Tata Series Hybrid Bus

Introduction

- Tata Series Hybrid bus is based on Series Hybrid Technology with state of the art hybrid drive and energy storage system.
- The Vehicle control strategy and energy management is done by Tata Motors proprietary software.
- The bus performance in terms of fuel economy optimization and other key parameters can be tuned and customized to Clients city drive cycle which is important to have optimized fuel economy.
- Tata Motors is the only company to offer both Diesel and CNG hybrid on a highly modular platform in 12 Meter Full Low floor configuration.
- The Hybrid buses have been tested in various cities in Spain i.e. Madrid, Barcelona, Zaragoza, Malaga etc.
- The platform on which the hybrid technology is developed can be adopted in future to offer pure electric or Plug in Hybrid.
- EMT Madrid have put the Tata CNG Hybrid buses in service in Line 75 (one of the most important line of the city of Madrid)
# Tata Series Hybrid Low Floor Bus Specification

## TECHNICAL SPECIFICATION

<table>
<thead>
<tr>
<th>General Characteristics</th>
<th>Details</th>
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</thead>
<tbody>
<tr>
<td>Type</td>
<td>Series Hybrid Low Floor Bus with Start and Stop System / Auto EV Mode</td>
</tr>
<tr>
<td>Wheel Base</td>
<td>6000 mm</td>
</tr>
<tr>
<td>Front OverHang</td>
<td>3260 mm</td>
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<tr>
<td>Rear Overhang</td>
<td>2572 mm</td>
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<tr>
<td>GVW</td>
<td>19000 kg</td>
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<tr>
<td>Max Speed</td>
<td>60km/hr</td>
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<tr>
<td>Turning Circle Diameter</td>
<td>21m</td>
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<table>
<thead>
<tr>
<th>Aggregate Specification</th>
<th>Details</th>
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</table>
| Engine                   | Option -1 Cummins, 195 BGeEV, EEV 195HP CNG Engine  
Option -2 Cummins IsBe4.5e5 185 HP, Diesel Engine |
| Series Hyrbid System     | Siemens Elfa Electric Drive |
| Traction Battery         | A123 Lithium Ion Iron Phosphate- 9kwhr |
| Axles                    | Rear Inverted Poter axle |
| Brakes                   | Full Air Dual circuit - S Cam, Disc Brake, EBS |
| Suspension               | Pneumatic Suspension - ECAS |
| Wheels and Tyres         | 8.25 X 22.5 Wheel rim with 275/70 R22.5 |
| Electricals              | 24 V system |
Tata Series Hybrid Bus (EMT Madrid)
Tata Series Hybrid Bus - Advantages

Technology
- State of the Art Hybrid drive & Storage System
- Tata Motors Proprietary Energy Management System
- Full electric Auxiliary drive for steering, air compressor and AC compressor
- Full Low Floor Chassis with EBS & ECAS

Performance
- More than 30% of fuel economy improvement in actual city cycle
- Full electric mode with option of Auto EV mode or start and stop EV mode
- Significant reduction in interior and exterior NVH noise and excellent drivability and acceleration

Emissions
- More than 30% reduction in overall emissions
- EEV engine Emissions standards
- Testing under Progress as per LCEB Guidelines for emissions.

Expertise
- Chassis design and developed at Tata Motors
- Tata Motors is the only OEM to work on Series and Parallel Hybrid in both CNG as well as Diesel engine option
- Bagged a joint project with technical institute of India for development of Fuel cell buses
Tata Series Hybrid Bus – Important Technological Features

- TML Proprietary Control Strategy & Energy Management
- Advance Onboard Diagnostic tool & Option of Remote Diagnostics & Telematics
- Body Electrical Multiplexing, Meets European Bus body requirements
- VDV Dashboard
- Tata AREA Hybrid
- Full Low Floor with EBS & ECAS
- Series Hybrid Technology with Advance Lithium Ion Traction Battery

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Tata Series Hybrid Buses in Action

Bus running in Line 75, Madrid

Testing in Malaga

Winter Test in Sweden