ✓ Monitor the charging status through Gogoro App on smartphone
- ✓ Charging two Batteries
- ✓ AC Slow Charging (5 h) or Fast Charging (2.5 h)

GOGORO Giant Battery Swap Stations



The giant battery swap stations can retain almost 167 kWh of energy.

GOGORO Charging Cost

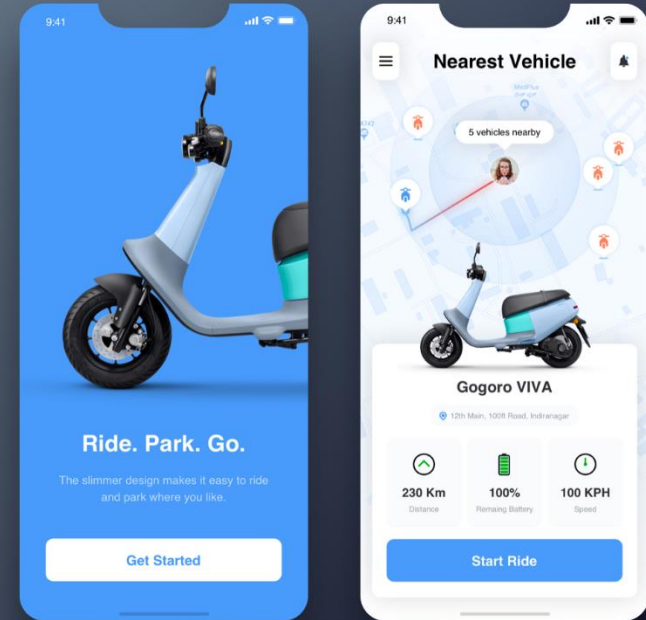


Gogoro also announced its new Flex Plan pricing structure. While riders were previously charged by the kilometer for the subscription-based electric scooter service, the new Flex Plan will see them charged by the Ah, a unit of measure of battery capacity.

This means riders are more accurately charged for the energy they use. The Flex Plan will cost TWD \$299 (US \$9.60) per month for the subscription and another TWD \$2.30 (US \$0.07) per Ah used.

e-Scooter Application Features

- ✓ Find Batteries
- ✓ Personalize Smartscooter with dynamic dashboard colors, light patterns, and custom sound effects
- ✓ Maximize your Power (set your energy efficiency)
- ✓ Set regenerative braking
- ✓ constantly tracking the status of Smartscooter
- ✓ Capture stats from every trip (top speed, longest commutes, energy use, and CO2 savings)
- ✓ Operate as a smart key
- ✓ Counting Badges



- **By April 2018 in Taiwan:**

- 60,000 E-scooters
- 120,000 batteries
- Prepared 11,000 batteries for backup in swap stations
- Only 8.4% of the batteries are used in the battery swap stations



- **AI powered battery system called “Smartgen”**
 - Learn to predict the consumption behavior of each user
 - AI system looks at user profiles near a particular station to decide how to charge batteries



More on swap stations

- **Bi-directional Smart Grid**
- **Benefits from photovoltaic energy in some stations**
- **Huge capacity of 560 kWh to support swappable batteries in swap stations**



GOGORO Battery Packs

- ✓ 1.3 kWh in capacity
- ✓ Range of 170 kilometers
- ✓ <10 kg weight
- ✓ Panasonic 18650 cell
- ✓ New battery features 21700 ternary cores (similar to that used by Tesla cars)



Core Value

Be green without compromise

Battery

Core Battery

Removable Battery

Never Worry about Range

Home Charger

Power Outlet Charger

Charging Point Network

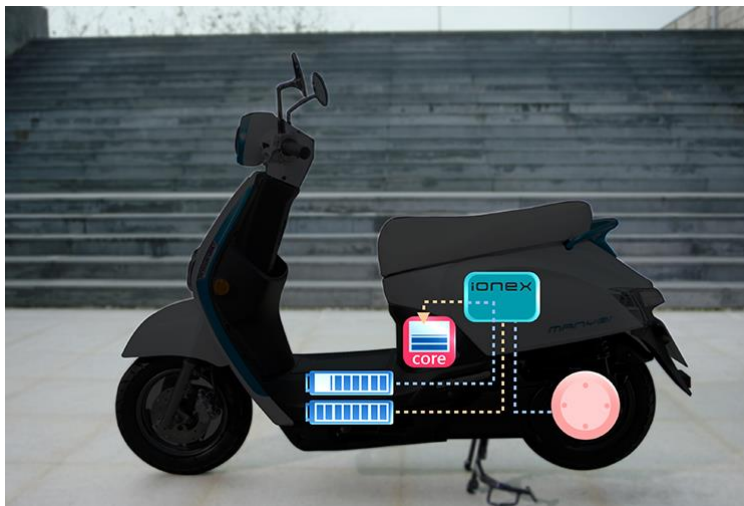
Extra Battery Rental





Model	KYMCO Nice 100 EV	KYMCO New Many 110 EV
Dimension (Length×Width×Height)	1.71×0.65×1.01 m	1.73×0.67×1.07 m
Motor Type	DC brushless motor	DC brushless motor
Drive Type	Hub motor	-
Motor Power	1.5 kW	3.2 kW
Motor Torque	50 N.m	16.5 N.m
Acceleration (0~50 mph)	-	-
Max. Speed	45 km/h	59 km/h
Range	64km (Constant 30km/h)	60km (Constant 30km/h)
	39km (CNS Mode)	36km (CNS Mode)
	※Core battery and One swapping battery	※Core battery and One swapping battery
Battery Charging Time	Standard : 4hr (charger included with)	Standard : 4hr (charger Included with)
	Fast charge : 1hr	Fast charge : 1hr
	※0%~100%	※0%~100%
Charger Speciation	100~240V/3A	100~240V/3A
	50~60Hz	50~60Hz
Curb Weight	77 kg	87 kg
Battery Type	NMC Li-ion	NMC Li-ion
Battery Capacity	Core battery : 50V/8Ah	Core battery : 50V/10.5Ah
	Swapping battery : 50V/13Ah	Swapping battery : 50V/13Ah
Tyre Size	F/R : 80/90-10	F/R : 90/90-10 50J
Climb	10.2° (18%)	19°

Ionex Internal Battery



The core battery recharged by the removable battery

Using the internal core battery as the power source to continue operation during the battery swapping.

Choosing the optimal battery to charge the core battery and decides on the right battery to supply power.

Leads all batteries to seamlessly work together

Using the typical way plugging the scooter directly to a power outlet



Ionex Extra Battery Rental



✓ Three Additional batteries



✓ Under-seat storage fits the additional batteries

✓ Increase the maximum range 200 km



- [illegible]



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