

规划引领,立足实际,助力城市轨道交通高质量发展

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轨道交通是现代城市的血脉,上海市民在评价城市管理服务的温馨度、精细度时,最直接的感受就来自地铁出行。如今,上海地铁已经走过了三十而立后的第一个年头,围绕“高质量”这个关键词,通号分公司作为业内唯一一家集建设与维护为一体的通号运维企业,紧密结合业务实际需求,明确了自身高质量发展的路径与目标,即以高质量的规划为引领,落实高质量的建设和高质量的维护,力争实现“无感运营”的目标。

基于对新技术、新需求的研究和思考,通号分公司在“十四五”初期即制定了符合超大规模网络要求的专业演进规划,包括高性能、高可靠、标准化的增强型信号系统,以及高性能、线网化、扁平化的通信系统,并形成了专业发展白皮书来指导后续的大修更新改造及维护维修工作,从而全面提升通号板块的建设和维护保障能力。伴随着“十四五”规划的逐步推进,我们在大修更新改造和日常维护中也遇到了以下挑战。

一是新技术的推广应用。例如,TACS(基于车车通信的列车自主运行系统)、BLS(基于信标的次级定位)等会对系统架构、运营场景、外部接口、功能要求等带来不同程度的影响,因此大量设计和实施方案需要细化研究。

二是新的运营需求不断涌现。例如,正线过夜存车、降低列车打滑后的运营影响、节能减排等新需求,要求在设计方案时既要考虑对需求响应的快速性,又要考虑和规划的一致性。

三是如何利用数据来提升维护能力。数字化转型正在如火如荼地展开,对于基础设备状态的全面监测也已在 大修更新改造中落地,但如何利用收集到的数据来提升维护能力,特别是在转辙机维护、电源维护、无线环境监测等重点难点领域还有很多问题值得探讨。

针对上述实践过程中遇到的问题,通号分公司逐项梳理,并联合设计院、系统集成商、施工单位进行深入分析和重点研究,形成了一系列可实施的方案。在此以论文集的形式汇总研究的成果,希望能够藉此为大修更新改造团队提供有针对性的解决方案,对进行日常维护的一线员工赋能,打通规划落地的“最后一公里”,从而推动生产服务全面提质增效,助力上海轨道交通高质量发展,为行业繁荣添砖加瓦。

Commentary

Guidance by Planning, Grounded in Reality, Promoting Urban Rail Transit High-quality Development

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Rail transit is the lifeblood of modern cities. For Shanghai residents, the most direct experience of the city's management service quality such as coziness and fineness comes from their metro travel. Now, as Shanghai Metro enters its fourth decade, centered on the key word of 'high-quality', the Telecom & Signal Branch, the only company in the industry that integrates construction and maintenance of signaling operations, has defined its path and goals for high-quality development through closely combining business practical requirements. This is reflected as, guidance by high-quality planning, implementation of high-quality construction as well as maintenance, striving for the goal of 'seamless operation'.

Based on research and consideration of new technologies and demands, the Telecom & Signal Branch formulated a professional evolution plan at the beginning of the 14th Five-Year Plan that complies with the requirements of a large-scale network, including high-performance, high-reliability, standardized enhanced signaling systems, as well as high-performance, networked, and streamlined communication systems. A professional development white paper was formulated to guide subsequent major overhauls, updates, and maintenance work, thereby comprehensively enhancing the construction and maintenance capabilities of

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the telecom & signal sector. As the 14th Five-Year Plan progresses, the following challenges are encountered in major overhauls, updates, and daily maintenance.

Firstly, the promotion and application of new technologies, such as TACS (train autonomous control system based on vehicle-to-vehicle communication) and BLS (beacon-based secondary localization system), will impact system architecture, operational scenarios, external interfaces, and functional requirements to varying degrees. Therefore, detailed research on design and implementation plans is necessary.

Secondly, new operational demands are constantly emerging. For example, overnight storage of trains on main lines, reducing the operational impact of train slippage, and energy conservation and emission reduction. These new demands require design plans to consider both the responsiveness to these needs and consistency with overall planning.

Thirdly, how to utilize data to enhance maintenance capabilities. Digital transformation is in full swing, and comprehensive monitoring of the status of basic equipment is implemented in major overhauls and updates. However, there are still many issues to explore regarding how to use the collected data to improve maintenance capabilities, especially in key and challenging areas such as switch machine maintenance, power maintenance, and wireless environment monitoring.

To address the issues encountered during the aforementioned practices, the Signal Branch has systematically reviewed each problem and collaborated with design institutes, system integrators, and construction units for in-depth analysis and focused research, formulating a series of implementable solutions. The research findings have been compiled into a collection of papers, aiming to provide targeted solutions for the overhaul and renovation teams, empower frontline employees involved in daily maintenance, and bridge the 'last mile' of planning implementation. This approach is intended to comprehensively improve the quality and efficiency of production services, support the high-quality development of Shanghai rail transit, and contribute to the prosperity of the industry.

Translated by ZHANG Liman

上海机场联络线预计 2024 年年内开通运营

2024 年 10 月 21 日,上海市委宣传部、市委网信办、市政府新闻办组织的“我们的人民城市”专题采访活动的记者们走访了上海机场联络线虹桥 2 号航站楼站。上海机场联络线是上海市域轨道交通网络中东西向的骨干线路,连接上海市“两场三站”重要对外交通枢纽。线路全长 68.6 km,途经闵行、徐汇、浦东新区 3 个行政区,全线共设 9 座车站,其中,地下站 6 座,地面站 3 座。

9 月初,上海机场联络线不载客试运行启动。目前,为期 20 余天的按工作日列车运行图跑图试验已顺利完成,将结合运营实际场景开展各项应急演练及 4+4 重联列车型式试验,并同步推进车站装饰装修、机电设备安装、附属出入口结构及联调联试等工作。下阶段,上海机场联络线将进行各项验收取证工作,并筹备相关资料迎接初期运营安全评估,预计年内虹桥 2 号航站楼站至浦东 1 号 2 号航站楼站具备初期运营条件。

记者在上海机场联络线的虹桥 2 号航站楼站看到,工作人员正在紧锣密鼓地调试列车,站点的硬件设施已基本完善。记者通过试乘发现,上海机场联络线列车从虹桥 2 号航站楼站到中春路站,用时不到 5 min。在中春路站,乘客可不出站与 9 号线换乘。未来虹桥和浦东两大综合交通枢纽间的通行时间可控制在 40 min 左右。

上海机场联络线列车内部设计有不少亮点,如:采用平行座位布局,并配有专门的行李放置区域,行李架上用了东方明珠点阵画装饰;列车横排座位接缝处设置有线充电区,车厢连接处设置有线+无线充电台,尽显人性化。

据悉,目前上海机场联络线虹桥 2 号航站楼站至浦东 1 号 2 号航站楼站共 7 座车站主体结构已完成,59 km 区间轨道铺设已完成,列车限界检测、接触网冷滑、送电、热滑试验均已完成,14 列列车已进场,剩余 3 列列车预计 10 月底陆续到场。全线联调联试已基本完成。此外,上海机场联络线的运营队伍已组建完成,各专业主体工种人员上岗取证工作已完成,相关规章制度已建成体系。

记者还从上海市交通委还获悉,除了上海机场联络线外,上海还将开工建设轨道交通 19 号线、20 号线等,上海市将持续扩大轨道交通网络规模和服务范围。

(来源:上海市人民政府官网)