

“Skytrak” - Low Carbon Vertical Transportation Systems for the 21st Century

「架空單軌機」- 二十一世紀低炭直立式運輸系統

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Abstract

There has been much talk over the past thirty years or more about the dream of having more than two passenger cabins travelling in one lift shaft. Why? Because of the innate efficiency gains, especially for very tall buildings, that would follow such a quantum leap in passenger handling capacity for any given lift shaft.

Of course, to even attempt this would require one to dispense with suspension ropes as well as the “beautiful” counterweight potentially losing a device that, for over 100 years, has provided a degree of efficiency in conventional electric traction lifts as we know them today.

The attraction of “Skytrak”, a radically new form of vertical transportation, is that it dispenses with suspension ropes and counterweights and, in the process, offers architects a completely new degree of freedom for transporting people around and between buildings thereby unleashing the potential for new building designs and visions for new live, work, play “green” communities of tomorrow.

This new space and energy efficient approach to moving people uses linear motors and “retarders” to give vertical transportation its new found independence yet inherent safety. In this paper the work done in identifying many of the new low carbon opportunities for Skytrak to move people both horizontally and vertically is explored and explained.

摘要

由於要考慮如何在摩天大廈內提高升降機的效能而同時達致理想的載客量，在過去三十年已有很多關於在同一升降機井道內使用兩個以上載客升降機機廂的討論。

要達致以上目的，今日我們將不考慮在過往一百年使用懸吊纜索及對重的傳統電動曳引式升降機。

在不用纜索及對重的情況下，新型直立式運輸「架空單軌機」可為建築師提供一個全新的自由空間載人到建築物不同的位置，從而為未來的建築設計及生活提供更「綠色」的環境。

在安全情況下，使用直線驅動器及減速器以直立運輸方式作為交通工具，是一項以能源效益為先的新嘗試。本文會探討和解釋「架空單軌機」以水平和直立方式載人所帶來的許多新低碳機會。

Biography

After graduating with honours in Electrical Engineering & Electronics from Salford University and obtaining a Diploma in Management Studies from the University of Manchester Institute of Science and Technology in the early 1980's Adrian worked first for General Electric Co., Hirst Research Centre, one of the UK's premier research laboratories and then for Lift Design Partnership. He was responsible for opening the London office of Lerch, Bates & Associates in 1990 and subsequently developed the firm to include five additional offices in Europe. His particular areas of interest and expertise are in the development of “smart” elevator control systems and planning of elevator systems for high rise buildings. Author of numerous papers and holder of a number of patents in the area of lift systems he has been involved in the design of the lift systems for some of the tallest buildings in Europe and the Middle East working with high profile architects.

In recent years he has been involved with the first installation of “destination hall call” control lifts at No 4 Broadgate in the City of London and pioneering the first ever application of “destination hall call” control to double deck lifts within the Broadgate and Heron Bishopsgate towers in the City of London as well as the Shard at London Bridge (the UK's tallest building). Most recently he has picked up the work of his father on the application of linear motors to lifts and is actively engaged in looking at the potential of this technology.