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<p>Title:</p>	<p>E/M systems manager</p>	
<p>Presentationtitle:</p>	<p><b>Air Conditioning System Design on a Two-Line Metro Station – a Complex Case of Energy, Environmental, Social and Cost Sustainability</b></p>	
<p>A Metro system fulfils several energy, cost, social and environmental sustainability requirements, by reducing energy consumption, pollution emissions, car accidents, noise levels, etc. in a city, while promoting sustainable growth and making worthwhile the substantial capital cost necessary to construct a Metro Line.</p> <p>The paper describes the design for retrofitting an air conditioning system to Syntagma Metro Station in Athens, sized at a cooling load of 2.7 MW. Namely, design principles and parameters, cooling loads, civil works restrictions, modifications of air-ducting, steps necessary to implement the A/C System in an operational Metro station and interfacing disciplines (power supply, controls, architecture, etc) are outlined.</p> <p>Furthermore, the impact of the condenser heat rejected at street level during the A/C operation is predicted using 3-D CFD simulations as based on an outdoors elevated steel platform structure designed to house the chillers, with sensitivity regarding its proximity to the National Garden park and the Parliament building, leading to an unacceptable temperature increase of up to +4°C to the neighboring vicinity during operation, in the worst case of minimal cross winds.</p> <p>The evaluation of this design showed that despite the attractiveness of air conditioned Metro stations to passengers in the summer months, the overall energy and environmental sustainability of this proposal is poor due to the large volumes of air (&gt;2000m<sup>3</sup>) being moved by every train arriving at or departing from the station and hence diluting and "wasting" the air conditioned air to the street level and the tunnels. It was concluded that retrofitting an A/C system to the specific Metro station or to any Metro station in Athens, should be implemented only when Platform Screen Doors are installed in the stations, leading to 65% reduction of the cooling loads, the energy consumption and the heat rejection at street level, ensuring energy and environmental sustainability.</p>		

CV:

BSc, MSc in Mechanical Engineering, PhD in experimental/computational fluid dynamics - heat transfer (Imperial College London, 1987). Continued with CFD in turbomachinery/aircraft/wind turbine aerodynamics for 5 years, participating in EU funded research projects. Worked (in a Ministry) in large scale public transportation projects planning, then moved to Attiko Metro, working for 23 years, initially as a metro ventilation-A/C, fire protection and electromechanical systems engineer, then in design, interface coordination and project management of metro/tram systems implementation as Deputy Engineering Manager.

Worked for 14 Metro & 3 Tramway projects in operation / construction / design, on :

- Managing electromechanical/railway systems design reviews from on-going construction contracts submitted by contractors and design consultants on all design levels.
- Managing, coordinating and contributing to electromechanical/railway systems in-house or consultant assisted designs of new metro lines and extensions covering stations, tunnels, shafts and depots, underground car parks and bus transfer facilities as well as systems upgrading in existing metro lines. Emphasis on civil works layouts, interface coordination between structural/architectural/electromechanical/railway system requirements.
- Ensuring passive/active Fire and Life Safety design for stations/shafts,/tunnels/depots (smoke dispersion control, evacuation safety, fire compartmentation, fire detection, fire suppression, dry/wet systems, sprinklers, automatic fire extinguishing, fire curtains, emergency/safety/directional lighting, emergency routes/exits, pressurized staircases, structural fire safety, interfaces with other systems, rolling stock & fare collection gates).
- Organizing and preparing Design - Performance - Material & Workmanship specifications for new projects for all electromechanical and railway systems.
- Managing and preparing rolling stock specifications and procurement strategies for metro/tram vehicles
- Organizing "General Specifications" for new metro/tram projects covering procedures, design contents, coordination requirements, RAMS, EMC, project documentation, etc.
- Identifying new systems technologies and preparing tender documents for their implementation, ensuring compatibility with existing operational systems.
- Providing necessary input for Environmental Impact Assessment studies
- Providing BOQs & costing estimates for electromechanical/railway systems and rolling stock. Created and continuously supplementing costing databases.
- Assisting projects costing/scheduling, at concept/preliminary/detailed levels
- Coordinating with Contracts, Costing, Scheduling and Legal departments, in preparing contract documents for metro/tram projects construction contracts.
- Cooperating with operational safety auditors on operational safety assessments
- Defending the company's positions against external auditors
- Worked on the ISO certification procedures for the Engineering department
- Supporting Research/Technology proposals to secure EU's research project funding.
- Testing/commissioning procedures preparation
- Systems installations supervision
- Managing contractual disputes
- 30 publications in international journals/conferences. Limited teaching experience.