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KEOLIS HYDERABAD METRO RAPID SYSTEM – OVERVIEW

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ABSTRACT

The Hyderabad Metro Rail is the world's largest metro project in public-private partnership (PPP) mode. It covers 69.2 km across three corridors, transforming Hyderabad, triggering robust economic activity around the city. The Hyderabad Metro is a rapid transit system that has been operating in Hyderabad, India, since 2017. The system has been a major success, with ridership increasing steadily over the years. However, the metro has also been plagued by overcrowding, particularly during peak hours. The number of passengers in Hyderabad Metro is increasing day by day. Due to this, the congestion in the metro is increasing.

The objective of this report is to analyse and address the issue of overcrowding in the Hyderabad Metro system using data analysis tools and techniques. Through comprehensive data analysis, this study aims to identify the underlying causes of overcrowding and pro-vide recommendations for optimizing the metro system's capacity and operations. By utilizing data analysis tools and techniques, this report aims to provide evidence-based insights and recommendations to address the issue of overcrowding in the Hyderabad Metro system. The findings of this study will be valuable for metro authorities, policy-makers, and urban planners, enabling them to make informed decisions to enhance the efficiency, reliability, and capacity of the metro system, leading to improved transportation services and a better commuting experience for passengers.

1.INTRODUCTION

Keolis is a multinational transportation company that operates public transport systems. The company manages bus, rapid transit, tram, coach networks, rental bikes, car parks, water taxi, cable car, trolleybus and funicular services. Keolis is a global leader in the shared mobility market and a committed partner to public transport authorities around the world.

They facilitate the journeys of millions of people every day, helping to provide a better quality of life for each and everyone

Headquarters: Paris, France

Founded: 01

Number of employees: 68,500

CEO -Bernard Tabary

Keolis Hyderabad Mass Rapid Transit System Private Limited ("Keolis Hyderabad") is a private limited company incorporated under the Companies Act, 1956 on 7th August 2012.

Keolis Hyderabad is the Operations and Maintenance Contractor for the Metro Rail system for seventy-one decimal one six kilometers (69.2 km) on elevated structures from Miyapur to L.B. Nagar ("Corridor I"); Jubilee Bus Station to MGBS ("Corridor II"); and Nagole to Raidurg ("Corridor III") in Hyderabad appointed by L&T Metro Rail (Hyderabad) Limited. It is the second longest operational metro network in India after the Delhi Metro Rail.

2.METRO HEAD QUARTERS HYDERABAD (UPPAL DEPOT)-

The Hyderabad metro rail headquarters is situated at Nagole (Uppal Depot). Here at depot all the trains are monitored and controlled from the OCC building. Maintainance and operations also takes place at Nagole whereas Miyapur being the main depot for Maintainance. Uppal Depot is the main as it has the Operations Control Center along with additional features and equipment storage facility. The depot is spread over an area of 100 acres approximately. Housing, maintenance, and repair of trains is done here. All the major operationsare also carried out from here.

Important buildings in Uppal depot are:

- OCC (Operations Control Centre)
- Receiving Sub Station (RSS)
- Maintenance Workshop
  - Inspection Bay Lines.
  - Stabling Bay lines (Covered, Open Lines)
  - Workshop Lines.
- Depot Control Centre
- ETP – STP (water treatment)
- Infrastructure Shed (Warehouse)

2.1.OCC (OPERATION CONTROL CENTRE)-

This is the main administrative building of L&T Metro Rail Hyderabad & Keolis Hyderabad MRTS. Planning, Finance, and several activities are carried out from here. OCC (Operations Control Centre) is on the third floor of this building hence the name OCC building. All the commands to the trains running anywhere in Hyderabad are given from OCC.

The Nerve centre of Metro Operations, OCCs are central to metro operations, through monitoring the entire system and hosting critical decisions during service interruptions. Several metros report plans to upgrade, expand, or integrate aspects of their OCC management to improve the level of service they can deliver. The trains of Hyderabad Metro are controlled using CBTC technology. These are monitored from the advanced Operation Control Centre (OCC) located in Uppal depot, considered as the primary control Centre, and also the back-up control centre for managing operations during emergencies.

2.2. RECEIVING SUBSTATION

Electrification for Metro Rail Corridors is through 25 kV, single phase, 50 Hz for OHE to transmit electric energy to motors. Thus, the Receiving Substation will receive the power supply at 132 kV. This 132 kV supply willbe stepped down to 3 phase 33 kV for lighting & general purpose and single phase 25 kV for traction purpose. It uses two transformers for stepping down the voltage. Receiving Substations (RSS) are located at Uppal, Miyapur, Yosufguda &MGBS which will receive the power supply from the proposed APTRANSCO at 132 kV voltage level. This 132 kV supply will be stepped down to 3 phase 33 kV for lighting & general purpose and single phase 25 kV for traction purpose. All RSS are AIS (Air Insulated Substation) and TSS shall be GIS (Gas Insulated Substation). ASS (Auxiliary Substations) shall be located at each Metro Stations, Depots and OCC for providing Low Voltage power supply with

33 kV/ 415 V for S& TC, Communications, MEP etc.

2.3. MAINTENANCE-SHED

Maintenance Sheds/Workshops are used for stabling and maintenance of trains, rail systems and engineering maintenance vehicles. Each line has a supporting depot where all the trains of that line shall be stabled in night. These maintenance depots are manned round the clock and are equipped with all facilities and resources required for efficient and effective maintenance of rail system assets. The maintenance workshops are managed by a team who plan, coordinate, and manage various activities in depot to ensure that the trains are well maintained and cleaned for daily passenger service. Every night when trains return from revenue services the trains are thoroughly washed at train wash plant before it is stabled on stabling lines. Daily internal cleaning is carried out before inducting trains in service to provide clean environment and ambience to passengers. The trains are inspected, checked, and certified 'fit-for-service' to allow train service in passenger service. This requires thorough analysis of data downloaded from train, visual inspection by team of engineers & technicians, successful completion of on-board test of vital safety systems and other comfort functions of trains.

It is a workshop for Rolling Stock. All the repairs and regular checks of rolling Stock are carried over here. It has total 8 lines. line 1-4 are for regular checks, OHE can be accessed from here. Lines 5-8 are for special repairs.

Stabling Lines wherein Trains when not in use on main line are parked at Stabling Yard, A total of 16 lines in stabling yard. 12 of them are uncovered and 4 are covered. Regular cleaning of trains is done here.

2.4. INFRASTRUCTURE-SHED (WAREHOUSE)

All the spare parts and new equipment are stored here. There might be failure of any part anytime. In such cases the parts need to be replacedimmediately without any delay. All parts, spares and tools are stored here. These tracks do not have power. This is the storage for equipment of systems in stations. Any equipment required for repair or maintenance of lifts or escalators in stations can be found here. This storage does not have parts related to Rolling Stock. The Vehicle used for Maintenance of Catenary lines is also parked here. Any other infrastructure related parts can also be found here.

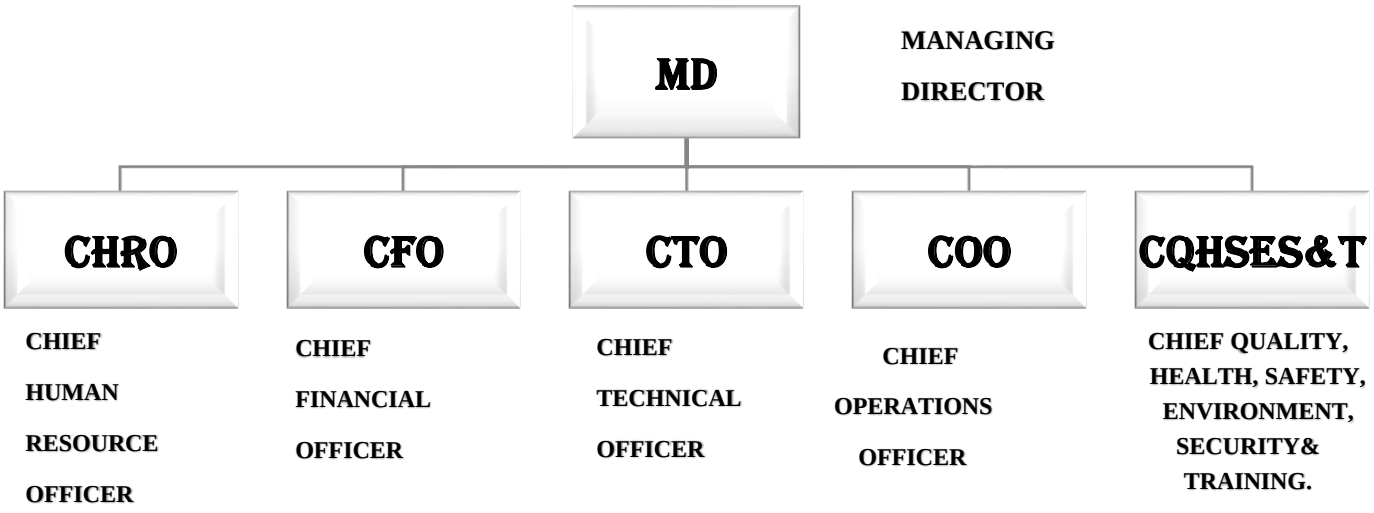
2.5. DEPOT CONTROL CENTRE DCC

The DCC is the maintenance hub of the entire metro system. It controls the operations of the depot, provides stabling and maintenance facilities for the metro line and monitors train movements within the depot and are operated/authorized by depot controller.

2.6.ETP- STP

Water used in the depots are treated here for its effective usage. Its objective is to produce a waste stream (or treated effluent) and a solid waste or sludge suitable for discharge or reuse back into the environment. Water from here is used for gardening and cleaning purposes only, not for drinking.

3.ORGANIZATIONAL STRUCTURE



3.1. CHIEF HUMAN RESOURCE OFFICER-

The Chief Human Resources Officer (CHRO) for Keolis Hyderabad is in charge of the entire human resources department of the business, which includes recruiting top talent, managing employee relations, providing training and development, setting salaries and benefits, and ensuring safety and security.

3.2. CHIEF FINANCIAL OFFICER -

The Chief Financial Officer (CFO) of Keolis Hyderabad is in charge of the organization's overall financial management, which includes risk management, accounting, treasury, and financial planning and analysis.

3.3. CHIEF TECHNICAL OFFICER-

The Chief Technical Officer (CTO) at Keolis Hyderabad is in charge of the organization's entire technical management, which covers asset management, engineering, and maintenance.

3.4. CHIEF OPERATIONS OFFICER -

The Chief Operations Officer (COO) is in charge of the business' overall operations. This covers both the long-term strategic planning for the business and the day-to-day management of the metro system. In order to make sure that the business's operations are efficient and effectively conducted, the COO closely collaborates with other top executives and reports to the CEO. Additionally, they collaborate with workers at all levels to make sure the business is accomplishing its goals and objectives.

3.5. CHIEF QUALITY, HEALTH SAFETY ENVIRONMENT SECURITY & TRAINING OFFICER

The company's total CQHSE&T function is overseen by the Chief Quality, Health, Safety, Environment, Security & Training (CQHSES&T) Officer at Keolis Hyderabad. This involves management of quality, health and safety, the environment, security, and training. To make sure that the company's QHSE&T policies and procedures are carried out successfully, the CQHSES&T Officer, who reports to the CEO, collaborates closely with other senior executives. Additionally, they collaborate with workers at all levels to advance a culture of quality and safety.

4. KEOLIS - A Global choice for safe Metro Operations & Maintenance.

4.1. Operations: Keolis Hyderabad MRTS is in charge of running the Hyderabad Metro Rail system on a daily basis. This involves controlling passenger traffic, dispatching trains, and ensuring the system is operating safely and effectively.

Station Operations: Station operations at Keolis Hyderabad include the following:

- Managing passenger flow.
- Providing customer service
- Maintaining station facilities
- Monitoring security:
- Conducting safety inspections

Train Operations: Train operations at Keolis Hyderabad include the following:

- Scheduling and dispatching trains
- Monitoring train performance.
- Operating trains.
- Maintaining trains.
- Conducting safety inspections.

4.2. Maintenance: Keolis HMRTS is also in charge of keeping the Hyderabad Metro Rail system in working order. This covers overhauls, preventive maintenance, and corrective maintenance.

All systems and components must also be examined, tested and repaired or replaced as necessary.

- Rolling stock maintenance (RST) include cleaning the interior and outside of trains, as well as inspecting and repairing them.
- Overhead equipment (OHE) maintenance comprises inspecting and repairing substation equipment as well as overhead wires and catenary systems.
- PSS maintenance comprises inspecting and repairing the power supply system's cables, switchgear, and transformers.
- AFC system maintenance comprises inspecting and repairing the AFC system's readers, gates, and ticketing devices.
- CSM as public address, radio, and CCTV systems are all included in communication system maintenance, which also includes inspection and repair.
- Signaling system maintenance comprises inspecting and repairing the switches, signals, and detectors that comprise the signaling system.
- Track maintenance entails checking and repairing the tracks, as well as the ballast and ties.

5. KEY CHALLENGES -

The following are some of the major challenges that Keolis Hyderabad faces:

- **Overcrowding:** The Hyderabad Metro Rail system is becoming congested, especially during peak hours. This can result in delays and a negative customer experience.
  https://www.envisionesl.com/case-study/hyderabad-metro-utmost-maintenance-with-least-turn-around-time

- **Technical issues:** The Hyderabad Metro Rail system is a complex system with a number of technical issues that must be addressed. These include the maintenance of the rolling stock, the overhead equipment, and the power supply system.

6. CONCLUSION -

The organisation is well-structured, with clear lines of duty and accountability. Keolis Hyderabad is dedicated to providing excellent customer service and has launched several efforts to enhance the passenger experience. The firm is likewise concerned with sustainability, and has taken several steps to decrease the environmental effect of the Hyderabad Metro Rail system

Overall, Keolis Hyderabad is a well-managed firm dedicated to provide Hyderabad residents with safe, dependable, and efficient public transportation services.

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