



Project Profile – Beijing Airport Automated People Mover (APM) System

For over 30 years, Tyco Thermal Controls has satisfied the unique requirements of various industries through innovative engineering and a wide range of products and technologies. The Transit industry is one example where through strategic utilization of our resources, Tyco Thermal Controls can provide our customers with the best and most cost-effective Heat Tracing Solution.

In cold weather climates, APM System running surfaces, such as guideways, power and signal rails, switches, and turntables, require de-icing for safe operation. Tyco Thermal Controls can engineer heat-tracing systems to accommodate the most unique aspects of these applications, including embedded guideways and tight clearance and configuration areas as seen in rails, switches and turntables.

Project Description

- ❑ **Client/Owner:** Beijing Capital International Airport
- ❑ **System Supplier/Operator:** Bombardier Transportation
- ❑ **Location:** Beijing, China
- ❑ **Type of System:** Electric Heat Tracing for an Automated People Mover (APM) System
- ❑ **Technology:** Skin-effect Tracing Systems and Series-resistance Heating Systems
- ❑ **Product Scope:** Over 48 kilometers of heat tracing supplied
- ❑ **Date Initiated / Completed:** March 2006 / December 2007
- ❑ **Contract Scope:** Finite Element Analysis to predict thermal profile of the Guideway running surface, Engineering and Procurement for the Electric Heat Tracing and Ancillary Components; Control & Monitoring and Transformers

Project Details

A suite of Tyco Thermal Controls products has been installed to keep snow and ice from forming on the guideway and associated running surfaces of a new Automated People Mover (APM) system for the Beijing Capital International Airport. This APM system is part of the airport's extensive expansion program in preparation for the 2008 Olympics being held in Beijing, China. Bombardier, acting as the prime contractor for the Beijing Capital International Airport Authority, contracted Tyco Thermal Controls to provide all engineering, design and products for the integrated heating system — a system designed and based on predicted heat requirements and thermal profiling of the guideway running surface.



TRACER[®]

Raychem[®]

HEW-THERM[®]



We manage the heat you need™

Tracer® Skin-effect Tracing Systems (STS) generates heat on the inner surface of a ferromagnetic heat tube that is thermally embedded into the concrete guideway to be heated. STS systems are custom engineered to minimize the number of power supply points required.

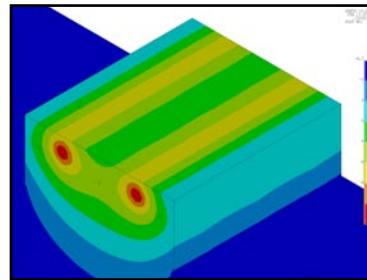
The Raychem® and HEW-THERM® polymer series resistance heating cables are flexible, providing ease of installation. They are also suitable for longer circuit lengths and for continuous exposure temperatures of up to 260°C.

Tyco Thermal Controls is the world leader in heat-tracing solutions. We will continue to pioneer new technologies and products to meet the needs of rapidly evolving worldwide markets. In an increasingly global economy, customers recognize Tyco Thermal Controls as a partner whose global capabilities translate into global solutions



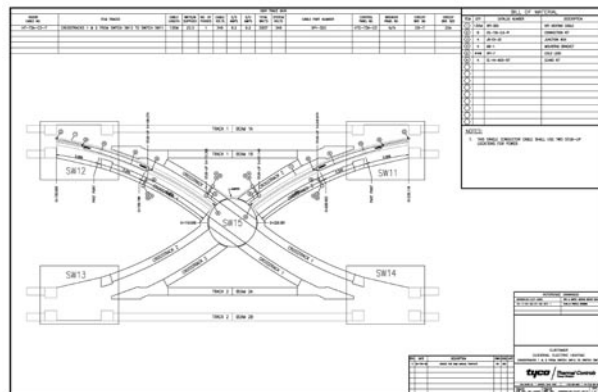
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Tyco Thermal Controls performed a Finite Element Analysis (FEA) to predict the heat requirements and snow-melting characteristics under varying conditions. A total of eleven case studies were submitted using historical data on Beijing's snowfall and temperature averages over the past 100 years. This information was used to establish and implement operating philosophies for the customer to allow for the most suitable and energy efficient heating system solution.



Specific challenges inherent to this type of project included the extremely long running surfaces associated with the guideways and tight clearances and configurations as seen in the rail, switch and turntable applications. Tyco Thermal Controls provided a final system design that incorporated heat-tracing systems of various technologies to address these issues.

The largest engineering challenge with this project lay in the design of the Skin-effect Tracing System for the concrete guideways. By developing and utilizing specialized component assemblies, Tyco Thermal Controls was able to design a system with long continuous circuits, averaging over 1000 meters in length. Other unique components and assemblies were employed in the design to provide an overall solution that was not only cost-effective but also highly reliable because it eliminated the need for hundreds of circuits, which would be required using other heat-tracing technologies.



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