Inspiro The New Metro Platform

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February 24, 2011



Industry Sector, Mobility Division

Challenges ...

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for Mobility	for metro operators
Increase the volumes of traffic	Flexible, highly available metro systems
Fast, punctual service	Reliable systems, high quality, proven technology
High safety and protection requirements	Application of modern safety standards and corresponding components
High environmental awareness	Sustainable materials, eco-friendly production & energy-efficient operation
Cost-effective operation	Achieve profitability by reducing lifecycle costs
Climatic conditions	Rail vehicles that remain reliable and available under severe climatic conditions
Attractive for passengers	Comfortable trains, attractive design that reflects the modern image of a city
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Our answer: Inspiro The new metro from Siemens



Design vision – more than just a metro Comfort

Unique, modern design

Symbolizes orientation toward the future

Customer orientation – giving the customer measurable advantages

- A mix of standardization, flexibility and versatility
- A reliable, highly available concept that uses service-proven components
- Higher passenger capacity
- Optimized maintenance

Environment and efficiency – improving the CO₂ balance

- Higher energy efficiency
- Optimized weight
- Sustainable materials
- High recyclability

Inspiro The development



- Extensive experience from customer projects was channeled into the development.
- Adaptability to diverse customer requirements is assured.
- Energy is saved by a weight-optimized design and a highly efficient traction drive system.
- Low empty weight maximizes carrying capacity with low axle loads.
- The platform builds on Siemens' vast experience in the metro field: proved, innovative technologies are used.
- Fully integrated into the holistic Siemens Mobility concept "Complete Mobility".

Inspiro Examples of the exterior design





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Inspiro Illustration of light concept and exterior design



1. Intelligent light concept to indicate changing situations:

Light strips in the doors that flash while the doors are open and run down like an hourglass to indicate the time remaining before the doors close

2. Futuristic front section:

Emphasizes the typical design and reflects the character of the vehicle



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Inspiro Flexibility and optimized capacity



- Customized interior furnishing
- Optimized passenger flow to shorten dwell times at stops
- The passenger area is for the passengers there are no electrical equipment cabinets in the interior, so passenger capacity is optimized



Inspiro Modular, flexible interior layout (1)





Optimized for capacity, comfort and passenger flow:

- Attractive, modern interior design combined with great variability
- Individual seating arrangements for longitudinal, transverse and mixed seating
- Easily adapted for optional multifunctional areas
- Wheelchair spaces and expanded passenger information system
- Flexible modular seating and stanchion concept with standardized interfaces for diverse customer requests
- Application of weight-optimized and thus energysaving solution with a small "carbon footprint" (e.g. multifunctional ceiling profile, innovative cork flooring, lightweight aluminum construction)
- No electrical equipment cabinets in the passenger area

Inspiro Modular, flexible interior layout (2)



Lightree

- Highly symbolic and functional feature
- Enables passengers to find their own seats
- The area above the tree is lit by LEDs
- An open modern interior enhances the attractiveness of the metro

Virtual conductor

- Display shows the metro line, next station, destination station
- The passenger flow is optimized by wide entrance areas and the 45° angle of the "virtual conductor"
- Additional information displays above the windows and at the ends of the cars
- The feeling of safety and comfort

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Inspiro – SIEMENS Self-contained train concept for any desired configuration

C Mc: Motor car with driver's cab			
M: Motor car			
T: Trailer car			
Basic configuration			
\square			
\square			

- 3- to 8-car trains, motor car with driver's cab, motor car and trailer cars
- Degree of motorization from 60% to 100%
- Adaptable to tougher climatic conditions (e.g. sand, low temperatures)
- Scalable heating, ventilation and airconditioning systems, separate for driver's cab and for passenger areas
- Integration of innovative technical concepts and Complete Mobility solutions (e.g. Syntegra, fully automated train operation, stationary energy storage systems)

Inspiro – Design and construction of the front section

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Exterior design concept for a range of requirements

- The fiber-reinforced plastic (FRP) front shell is a lightweight construction that facilitates easy adaptation of width and height.
- A modular driver's cab concept for operation with and without a driver
- Front with or without an emergency door, with standardized interfaces
- Train front section with or without driver's cab door



Inspiro – Inspiration Citylife Adaptable car body

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The new car body concept can be easily adapted to meet differing infrastructure requirements. This leads to lower energy consumption, reduced axle loads, and consequently allows higher passenger capacities

- Weight-optimized, welded car body with lightweight aluminum construction
- Width of car body: 2.63 m to 3.0 m
- Length of car body: 17.9/18.9 m to 20 m
- 3 or 4 passenger doors on each side of the car
- Standardized interfaces for tested systems
- Crashworthiness according to prEN 15227 (static longitudinal load up to 1,000 kN)
- Standardized interfaces for components

Inspiro Innovative, weight-optimized components



Innovative flooring

- Improved sound absorption¹⁾
- Improved thermal insulation
- 30% less weight ¹)
- High recyclability and sustainable materials
- Tested for durability to match the train's lifetime

Weight-optimized car body

- Lower energy consumption
- Reduced axle loads
- Optimized passenger capacity

¹⁾Compared to plywood floors

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Inspiro HVAC and multifunctional roof profile



Multifunctional roof profile

- Integrated cable ducting, light strips and roof structure
- Installation interface for innovative fabric ventilation duct, central roof area, etc.

HVAC

(heating, ventilation, air-conditioning system)

- Modular design to meet differing requirements
- Demand-related fine control (optionally via CO₂ sensor)
- Uniform air and temperature distribution, draft-free air flow through perforated ceiling panels
- Lightweight design of the air ducts (approx. 60% weight reduction)

Inspiro – Designed for severe environmental conditions



Experience of mastering severe winter environmental conditions

These conditions affect:

- The selection of materials (e.g. connections and seals)
- Special valves
- Enhanced electrodynamic components
- Air ducting & cooling concept
 Verified by comprehensive trials in the climatic test chamber

References from the Oslo Metro and the Velaro in Russia

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Inspiro Long-lasting, eco-friendly design



- The environmental sustainability is taken into account during the design of the vehicle and in the production process
- Materials with low gray energy and a favorable CO₂ balance are used
- Innovative flooring design using renewable raw materials
- Lightweight construction
- Efficient propulsion technology and demand-related climate conditioning

Savings in raw material and energy, plus an improved CO₂ balance



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Inspiro Summary

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Maximum advantages for passengers and operators over the entire lifetime

The innovative, revolutionary design makes every journey an experience

- Enhanced passenger comfort for greater attractiveness
- A contribution to the experience of life in a modern city

Flexibility in the realization of the operator's visions

- Adaptable to various customer requirements and standards
- Increased reliability from the use of service-proven components
- Integration of modern technologies

Low lifecycle costs and benefits for the environment

- Low weight and higher efficiency achieved by saving energy
- Recyclable, sustainable materials

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The Inspiro for the Warsaw Metro First order for the new metro generation

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Information about the Warsaw Project

Project data

- 35 six-car Inspiro trains for Warsaw, the capital of Poland
- Order volume: 272 million euros
- Service location: Lines 1 and 2 of the Warsaw Metro
- Train design developed by BMW DesignWorksUSA
- First train delivery scheduled 24 months after signing of the contract
- Scope of order: delivery of the vehicles, commissioning, tests and certifications of the vehicles
- First 10 trains will be manufactured entirely in Vienna, while Newag SA, the consortium partner, will carry out the final assembly of the remaining trains in Poland



Train configuration Mc-T1-M-M-T1-Mc	Technical data
Car body material Aluminium	Train configuration
Car body material Aluminium	Car body material
Track gauge 1.435 mm	Track gauge
Maximum speed 90 km/h	Maximum speed
Train length Approx. 117.800 mm	Train length
Train width 2.740 mm (across door leaves)	Train width
Power supply 750 V DC/ Third Rail	Power supply



Inspiro – Thank you very much for your attention!

