



In collaboration with:



Virtual Classroom on Electric Bus Procurement, Planning & Funding

电动大巴采购、规划与融资线上课程

07-08-14-15 June 2022, 2 weeks span | 2022 年6月7日、8日、14日、15日, 跨两周时间

UITP Academy is launching an online course on Electric Bus Procurement, Planning & Funding, starting on 07 June and ending 15 June with Shenzhen Bus Group which has achieved full electrification. This course features 8 interactive online sessions.

UITP 学院与已经实现全面电动化的深圳巴士集团推出电动大巴采购、规划与融资的线上课程，该课程自 6 月 7 日开始，同月 15 日结束。共有 8 次在线互动课堂。

With most metropolitan areas targeting zero-emission environments, an increasing number of cities and transport companies are considering a fully electric solution for their urban bus network. In this context, the UITP Academy & Shenzhen Bus Group designed this training programme on Procurement, Planning & Funding of Electric Buses offering a comprehensive overview on how procure, plan and fund of electric buses. This training will give an insight of urban bus networks, importance of building a sustainable infrastructure, recent technologies, using the data for the procurement & planning efficient timetable and scheduling on your routes.

随着多数大都市地区确定零排放环境的目标，越来越多的城市和运输公司正在考虑为其城市公交网络提供全面电动解决方案。在此背景下，UITP 学院和深圳巴士集团设计了本次电动大巴采购、规划和融资的培训课程，全面概述如何进行电动大巴的采购、规划和融资。该培训将让学员深入了解：城市公交网络、建设可持续基础设施的重要性、最新技术、使用数据进行采购、规划有效的时间表及路线调度等。

Shenzhen Bus Group (SZBG) is the largest and oldest public transportation operator in Shenzhen, China. After achieving full electrification (operating 6,053 e buses) in 2018, SZBG has become the largest new energy public transportation operator in the world. SZBG also have started trialing electric self-driving buses on open and mix-trafficked roads since 2017 with zero accidents to date.

深圳巴士集团 是中国深圳规模最大、历史最悠久的公共交通运营商。继 2018 年实现全面电动化（运营 6,053 辆电动大巴）后，深圳巴士已成为全球最大的新能源公共交通运营商。自 2017 年以来，深圳巴士还开始在开放和混合交通的道路上试行电动自动驾驶巴士，迄今为止零事故。

The training and all training materials will be provided in English, and **Simultaneous Interpretation (SI) from English to Chinese** will be provided in this online training.

本次在线培训及所有培训材料采用英语，并提供**中英同声传译（SI）**。

Reach your objectives | 实现您的目标:

- Introduce the electric solution, the different types of technologies and compare their benefits and drawbacks
介绍电动方案及不同类型技术，比较各自的优缺点
- Understand how to get value from electric buses looking at their economic, environmental and societal feasibility
从经济、环境和社会可行性的角度理解如何挖掘电动大巴的价值
- Learn from experience on how to implement and run electric bus lines successfully
学习成功地实施、运营电动大巴线的经验

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- Understand the implications for operations and infrastructure
了解对运营与基础设施的影响
- Learn about the implementation and running of electric buses
了解电动大巴的实施与运行
- Discuss the performance of an electric bus solution with a practical application during our dedicated workshop
在我们的专门研讨会上讨论具有实际应用的电动大巴解决方案的表现
- Listen the best practices from **Asia and Europe**
听取**亚洲和欧洲**的最佳实践

Why choose an online course? | 为什么要选择在线课程?

- Interact with public transport professionals from across the world
能够和全球的公共交通专业人士互动
- Be time efficient, with 8 sessions over a 2-week timespan
在两周的时间内高效地完成 8 节课
- Flexibility to join the sessions from any location in the world, at work or at home
无论是办公室还是家里，全世界随地都可灵活参加课程

A top-level methodology | 顶级的方法

- Participate in interactive online sessions which includes an introduction by course leaders and open discussions with participants
参加互动式在线课程，包括课程负责人的介绍和与参与者的公开讨论
- Apply your concepts during the online workshop
在线课程期间运用您的概念
- Exchange your current practices and experience with your peers
与同行交流当前的实践与经验
- Each theme will be approached as followed:
各主题将采用以下方法：
 - o Basic principles and conceptual approach | 基本原理和概念性方法
 - o State of the art development and innovations | 最新的发展与创新
 - o Good practices examples | 良好实践示例
 - o Interactive exchange between participants and experts | 参与者与专家的互动交流

Who is it for? | 课程对象是谁?

- Project managers, engineers and other professionals eager to learn more about the technology, the implementation and the running of electric buses
渴望更多地了解电动大巴的技术、实施和运行的项目经理、工程师和其他专业人士
- Staff from public transport or authorities planning to extend a fully electric solution to the core part of the urban bus network
计划将全面电动解决方案扩展到城市公交网络核心部分的公共交通或有关当局人员
- Staff from the bus industry worldwide involved in the market uptake of electric buses
全球大巴行业中参与电动大巴市场吸收的人员
- Professionals interested in obtaining a wider and international perspective on electric buses and eager to learn more from international best practice
希望培养更广泛和国际化的视野并渴望更多地汲取国际最佳实践的专业人士

A good level of English is a compulsory requirement to attend the training | 参与培训的人必须具备良好的英文水平

Inspiring trainers | 激励人心的讲师

Our skillful trainers are composed of international experts and professionals with extensive experience and knowledge in the strategic, operational and technological areas of electric buses.

我们高素质的讲师包括国际专家和专业人士，他们在电动大巴的战略、运营和技术领域拥有丰富的经验和知识。

All sessions will take place at 08:00 am CEST time (UTC+2) equivalent to 2:00 pm China time (UTC+8).
所有课程将在中欧夏令时间 (UTC+2) 早上 8 点开始，即中国时间 (UTC+8) 下午 2 点。

Day 1, Tuesday 7th June 2022 | 第 1 天, 2022 年 6 月 7 日, 星期二

08:00 CET **Welcome & Introduction to the course | 开场欢迎与课程介绍**

14:00 CN **Adrian POHER, Training Manager, Academy, UITP**

UITP 学院培训经理 Adrian POHER

Hallie LIAO, Deputy General Manager, Shenzhen Bus Group

深圳巴士集团副总经理 Hallie LIAO

Expectation Analysis | 预期分析

Adrian POHER, Training Manager, Academy, UITP

UITP 学院培训经理 Adrian POHER

08:45 CET **Session 1: Electric Bus Deployment at a Glance: from Policy to Operations**

14:45 CN **第 1 节：电动大巴部署一览：从政策到运营**

Feyzullah GÜNDOĞDU, Senior Adviser to UITP Academy & Head of Eurasia, UITP

UITP 学院高级顾问兼 UITP 欧亚区负责人 Feyzullah GÜNDOĞDU

- E-Bus solutions for urban bus networks | 城市公交网络的电动大巴解决方案
 - Challenges to address for e-Bus deployment | 电动大巴部署面临的挑战
 - Drivers for e-Bus G-local | 电动大巴 G-local 的驱动程序
 - UITP Strategy for decarbonisation | UITP 脱碳策略
 - Global Electrification Targets | 全球电气化目标
- WHY E-BUS? We need to Deploy E-bus? | 为什么选择电动大巴？我们需要部署电动大巴？
 - Market overview | 市场概况
 - Technology and the solutions | 技术和解决方案
- Planning for E-bus deployment | 电动大巴解部署规划
- Charging technologies: Scenarios & Solutions | 充电技术：场景与解决方案
- Procurements of E-bus | 电动大巴 采购
- UITP Tender Structure document | UITP 投标结构文件
- Testing & Commissioning | 测试和调试
- Operation & Maintenance | 操作和维护
- Safety basics for E-bus system infrastructure and vehicles | 电动大巴系统基础设施和车辆的安全基础

09:45 CET *Break (tea-break)*

15:45 CN *休息 (茶歇)*

10:00 CET **Session 2: Case Study- Implementation of SORT in Europe**

16:00 CN **第 2 节：案例研究 — 马德里 EMT 的 SORT 实施**

Julian DEL OLMO PERANDONES and Sergio Fernández BALAGUER, Empresa Municipal de Transportes de Madrid S.A. (EMT), Spain

西班牙马德里市交通管理局 **Julian DEL OLMO PERANDONES** 和 **Sergio Fernández BALAGUER**

11:00 CET End of Day 1

17:70 CN 第 1 天结束

Day 2, Wednesday 8th June 2022 | 第 2 天, 2022 年 6 月 8 日, 星期三

08:00 CET **Session 3: International market overview of electric buses and charging infrastructure**

14:00 CN **第 3 节：电动大巴和充电基础设施的国际市场概况**

James WANG, Chief Scientist Communications in China Transit Science, China

中国公共交通学科首席科学传播专家王健

How can electric buses contribute to making public transport network competitive and our cities sustainable? What are the drivers and barriers when it comes to the choice of technology? This session will also give an overview of the market. Looking to auxiliaries and related technologies used to run electric busses, whether it be the installation (and running) of charging infrastructure, (the impact on information technology systems), driver assistance and standardisation based on actual examples of implementation.

电动大巴如何帮助提升公共交通网络的竞争力和我们城市的可持续性？技术选择的驱动力和障碍有哪些？本次课程还将介绍市场情况，着眼于电动大巴运行所用到的辅助部件和相关技术，无论是充电基础设施的安装（和运行）、（对信息技术系统的影响）、驾驶员辅助，还是基于实施实例的标准化。

This session includes | 本节课包括:

- The policy context and city strategies for the introduction of electric buses
电动大巴推行的政策背景和城市战略
- An insight into vehicles (battery, hybrid, plus-in hybrid, trolley) and infrastructure (continuous, overnight and opportunity charging)
深入理解车辆（电池、混动、插电式混动、电车）和基础设施（持续、夜间和机会充电）
- The system approach
系统方法
- Main challenges for deployment: upfront costs, operational requirements, procurement, interoperability, cooperation with energy sector
部署的主要挑战：前期成本、运营要求、采购、互操作性、与能源领域的合作
- Steps of an implementation process
实施流程步骤
- Current state of the electric bus market
电动大巴市场的当前状态

09:15 CET *Break (tea-break)*

15:15 CN *休息（茶歇）*

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09:30 CET **Session 4: Batteries for electric buses, Infrastructure & auxiliaries**

15:30 CN **第 4 节：电动大巴电池、基础设施和辅助部件**

Josep Enric GARCÍA ALEMANY, Public Transport Consultant, Spain

西班牙公共交通顾问 Josep Enric GARCÍA ALEMANY

This session will look into new auxiliaries and technologies used to run electric busses, whether it be the installation and running of charging infrastructure, the impact on information technology systems, driver assistance, standardization of the connection or the technical evolution of the battery.

本节课主要介绍电动大巴运行所用到的新型辅助部件和技术，无论是充电基础设施的安装还是运行、对信息技术系统的影响、驾驶员辅助、连接标准化，还是电池的技术演化。

- Driveline – auxiliary components – technology & maintenance – infrastructure costs – examples of best practice
动力传动系统 - 辅助部件 - 技术与维护 - 基础设施成本 - 最佳实践示例
- Batteries: technologies – cell type – behaviour – management systems – lifetime – standards – safety – thermal management – models
电池：技术 - 电池类型 - 行为 - 管理系统 - 寿命 - 标准 - 安全 - 热管理 - 模式

11:00 CET **Introduction of Group Work Study**

17:00 CN **小组研究简介**

Ozlem TATAR, Training Manager, Academy, UITP

UITP 学院培训经理 Ozlem TATAR

11:20 CET End of Day 2

17:20 CN 第 2 天结束

Day 3, Tuesday 14th June 2022 | 第 3 天，2022 年 6 月 14 日，星期二

08:00 CET **Session 5A: Global Update - Why Decarbonization and Electrification are important?**

14:00 CN **第 5A 节：全球最新动态 — 脱碳和电动化何以重要？**

Arjen JAARSMA, Public Transport Expert, Modasti Consulting, The Netherlands

荷兰 Modasti Consulting 公司公共交通专家 Arjen JAARSMA

- The Road to Net Zero | 通往净零之路
- Avoid, Shift and Improve | 避免、转变和改善
- Transport Decarbonization | 脱碳运输
- What about Hydrogen? | 氢气怎么样？
- Electrification Now! | 现在就开始电动化！

08:30 CET **Session 5B: Getting the procurement and commissioning process right**

14:30 CN **第 5B 节：建立正确的采购和调试流程**

Stefan WIDLUND, City Mobility Director, Volvo Bus Corporation, Sweden

瑞典沃尔沃客车城市交通主管 Stefan WIDLUND

To successfully implement and run fully electric line, it is essential to make the tendering process evolve from a simple vehicle purchase to the tendering of a comprehensive electric system, taking into account life cycle costs, charging infrastructure, batteries, economic models, leasing and renting, etc

为成功地实施和运行全面电动大巴线，必须使招标过程从简单的车辆采购演变为综合电动系统的招标，同时要考虑生命周期成本、充电基础设施、电池、经济模式、租赁、出租等。

- Tendering electric bus operations | 电动大巴运营招标
- Financial constraints | 财务约束
- Launching a request for quotation | 发起询价
- Deliverables | 可交付成果
- Specifications | 规范
- Valuing tender criteria | 重视招标标准

09:45 CET *Break (tea-break)*

15:45 CN 休息 (茶歇)

10:00 CET Session 6: Getting value out of electric buses

16:00 CN 第 6 节：挖掘电动大巴的价值

Chris LIANG, Operations Manager, International Development Dept, Shenzhen Bus Group, China

中国深圳巴士集团国际发展部运营经理 **Chris LIANG**

What are the financial constraints and benefits of implementing an electric bus line? How to analyse the electrical life cycle costs? What risks exist and what can be the impact on costs? How to run a healthy budget by balancing and foreseeing accurately new types of savings and costs?

实施电动大巴线有哪些财务约束和好处？如何分析电动生命周期成本？存在哪些风险以及对成本的影响是什么？如何通过平衡和准确预测新型节约和成本来运行健康的预算？

11:00 CET Session 7: Case Study: Planning and Preparation for a large-scale procurement and

17:00 CN Deployment - Auckland Experience

第 7 节：案例研究：大规模购置与部署规划和准备 — 奥克兰经验

Darek KOPER, Acting Group Manager, Metro Service, Auckland Transport, New Zealand

新西兰奥克兰交通局城市服务部代理经理 **Darek KOPER**

12:00 CET End of Day 3

18:00 CN 第 3 天结束

Day 4, Wednesday 15th June 2022 | 第 4 天, 2022 年 6 月 15 日, 星期三

08:00 CET 14:00 CN	Session 8: Futuristic Case Study - Development of an autonomous, road bound, electric public transport mode to supplement the Singapore public transport system 第 8 节: 未来案例研究 — 开发一种自主的、公路专用的电动公共交通模式, 以补充新加坡公共交通系统 Andreas RAU, Faculty Head and Principal Investigator (Rail, Transport & Logistics), TUMI Asia, Singapore 新加坡 TUMI Asia 学院院长兼首席研究员 (铁路、运输和物流) Andreas RAU
09:00 CET 15:00 CN	Workshop/Group Work - Discussion on two topics 研讨会/小组讨论 — 两大主题讨论 Alok JAIN, Managing Director, Trans-Consult Ltd., Hong Kong SAR, China 香港亚洲交通咨询有限公司执行总裁 Alok JAIN The session is organized to work in two group, present and discuss on the following topics: 本节课分为两个小组, 介绍和讨论以下主题: <ul style="list-style-type: none">• Funding and financing 融资• Electric buses in the context of smart city 智慧城市背景下的电动大巴
10:30 CET 16:30 CN	<i>Break (tea-break)</i> <i>休息 (茶歇)</i>
10:45 CET 16:45 CN	Group Presentations 小组报告
11:45 CET 17:45 CN	Wrap Up & Closing 课程总结
12:15 CET 18:15 CN	End of Online Course Programme 线上课程圆满结束

**UITP reserves the right to make amendments to the programme or any related activity at its discretion | UITP 有权自行决定修改课程或任何相关活动*

**2022 daylight saving time in Europe will start on March 27 (Sunday) ending on October 30 (Sunday) | 欧洲 2022 年夏令时于 3 月 27 日 (星期日) 开始, 于 10 月 30 日 (星期日) 结束。*