

The Sustainable Transportation Solution for the ASEAN Region

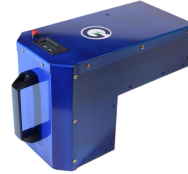
Transforming Transportation with Advanced Battery &
Retrofitting Technologies



Overview of Our Business

World 1st 10 Min Charging Battery Technology

World's 1st 10 minute Charging batteries for Electric Motorcycles and Charging Services



Personal Mobility design and manufacturing

We design and manufacture Personal Electric Vehicles for special applications



Rapid Charging Services

10 minute Charging Infrastructure and Solar Charging



Electric motorcycle rental and Leasing

Providing Electric mobility transportations for US Military base in Korea



250 Million Gasoline Motorcycles in ASEAN Countries

01

**Hydrocarbon - 16X
Carbon Monoxide - 3X
worse than cars**

02

Plus other Toxic Pollutants

03

**Gasoline Use :
Approx. 100 Million Liters per Day**

04

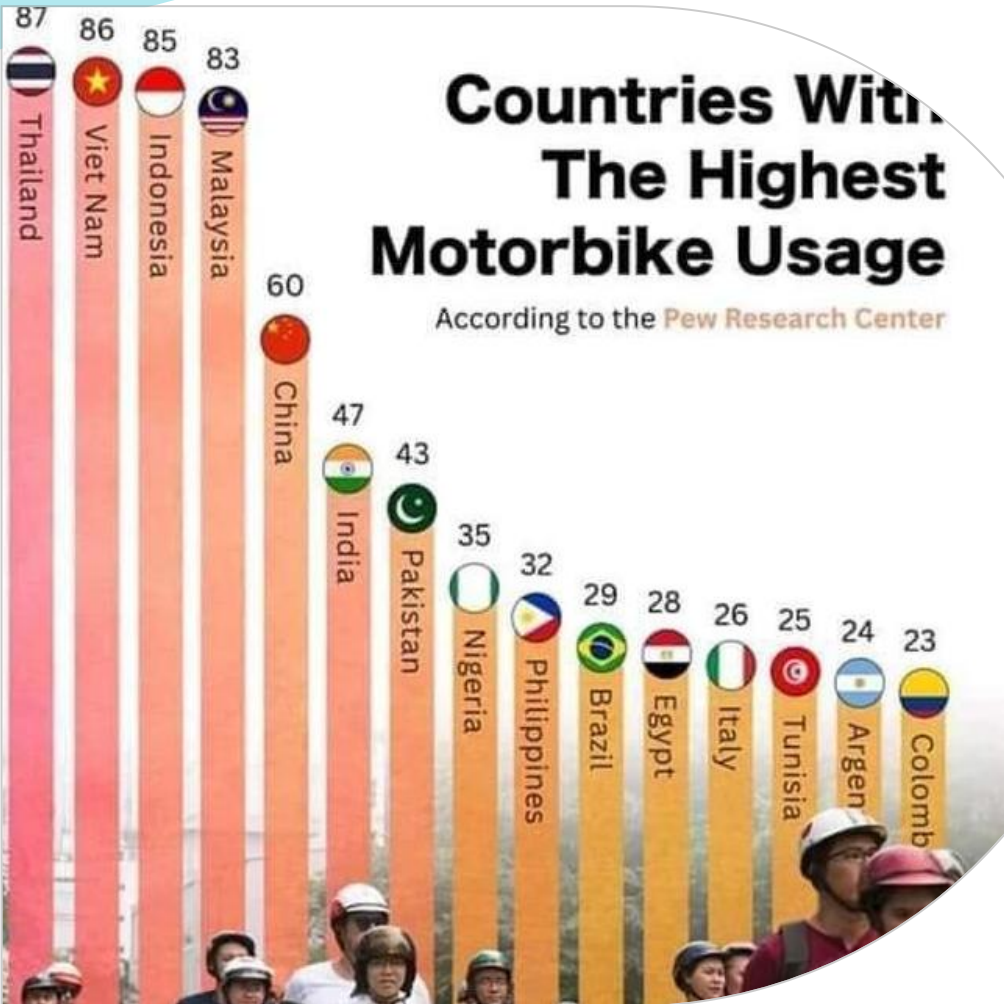
**CO2 Generated:
Approx. 200,000 Tons per Day**



The ASEAN Opportunity: A Region Ready for Sustainable Motorbike Transportation

Countries With The Highest Motorbike Usage

According to the **Pew Research Center**



01

ASEAN Goal of 30% EV by 2030

Government initiatives promoting electric vehicles and sustainable mobility goal of 30% EV by 2030

02

Huge Environmental Concerns

- Massive CO2 generation
- Unhealthy Poor Air Quality
- Noise Pollution

03

Rapid Growing Economy

- Need for Sustainable Transportation

04

No Emissions Regulation

- Gasoline Motorcycles have no Emissions Control

Issues with the New Electric Motorcycles



01

Expensive

- Cost is too Expensive for the General Public

02

Inconvenient Charging

- Battery Charge time is too long (3-8hrs)

03

Battery life cycle

- Battery Life is Too Short(6month to 2 Year)

04

Battery Swapping is Expensive

- Not an Economical Solution

05

Lack of Service or Training

- Lack of Service locations for the Electric Motorcycles

Revolutionizing Mobility with Retrofitting Gasoline Motorcycles to Electric



01

Low Cost and efficient conversion technology for existing Motorcycles

02

Extends the lifespan of existing vehicles reducing waste

03

**Convenient Free Charge Points, Carbon Credits
Low Energy Cost: 1,000km=<\$0.50) *Lao**

04

**No More Gasoline purchases
Gasoline Cost: 1,000Km: 20~30 Liters=\$20~\$30**

Simple Gasoline to Electric Retrofit

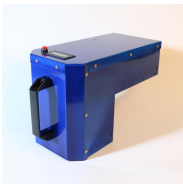
DC Motor



Controller



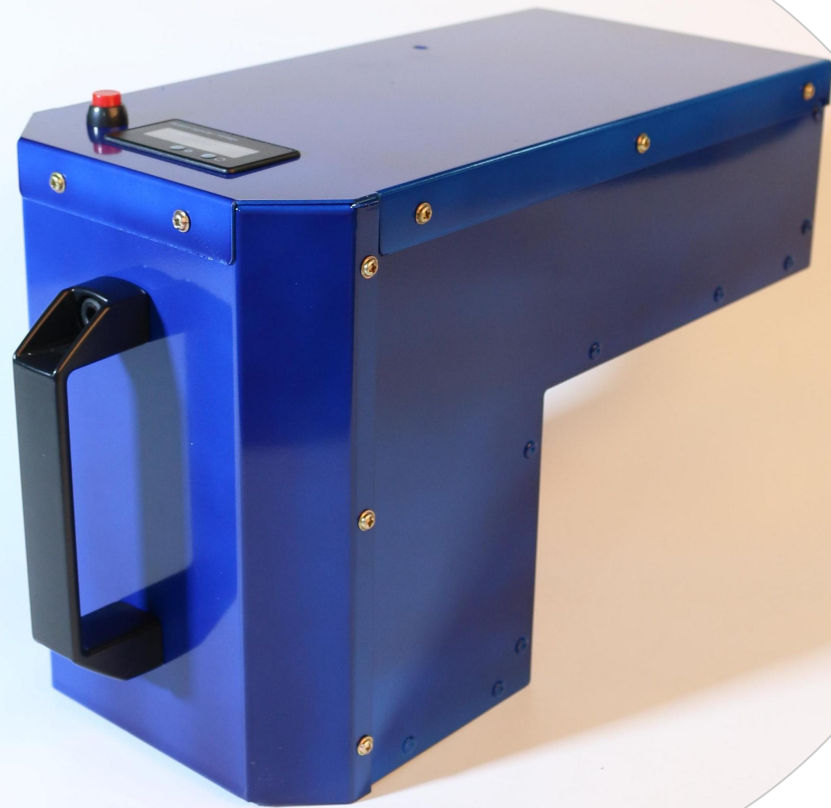
10 Min Charging
Battery Pack



2-4Hrs



Graphion's Innovative Battery Solutions: Rapid Charging Four Different Battery Pack Options



01

Lithium Capacitor (LIC) Pack

10-minute charge time, >10-year life, 40km range,
High Cost, Medium Power Density

02

Liithium(NCM) Pack

1-3 hour charge time, 3-5 year life, 80km range,
High cost, High Power Density

03

LFP(LiFeo04) Pack

<1-hour charge time, >7 Year life, 70km range,
Med cost, Medium Power Density

04

Sodium Ion(Na+) Pack

40-minute charge time,, non-explosive, 60 km range >
10 year life, low cost, Low Power Density

Typical Cost of Retrofit and Chargers

*approx. factory cost

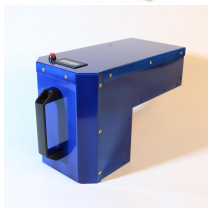
Retrofit Parts	Cost and Labor	Chargers	Cost
2-3Kw BLDC Motor	\$100	10 Minute Charger	\$1,000
Motor Controller	\$50	20 Minute Charger	\$300
Mechanical Parts	\$50	1Hr Home Charger	\$100
Wiring	\$30	3Hr Home Charger	\$50
Misc Parts	\$20		
Labor	2-4 hrs		
Sub Total(without the Battery)	\$250+Labot+Profit	Other Options	
Battery Option 1 (LIC)	+\$700	LED Head Light	
Battery Option 2 (NCM)	+\$500	Bluetooth Speakers	
Battery Option 3 (LFP)	+\$350	220AC Inverter	
Battery Option 4 (Na+)	+\$280		



DC Motor



Controller



10 Min Charging
Battery Pack



Energy Cost Comparison



Energy cost comparison between Gasoline motorcycles and Electric Motorcycles

Assumptions:

Gasoline efficiency: 40km/liter

Gasoline cost: \$1.00/liter

Energy Consumption: 30 watt-hr/km

Electric cost: \$0.023 per kWh (Lao PDR, 500Kips per kWh)

For 10,000Km per Year	Gasoline 100cc	Electric 2,000watt
10 Year Gasoline Cost (2,500 Liters)	\$2,500	
10 Year Energy Cost (3,000Kw/hr)		\$70
10 Year Government Subsidy (\$0.35/L)	~\$1,000	0
Amount of CO2 Generated	6,000kg	0
HC, NO, CO are generated excessively	Yes	None
10 Year Total Energy Cost •Oil Change or Engine Maintenance cost is Excluded	\$3,500	\$70

The Benefits of Gasoline to Electric Conversion



Environmental Impact

- No Carbon emissions
- No air pollution
- No Noise
- Clean City
- Recyclable
- Sustainable



Economic Benefits

- Free Charging
- Reduced dependence on imported fuels
- Job creation
- Cost savings
- Carbon Credits
- Basic EV Education



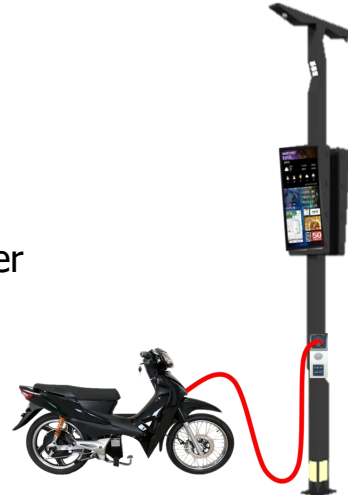
Convenience and Accessibility

- Rapid Charging Stations
- Fast charging
- Extended vehicle life
- Low Cost conversion
- Easy Local Maintenance
- Emergency Power Source



Improved Performances

- No shifting
- No Noise
- No maintenance
- USB charging
- Bluetooth Speaker
- 220AC option

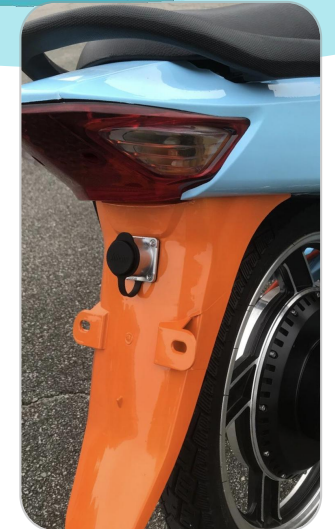


Building a Sustainable Ecosystem: Graphion's Approach to Sustainable Mobility

01

Fast Charging Infrastructure

Affordable and compact fast chargers (\$300-\$1,000)



02

Standardization Efforts

Working with ASEAN governments to standardize the fast charging and battery packs.

03

Education and Training

Developing local training programs for conversion and maintenance expertise



04

Customer Incentives

Government Subsidy, Free Charging Carbon Credits

Overcoming Challenges & Building Partnerships: Addressing the Challenges of EV Adoption

Cost

1

Challenge: High costs of electric motorcycles and batteries

Solutions:

- Cost-effective Retrofit and Battery Rental Plan
- Development of affordable battery options
- Advocacy for government subsidies
- Participation in Official Development Assistance program



Consumer Adaptation

4

Challenge: Convincing consumers to switch

Solutions:

- Incentives: free charging, carbon credits
- Highlighting benefits: reduced noise, multi-use features
- Advocacy for policy changes on gasoline motorcycle emissions

Regulatory Issues

3

Challenge: Potential regulatory hurdles

Solutions:

- Collaboration with government bodies (Lao Ministry of Energy)
- Advocacy for standardization of fast-charging technology

Charging Infrastructure

4

Challenge: Lack of widespread charging Infrastructure

Solutions:

- Development of affordable compact fast chargers
- Establishing a network of charging stations, starting in Laos
- Support for multiple vehicle types (e-bikes, landscaping)

Overcoming Challenges & Building Partnerships: Addressing the Challenges of EV Adoption



Technical Education and Maintenance

5

Challenge: Lack of EV tech knowledge

Solutions:

- Local training for conversion technology
- Emphasis on EV education and training programs

Grid Concerns

6

Challenge: Strain on electrical grid

Solutions:

- Chargers only 2-5kW/hr to minimize impact
- Development of various battery technologies for load management

Battery Performance and Longevity

7

Challenge: Ensuring battery performance and lifespan

Solutions:

- Range of battery technologies (LIC, NCM, LFP, Sodium Ion)
- Focus on rapid charging and extended battery life (up to 10 years)

Standardization

8

Challenge: Lack of standardized protocols

Solutions:

- Active work on standardizing fast charging and battery packs
- Use of ASEAN Energy Business Forum for promotion

Challenges with Used EV Batteries

1

Batteries Reuse in home solar charging

Home Emergency Power



2

Battery Recycling

Re-manufacturing and Reuse



3

Battery Certification Process Needed

For Battery Safety



Goals and Objectives of the Pilot Study with the Ministry of Energy, Lao

Goal:

Accelerate the transition to sustainable transportation in Lao PDR by retrofitting gasoline motorcycles to electric, using innovative rapid charging technologies to achieve 30% EV by 2030.

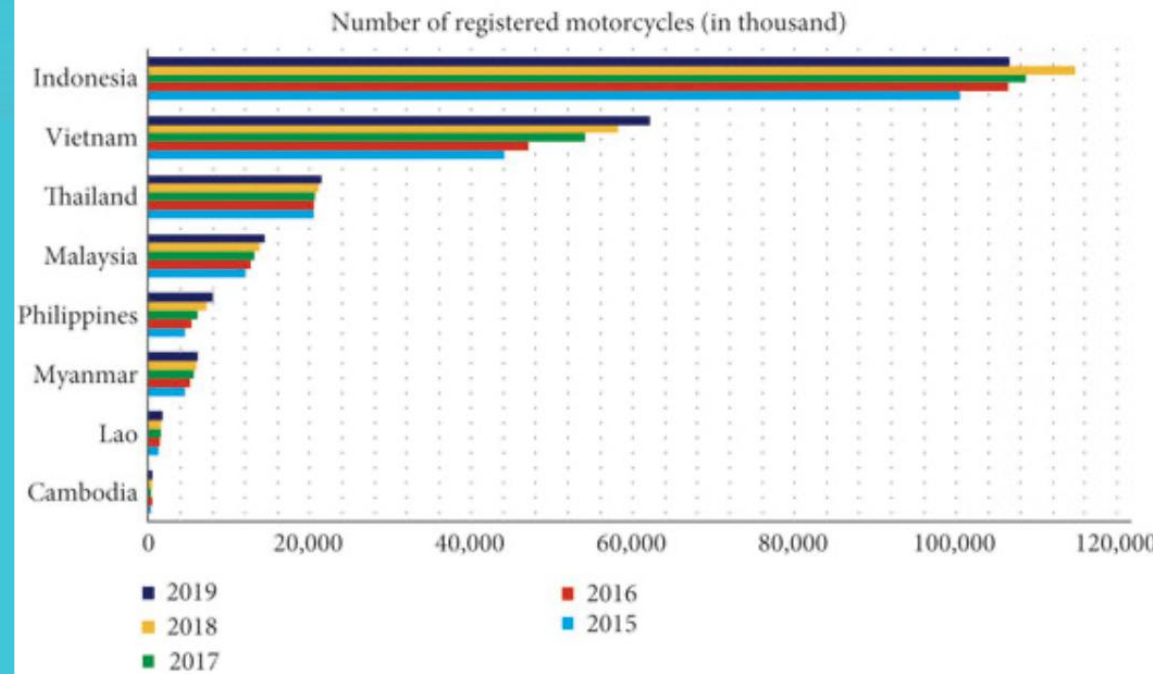
Objectives:

1. Convert existing gasoline motorcycles to electric motorcycles using Graphion's 10-minute charging battery technology.
2. Install a network of rapid chargers across Lao PDR and offer a free charging to general public.
3. Develop local expertise by education in EV technologies and maintenance.
4. Drive standardization through out the ASEAN countries.
5. Complete a feasibility study for nationwide rollout.
6. Work with Korea Ministry of Trade and Energy under ODA Program



Ministry of Trade,
Industry and Energy

Retrofit Market Opportunity



**>200 Million
Motorcycles**



30% By 2030



**>\$80 Billion
By 2030**



**>\$200 Billion
Total Available Market:**