Pure Electric Bus

More energy-saving, More stable structure, More efficient battery system

Electric system includes: controller of the whole bus, driving motor & controller, electric power steering & controller, electric air pump & controller.
Battery system includes: battery pack, battery management system, battery charging (swapping) device

Battery Charging Solution

Advantages: : Easy to use, but the charging station needs comparatively small capital investment.
Disadvantages: Long charging time and the low efficiency of the charging devices and vehicles. The charging station will need a large construction area.

Battery Swapping Solution

Advantages: High utilization rate of charging (swapping) devices and vehicles, fast charging, continuing operation; longer life span and easier maintenance of the battery.
Disadvantages: Battery charging and swapping center will need a large capital investment.

GOLDEN DRAGON

TAKING YOU FORWARD

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NEW ENERGY BUS SERIES

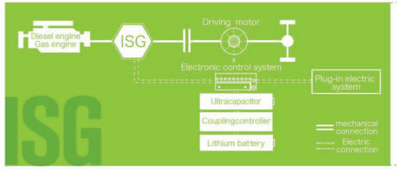
Hybrid Bus

More options, Higher efficiency, More stable energy management

Since 2005,Golden Dragon has been moving ahead to explore the new transportation technologies and has started the R&D in hybrid bus.In 2008,Golden Dragon' s hybrid buses were put into operation in Hangzhou,which becomes the first hybrid bus line in China.

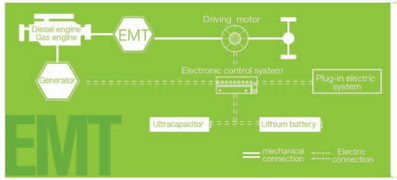
GHS-V Hybrid System

GHS-V Hybrid system optimized by the Golden Dragon R&D department, pushes the public transportation to the new stage with its advanced and matured energy management. According to statistics, the plug-in hybrid system which adopting GHS-V will save 51% of the energy compared with traditional bus.



ISG Double Generator Solution

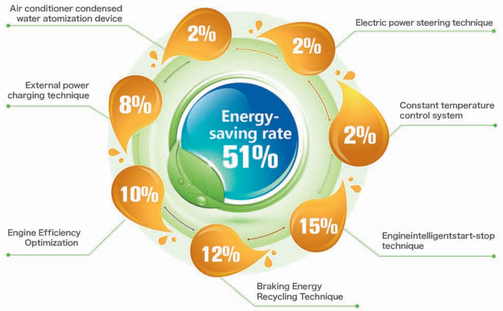
Higher power,Higher efficiency, Quicker charge
Planetary clutch:
Longer life span, more reliable, less occupied, compact arrangement, optimization of the coupling driving of generator and engine.



EMT Auto Transmission Solution

Double driving motor:
Lithium battery and ultra-capacitor, in parallel,form a double power supply.
EMT transmission:
Adding an EMT transmission between the driving motor and engine, as a mature structure, increases running efficiency and saves energy.

51 How can Golden Dragon Hybrid Bus save % of the energy?



ADVANCED ENERGY-SAVING TECHNOLOGIES

External Power Charging Technique
This technique adopts the intelligent control technique, which can monitor the charging process and protect the battery.

The Parallel-series Hybrid System
Direct driving motor is used to participate in producing driving energy and recycling braking energy. Furthermore, it can couple with the engine to guarantee the energy-saving effect.

Electric Power Steering Technique
Frequency conversion technique adjusts the output power by changing rotating speed in real time. Compared with traditional power steering, it is more energy-saving.

Constant Temperature Control System
Adjust the speed of fan automatically to make sure the temperature of the engine andgenerator is appropriate.

Composite Energy Storage Technique
Make full use of the lithium battery and ultra-capacitor,guarantee the battery' s life span and recycle the braking energy at much as possible.

Engine Intelligent Start-stop Technique
The engine will stop or start according to the driving condition. For instance, in the situation such as stop, moving slowly, gliding, engine will stop to save energy,. The start-stop technique can greatly decrease the emission and reduce the noise in congested situation.

TECHNICAL SPECIFICATION

Model	Oil-Electric Hybrid	Gas-Electric Hybrid	Plug-in Hybrid
Dimension(mm)	12000×2540×3120		
Bodywork Material	Steel (Option: aluminum alloy bodywork)		
Max Speed(Km/h)	69		
Pure Electric Driving Range (km)	30		
Climbable Gradient (%)	15%		
Engine Type	YC6J200-42 (Diesel)	YC6J210N-40 (Natural gas)	
Energy Storage	Ultra-capacitor+Lithium Battery		

7 KEY ASSEMBLIES OF ELECTRIC POWER SYSTEM

Electric Power Steering
- Adjust the generator's speed in accordance with the on-time work load, making steering more precise.
  Adopt the long-magnet generator, which is smaller and more efficient.

Driving Motor
- The driving motor is the permanent magnet synchronous motor, which is more efficient and reliable than traditional asynchronous traction motor.

DC/DC Convertor
- Provide the 24V DC for low pressure system.
- Self-adapt system, over current protection,overvoltage protection,under voltage protection, over temperature protection, high insulating strength.

Electric Air Pump
- The electric air compressor provides the chassis braking system with air.

VCU Controller For Whole Bus
- Read and process the date of driving operation, adopt the advanced vehicle control strategy.
- Monitor the data of temperature, voltage, current, fault in each assembly, guarantee the assemblies' function.

Electric Air Conditioner
- Electric air conditioner is a top-amounted Frequency conversion air conditioner, with intelligent energy management.

Controller Of Driving Motor
- The controller of driving motor features Dinuclearsignal process, Frequency Conversion Contro.
- 35 items of self-protection, IGBT module, ReflexTM technique and other techniques.

TECHNICAL SPECIFICATION

Model	Pure Electric bus	
Dimension(mm)	12000×2540×3120	
Bodywork Material	Steel (Option: Aluminum alloy bodywork)	
Max Speed(Km/h)	69	
Driving Range(km)	>200 (AC on) ; >260 (AC off)	
Climbable Gradient (%)	15%	
Energy Charging Solution	Plug-in	Battery-swap
Energy Storage	Lithium iron phosphate battery	