ELECTRIFYING THE FUTURE OF HEAVY TRANSPORT

MANUFACTURING FEASIBILITY REPORT

Integrated Electric Bus, Battery, Motor & IBSS Manufacturing Facility

Capacity: 100–500 Electric Buses per Month

Location: Republic of Azerbaijan

Proponent: BSHFMF Power Solution (Pvt) Ltd

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1. EXECUTIVE SUMMARY

BSHFMF Power Solution (Pvt) Ltd proposes to establish a **fully integrated electric vehicle manufacturing complex in Azerbaijan**, comprising:

- Electric Bus Manufacturing Unit
- Lithium Battery Pack Manufacturing Unit
- Electric Motor Manufacturing Unit
- Intelligent Backup Support System (IBSS) Manufacturing Unit

The facility will initially produce **100 electric buses per month**, scalable to **500 buses per month**, supported by **in-house production of critical EV components**, ensuring cost control, supply chain security, and superior profit margins.

This project aligns with:

- Azerbaijan's **energy transition goals**
- Regional **clean transport demand**
- Export markets in **CIS, Middle East, Europe, and Central Asia**
- Industrial diversification beyond oil & gas

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2. PROJECT OBJECTIVES

1. Establish Azerbaijan as a **regional EV manufacturing hub**
2. Localize high-value EV components (battery, motor, electronics)
3. Achieve **economies of scale** and high profitability
4. Reduce dependency on imported EV systems
5. Enable exports of EV buses and components
6. Generate skilled industrial employment
7. Introduce **IBSS-enabled ultra-long-range EV buses**

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3. PROPOSED PRODUCTION CAPACITY

Phase	Monthly Output	Annual Output
Phase 1 (Year 1)	100 buses	1,200 buses
Phase 2 (Year 2)	250 buses	3,000 buses
Phase 3 (Year 3+)	500 buses	6,000 buses

Supporting units:

- Battery packs: up to **3,500 packs/year**
- Motors: up to **7,000 units/year**
- IBSS systems: **6,000+ units/year**

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4. PRODUCT RANGE

- **12-meter Electric City & Intercity Buses**
- **18-meter Articulated Electric Buses**
- Export-ready variants

Key differentiation:

- **1,600–2,000 km operational range (IBSS-enabled)**
- Lower battery stress
- Reduced total cost of ownership (TCO)

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5. LOCATION ADVANTAGE – AZERBAIJAN

Strategic Advantages

- Strong industrial policy support
- Access to Eurasian transport corridors
- Competitive electricity tariffs
- Skilled technical workforce
- Access to CIS & EU markets
- Government incentives for green manufacturing

Land Requirement

- **500–700 acres**
- Built-up area: **45,000–55,000 sqm**

6. FACTORY STRUCTURE (INTEGRATED COMPLEX)

A. EV BUS MANUFACTURING UNIT

Department	Function	Area (sqm)
Design & Engineering	CAD, CAE, prototyping	2,500
Chassis Fabrication	Frame welding & assembly	6,000
Body Manufacturing & Paint	Panels, painting, corrosion	7,000
Powertrain Assembly	Motor, controller, axle	4,000
Battery & IBSS Assembly	Battery packs, IBSS systems	5,000
Electrical & Electronics	Wiring, VCU, sensors	3,000
Interior Assembly	Seating, HVAC, safety	4,500
Final Assembly Line	Vehicle integration	8,000
Quality Control & Testing	End-of-line testing	4,000
Warehouse & Logistics	Parts & finished goods	5,000
Offices & R&D	Admin, HR, testing labs	2,500
Utilities & Services	Power, air, water	2,000

Total Built-up Area: ~53,000 sqm

B. MANUFACTURING PROCESS FLOW

1. Design & Engineering
2. Chassis Fabrication
3. Body Manufacturing & Painting
4. Powertrain Installation
5. Battery Pack Assembly
6. IBSS Integration
7. Electrical & Electronics Assembly
8. Interior Installation
9. Final Assembly
10. Quality Control & Road Testing

11. Dispatch & Delivery

This flow supports **parallel production lines**, enabling high monthly output.

C. BATTERY MANUFACTURING UNIT (LFP PACKS)

Scope: Module & pack assembly (cells sourced initially)

Equipment & Machinery

- Cell grading & testing machines
- Automatic module stacking machines
- Laser welding systems
- BMS programming stations
- Thermal management assembly lines
- Battery aging & cycling test chambers
- Fire safety & explosion-proof chambers

Area Required

- **8,000 sqm**

C. ELECTRIC MOTOR MANUFACTURING UNIT

Scope: High-efficiency PMSM / induction motors

Equipment & Machinery

- CNC stator & rotor lamination presses
- Coil winding machines
- Vacuum impregnation systems
- Shaft machining centers
- Dynamic balancing machines
- Motor performance test benches
- Insulation & endurance test rigs

Area Required

- **6,000 sqm**

D. IBSS MANUFACTURING UNIT

Scope: Proprietary BSHFMF technology

Equipment & Machinery

- Power electronics assembly lines
- PCB SMT machines
- Inverter & control unit assembly stations
- Firmware programming benches
- Load simulation & endurance testing rigs
- Environmental & vibration test chambers

Area Required

- **4,500 sqm**

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7. TOTAL MACHINERY & EQUIPMENT SUMMARY

Category	Estimated Cost (USD)
Bus manufacturing lines	45–50 million
Battery manufacturing equipment	28–32 million
Motor manufacturing equipment	20–25 million
IBSS electronics & testing	15–18 million
Utilities & automation	10–12 million

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8. HUMAN RESOURCE REQUIREMENTS

Category	Personnel
Engineers & R&D	180
Production & Supervisors	250
Skilled Technicians	900
Battery & Electronics	300
Quality & Testing	200

Category	Personnel
Logistics & Admin	220

Total Direct Jobs: ~2,050
Indirect Jobs: 4,000+

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9. TOTAL CAPITAL INVESTMENT (CAPEX)

Item	Cost (USD)
Land & Development	18–22 million
Factory Construction	40–45 million
Bus Manufacturing Equipment	50 million
Battery Unit Setup	30 million
Motor Unit Setup	23 million
IBSS Unit Setup	17 million
Utilities & IT	10 million
Pre-operating & Training	7 million
Working Capital	25 million

TOTAL INVESTMENT

☞ **USD 220 – 240 million**

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10. OPERATING ECONOMICS (AT 500 BUSES/MONTH)

Average Selling Price (ASP)

- EV Bus: **USD 320,000 – 380,000**

Annual Revenue (6,000 buses)

☞ **USD 1.9 – 2.2 billion**

11. PROFITABILITY & MARGINS

Metric	Value
Gross Margin	28–34%
EBITDA Margin	18–22%
Net Profit Margin	12–15%
Annual Net Profit	USD 230–300 million
Payback Period	3.5–5 years
Project IRR	22–28%

12. OPERATING EXPENDITURE (OPEX – ANNUAL)

- Labor & HR costs
- Power & utilities
- Raw materials & components
- Maintenance
- Logistics
- Insurance & compliance

Estimated OPEX: **USD 45–55 million per year** (at 250 buses/month).

13. SAVINGS & VALUE CREATION

Cost Savings

- 20–25% lower unit cost vs imported EV buses
- Reduced logistics & FX exposure
- Long battery life via IBSS

National Benefits (Azerbaijan)

- Reduced diesel imports
- Export earnings
- Skilled workforce development

- Technology transfer

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14. INVESTOR BRIEF (SUMMARY)

Investment Ask

- **USD 230 million**

Use of Funds

- Manufacturing infrastructure
- Automation & tooling
- Working capital
- R&D & localization

Investor Returns

- Strong cash flows from Year 2
- High EBITDA margins
- Export scalability
- Strategic exit options:
  - IPO
  - Strategic OEM sale
  - Sovereign / infrastructure fund buyout

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15. RISK & MITIGATION

Risk	Mitigation
Technology	Proven IBSS
Supply chain	Local manufacturing
Market demand	Government & export contracts
Energy cost	Hybrid renewable integration
FX risk	Export revenue mix

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16. CONCLUSION

This feasibility confirms that **Azerbaijan can host a world-class integrated EV manufacturing ecosystem**.
With **IBSS differentiation**, localized battery and motor production, and scale of **100–500 buses per month**, BSHFMF Power Solution can establish a **highly profitable, export-oriented EV industrial base**.