Electrification of Bus
The Shenzhen Bus Group Experience



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Shenzhen Special Economic Zone Since 80’





Shenzhen SEZ Present

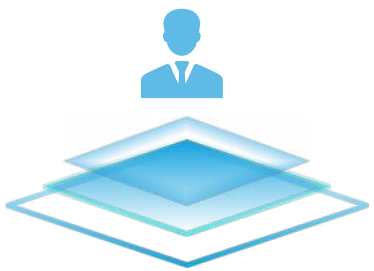


- Population: 13 Million
- Area: 1990 km^2
- GDP: $350 Billion
- Ranked 1st in Business Environment In China
- Colleges & Universities: 18
- Transportation:
  - 1 Airport
  - 9 Passenger/Freight Ports
  - 6 Train Stations
  - 7 Boarder Check Points (Only city in China with Sea, Air and Land checkpoints)
  - 8 Metro Lines
  - 977 Bus Routes w/ over 10,000 Buses
  - 20,000 Taxis

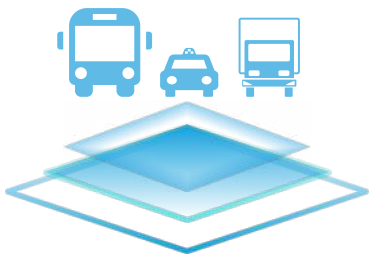
About SZBG

Company Asset

Staff：27,545



Fleet Size：12,769

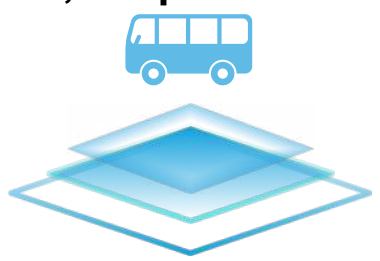


Urban buses：6028　Taxis：5807

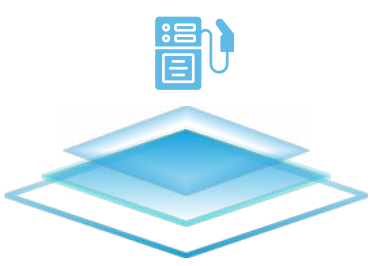
Cross-border, on-demand and tour vehicles：934

Annual passenger capacity:

800,000,000 person-times

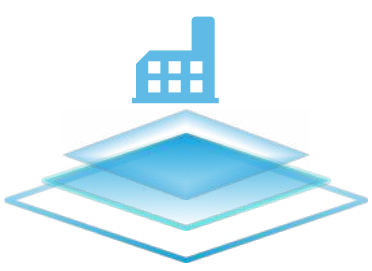


Charging stations：104



Chargers: 2.638

Depots: 945,000 sq.m

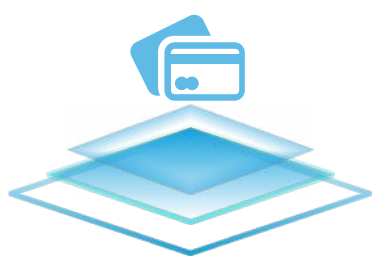


Self-owned station area: 250,000 ㎡

Rented station area: 695,000 ㎡

Shenzhen Tong

Shenzhen All-purpose Card



40 million cards

12 million active users

annual transaction amount of RMB 6 billion

About SZBG

Largest All Electric Public Transportation Operator In the World



- Taxi
- Urban Bus
- Custom Bus
- Micro Bus
- School Bus
- Tour Bus
- Cross-Border Bus
- Cross-Border Truck
- Vehicle Rental

Process of Electrification

BUS

In May 2008 - 10 hybrid buses.

In July 2011 - 137 electric buses.

In June 2017 - 6053 buses became electric buses



TAXI

In May 2010 - 50 electric taxis.

In Dec. 2017 - 3,056 electric taxis.

In Dec. 2018 - Shenzhen taxi electrified.



CHARGING

In June 2010 - first charging station.

In Apr. 2016 - "grid-type fast charging" technology

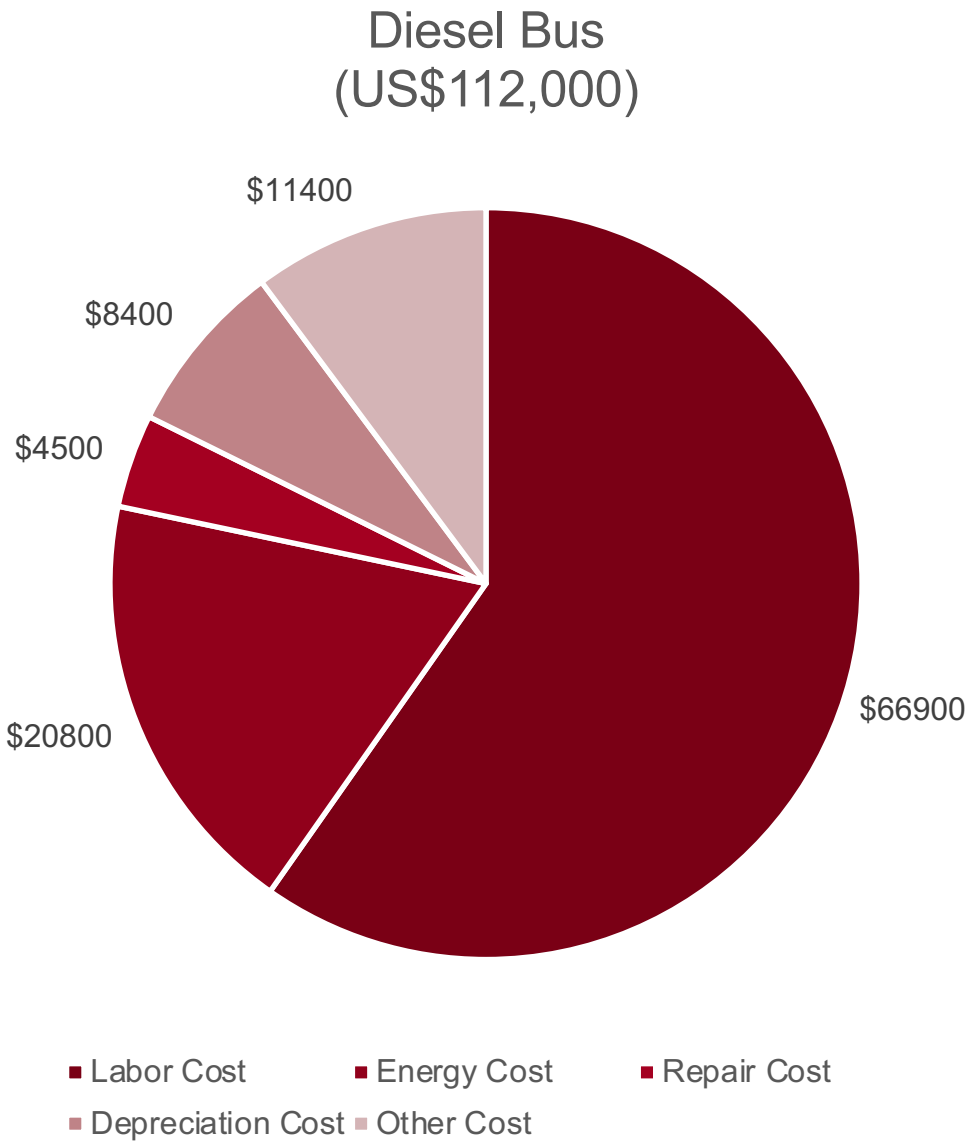
In Dec. 2018 - 333 chargers for taxis.

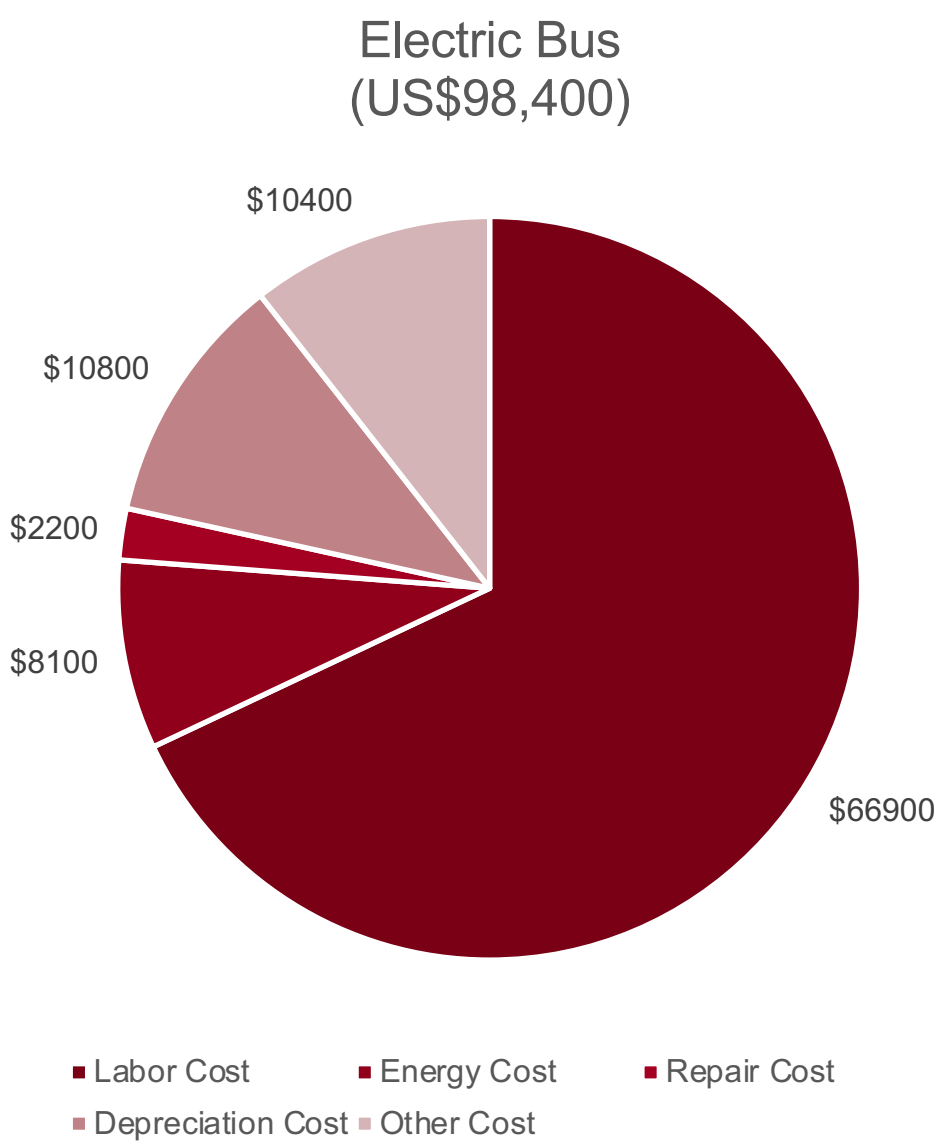


Benefits of Electric Buses



Benefits of Electric Buses





Technical Standardisation of Electric Buses

Minimal vehicle maneuvering

Flexible charging

Land efficiency

One charger/ 4 buses

Full use of trough period electricity



- 10.5-metre buses
- DC fast charging
- Patented grid chargers

Technical Standardisation of Electric Buses

Intelligent Dispatch Centre



E-bus maintenance



Charging service



Electric Taxis

- SZBG owns 2 taxi companies
- 5807 taxis
- 21.3% of the total taxis (22,000) in the city
- Taxi chargers: 933



Pengcheng Electric Taxi

- First pure electric taxi company in the world
- Management model for pure electric taxi business combining OEM and operator
- Global media and commercial interest



Comprehensive Charging Stations

One-stop stations to serve the passengers, drivers and taxis

For Consumer

- Convenience services
- Other onboard services
- Discover other needs

For Driver

- One-stop taxi fleet
- Driver dining service
- Driver life leisure

For Taxis

- Charging service
- Maintenance services
- Power storage



On-Demand Bus

Start time: 2016

Line: 989

App-based Customer/Commuters

Service mode：Fixed route, fixed time (peak hour) , Fixed fare

40 Seats / bus



U+ Minibus



10 Seats

Running time: Off peak

Dynamic route

No fixed Route

No fixed schedule

On-Demand Bus

7
Cities

70%
Attendance rate

500K
Registered users

1650
Lines

1602
Passengers per 1000 km

50K
Active users per day

Autonomous Driving Technologies

SHENZHEN BUS

+

HAYLION 海梁科技 Technologies

An Autonomous Driving Bus Trails that Operated over 20,000km without Incidents under Harsh Weather Conditions

International Cooperation

World Bank Electrification Report

SHENZHEN BUS

THE WORLD BANK

Charging Studies

eDF

Thank You!



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