



## **ACADEMIC YEAR 2013 – 2014**

### **TITLE OF DIPLOMA THESIS:**

Alternative traction systems for tramways and their effects in construction, operation and maintenance costs.

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### **ABSTRACT**

This master thesis describes the alternative traction systems for tramways which mostly emerged as an attempt to limit the visual impact of overhead power systems which significantly affect the urban environment. These systems are distinguished in terrestrial power systems (APS, Tramwave & Primove) and energy storage devices from regenerative braking (batteries supercapacitors and flywheels). In addition basic information about the overhead catenary system is given. It studies the basic structural and functional features of all the systems, and the costs of construction, operation and maintenance. More specifically, it records and evaluates the new systems which either have been implemented and applied in recent years or those that are in research and testing stage. Examples from the application of all systems in various cities are described and identifies the problems appeared in each of these. A comparison between the systems belonging to each of the above categories is made and those who qualify are compared to determine the most advantageous solution. The criteria used in the evaluation process are cost, environmental impact, safety and experience gained from their implementation. It draws conclusions for the already developed work and records the trends and prospects for the future tramway's traction systems.

### **KEYWORDS**

Ground supply systems, Energy storage device, Tramways, Equipment cost for light rail systems, Comparison of traction systems in railway