Complete Electrical Solutions for Infrastructure Projects
Our Vision – Setting the Pace

A world of proven talent,
delivering breakthrough innovations,
giving our customers a unique competitive edge,
enabling societies to master their most vital challenges
and creating sustainable value.
Global Megatrends – Challenges for Infrastructure

Mobility
- 2010: Air miles per passenger will double compared to 1995
- Americans spend 3.5 billion hours in traffic jams each year
- Population growth from more than 6 billion to 8 billion by 2025 with high demand on mobility

Urbanization
- Today: 280 million people live in megacities (> 10 millions)
- 2007: For the first time in human history more people live in cities than in rural areas
- 2015: 350 million people in megacities. The number of megacities will increase to 33
## Industry Solutions’ service offering

### Metals
- Iron & Steelmaking
- Continuous Casting
- Hot and Cold Rolling
- Processing
- Service

### Mining
- Extraction
- Transport
- Beneficiation
- Service

### Pulp & Paper
- Pulp processing and converting
- Paper production
- Recovered paper-recycling
- Water management
- Energy recovery
- Service

### Cement
- Raw material processing
- Cement production
- Cement storage and distribution
- Service

### Water
- Industrial Water/ Wastewater Treatment
- Municipal Water/ Wastewater Treatment
- Water Reuse
- Service

### Marine
- Cargo Ships
- Passenger Ships
- Off Shore Vessels
- Special Vessels
- Navy Surface Vessels
- Submarines
- Service

### Services
- Industrial Services
- IT Solutions / MES
- Segment Industrie Montage Services
- Electronic Design & Manufacturing Services
- Mechanic Center Erlangen GmbH

### Infrastructure Facilities
- Complex infrastructure projects
- Airports
- Tunnels
- Tank Terminals
- Sports Venues
- Cable Liner
- Solar power plants
- Service
Infrastructure Projects

www.siemens.it/is

Portfolio

- Totally integrated electrical solutions for complex infrastructure projects and technical service for:
  - Airports
  - Flyport
  - Tunnels
  - Tank Terminals
  - Infrastructure for complex buildings
  - Sports venues / Race tracks
  - Cable Liner
  - Solar power plants
- SIMAIN technical services
  - Technical facility service and troubleshooting
  - Reliability solutions / Maintenance realization
  - Logistic and repair services
  - Maintenance process analysis and optimization

Innovations & References

- Complete solutions for electro-technology and security
  - Dragao Stadium, Portugal
  - Bangalore Airport, India
  - Tashkent Airport, Uzbekistan
  - Baku Airport, Azerbaijan
- Tank Terminals Antwerpen, Stuttgart
- Modernization of eight soccer stadiums
  - World Cup 2006, Germany
- Formula 1 race tracks Bahrain, Turkey
- Cable Liner Toronto, Mexiko City
- Modernization of ski-lifts in Austria
- Maintenance
  - Cultural de Belem, Portugal
  - Associacao Industrial Portuguesa Feira, Portugal
  - Oceanario de Lisboa, Portugal
### References in Defined Sectors

#### Airports
- Expansion Taschkent, Uzbekistan 2004
- New Construction Bangalore, India 2005
- New Terminal 2 Mexico City, Mexico 2006

#### Flyport
- R&D project completed
- Various projects in design phase
- Pilot projects in Europe and Asia est. completed till middle of 2009

#### Complex Buildings
- Oncology Hospital Cairo, Egypt 2005
- Sundar Industrial Park, Pakistan 2005
- Dam St. Petersburg, Russia 2007

#### Sports Venues
- 4 Stadiums for Football EM, Portugal 2004
- Formula 1 Racetrack, Turkey 2004, Bahrain 2005
- Formula 1 Race track Abu Dhabi, UAE 2007

#### Tunnels
- Selatin Tunnel, Turkey 2003
- Bolaman Persembe Tunnel, Turkey 2007
- Cattinara Tunnel, Italy 2007
- Monte d’Oro Tunnel, Italy 2007

#### Cable Liner
- Toronto Pearson Int. Airport, Canada
- Mexico City In. Airport, Mexico 2007
- Perugia, Italy 2008

#### Tank Terminals
- Airport Athens, Greece 2000
- Liquid Bulk Antwerpen, Seatank, Belgium 2006
- Liquid Bulk, Vopak, Belgium 2006
- Airport Stuttgart, Germany 2008

#### Photovoltaic Power Plants
- Beneixama, Spain 2007
- Mahora, Spain 2007
## I&S IS E&C Infrastructure – About us

### Core Competences

- Project & Solution Design and Engineering
- Technical Consulting
- Design to Budget Processes
- System Integration: Energy, Data/Information Management, Automation
- Selection and Assignment of System Partners
- Financing and Contracting Models
- Project Execution and Management
- Construction
- Commissioning and Training
- Documentation
- Electrical General Contractor / Partner: E-EPC = Electrical Engineering Procurement Construction

### Customer Benefit

- **High Reliability**
  - One responsible party only
  - Interface coordination already during design phase
  - Adaptable technology
  - Holistic implementation of operation and maintenance issues

- **High Functionality**
  - Integration of all systems with world-leading technology
  - Support throughout the life cycle
  - Custom tailored modernization

- **High Economics**
  - Reduce redundant work and costs in design and implementation
  - Economy of scale through corporate purchasing
  - Project completion on time and within budget

- Ecological awareness to minimize environmental pollution
Core Competence: Integration of Entire Electrical Solutions for Complex Infrastructure Projects

- Automation
- Building Automation
- Emergency Power
- Construction
- Mechanical
- Electrical (E-EPC)
- Operation
- Main Contractor (EPC)
- IT / Communication
- Access, Security & CCTV
- Electrical Power Supply
- Lighting
- Parking
- Public Address
- Services
Integrated Airport Terminals: Basic Electrical Systems

- Power
  - Power Supply / Energy
  - Automation
  - Emergency Power
  - Lighting

- Information Communication
  - IT
  - Communication

- Security
  - Closed Circuit Television
  - Access Control

- Airport Specific Systems
  - Flight Information Display System
  - Baggage Handling
  - Airfield Lighting
  - 400 Hz Ground Power

- Project-, Contract-, Site-Management, Construction, Commissioning, Test, Training, Hand-over, Maintenance
Project Examples: New Airport Bangalore, India and New Airport Terminal 2 Mexico City, Mexico

Customer: BIAL (Bangalore International Airport Ltd.)
Partner: Civil: Larsen & Toubro
E&M: Siemens I&S IS, Siemens Ltd. India
Volume: Total Project 350 Mio. € / Siemens 78 Mio. €
Benefits: One Integrated Electrical Concept, Leading Standard Technology, Reference Project for Indian Market
Highlights: BOT-Project / Private-Public-Partnership

Customer: Aeropuerto Internacional de la Ciudad de Mexico
Partner: ICA Construcciones
Siemens I&S IS, IL; SBT; COM; PTD; A&D
Volume: Siemens (5 packages) 38,1 Mio. €
Scope: 5 E&M packages
P1 Electrical Systems & Power Supply
P2 Installation Services, P3 Baggage Handling System, P4 Security & Communication, P5 Automated People Mover
Benefits: Sub-contractor to ICA with full responsibility for 5 E&M packages
Highlights: T2 for new capability of 8’000 PAX up to 12’ in 2025
Project Examples: Airport Baku, Azerbaijan and Airport Tashkent, Uzbekistan

Customer: AZAL - Azerbaijan Airport

Partner: Local Civil Companies
Siemens I&S IS, ITS, ADB

Volume: Total Siemens Project 6.3 Mio. €

Scope: Power Supply (MV, LV, DGS, UPS), Visualized Control & Monitoring System for Runways CAT I & III and Taxiways

Benefits: Main contractor to supply and install a fully integrated airfield lighting solution over visualized operation & monitoring system

Highlights: Project execution during airport operation in several steps with several civil construction companies

Customer: NAC – National Aviation Committee

Partner: Local Civil Companies
Siemens I&S ITSA, I&S IS E&C, SGT Ulm

Volume: Deliveries 17.5 Mio. €, Services: 2.5 Mio. €


Benefits: Nominated sub-contractor to civil work JV under full responsibility for electrical & special airport systems

Highlights: Project execution during airport operation in a short time period of 18 months
Innovation: Flyport – the Modular Passenger Terminal

**System Advantages**

flyport® is the standardized modular passenger terminal featuring easy setup, flexible use, and customizable installation and configuration – the ideal prerequisites for a high return on capital over the entire life cycle.

- Short planning and fast approvals
- The highest quality in equipment and airport technology
- Worldwide applicable
- Short on-site construction periods
- Customized and standardized
- Flexible and expandable
- Planned, designed and executed by system partners made up of leading German companies
Siemens I&S IS as E&M Contractor for Tunnel Infrastructure

- Contract design and management
- Professional Project Management
- Site Management
- System Integration & Commissioning
- Subcontracting
- Logistics

Turnkey E&M EPC

- General Contractor
- Civil
- Systems & Solutions
- Components & Products

Environmental control
Lightning
Radio
Ventilation
Traffic control
Fire safety

Tunnel Control Center
Siemens
Tunnel Infrastructure Systems

**Tunnel Control**
- Tunnel Control Center
- Monitoring
- Video Surveillance
- Video Recording

**Ventilation**
- Axial Ventilation
- Radial Ventilation
- Emergency Ventilation

**Fire Safety**
- Infrared Perimeter & Surveillance
- Fire Detection & Alarm
- Fire Fighting

**Surveillance & AID**
- CCTV
- Access Control
- Screening
- Intrusion Security

**Lighting**
- Light Control
- Symmetric and Counter Beam Lights
- Entrance Lights
- Emergency Lights

**Tolling**
- Toll Stations
- Ticket Processing

**Power**
- High/Medium/Low Voltage
- Uninterruptible Power Supply
- Diesel Generators

**Signaling & VMS**
- Variable Messaging and Speed Signs
- Lane Control
- Emergency Signs

**Information & Communication**
- SCADA
- Video Signal Distribution
- Tunnel Radio
- Emergency Phones
Tunnels: Project Example
Bolaman Persembe, Turkey

Customer  General Directorate State Highways, Turkey
Partner   Nurol, Tekfen & Yüksel (NTY), J.V.
Volume   Siemens I&S 23,85 Mio. USD
Benefits  From Planning to Operation From a Single Source, Including a 2-Year-Contract for O&M
Highlights  Order December 05, Operation April 07, Duration 8 Months
Tunnels: Project Example
Selatin Tunnel, Turkey

Customer  General Directorate State Highways, Turkey
Partner   Nurol, Tekfen & Yüksel (NTY), construction consortium
Volume    Siemens I&S: 23,8 Mio. USD
Benefits  Basic & Detailed Engineering, Supply, Installation, Commissioning and two years O&M of all Electro-mechanical Systems
Highlights Contracting Dec. 05, Opening Apr. 07, Duration 8 months
Tank Terminals Solutions

- **Airport Fuelling Systems**
- **Liquid Bulk Logistics**
- **Industry Tank Terminals**

**Tank Terminal E-EPC (Turnkey) Systems:**
- Project management & supervision
- Basic / Detailed engineering
- Tankfarm management system:
  - Order / transaction management
  - Loading / Unloading control
  - Reconciliation / Inventory management
  - Tank monitoring / Leak detection
  - Blending systems
  - Product Quality management
  - KPI
- High availability control system
  - Energy savings solutions: Frequency drives / PID control / Pump sequencing
  - Optimization of Hydraulic behavior to prevent pressure surge risks
- Reliable Safety Integrated Solutions:
  - Fire & Gas detection
  - Fire fighting system
  - Environmental protection
  - Leak Detection/ Tightness Control
  - Identification Ex-zones, Exd-zones and associated safety procedures
Tank Terminal: Project example
Airport Fuel Terminal, Athens Airport

Customer: Olympic Fuel Company

Volume: Siemens app. 2’2 Mio. €

Scope: Complete Electrical Turnkey including Automation for a Greenfield airport fuelling system

Operation: Since 2002

Benefits: Environmental safety; Power savings; Economic operations; 6 years proven Quality Concept; Compliance to international standards and guidelines (JIG, IATA)

Highlights: Optimized Basic design of Hydrant System and Tank farm for safety and economics; Professional electrical turnkey solution; Powerful redundant automation for tank farm: SIMATIC; Reliable and safe monitoring of pipeline leakage by Tightness Control System TCS®; Safe fire fighting system
"Regional Specific" Infrastructure projects require combined solutions of

- Electrical Power Supply
- Communication
- Sound & Video
- Special Electronics
- Integrated Public Adress System

for special purpose facilities such as →

With our qualified know-how we analyze the customer specification for technical feasibility and correctness, taking into account the standards applying in the respective countries.

Starting with our qualified Basic Engineering we work out an optimized scale of quantities according to the customer specification.

With consistent project management and on-schedule project processing we ensure our systems operation, taking into account the defined interfaces according to the Black Box specification.

Our customers can therefore be sure of an ideal integration and optimal compatibility of their systems from a single source.
Industrial Infrastructure: Energy & System Integration

**Electrical Power Supply**
- Medium Voltage Switch-gear 6.6 - 21 kV
- Low Voltage Systems 400V
- Direct Current Systems / AC/DC & UPS Systems
- Lighting for Combined Cycle Power Plants
- Emergency Diesel Generator Set 200 kVA - 2000 kVA
- Power Transformers up to 10 MVA
- Auxiliary Transformers up to 2.5 MVA
- Dry Type Transformers up to 2.5 MVA
- Power Cable, Control Cable and Cableways

**Communication**
- PABX System (telephone)
- Clock System
- LAN System (active & passive components)
- Public Address System
- Pager System

**Sound & Video**
- Pro Sound System
- Video Television System
- Picture Transmission System

**Security Systems**
- Fire Detection and Alarm System
- Access Control System
- Infrared Perimeter & Surveillance System
- CCTV System (Closed Circuit Television)
- Picture Transmission System

**Special Electronics**
- Gateways for System Interfaces
- Power Line Carrier System
- Open Transmission Network (OTN) System
- Training Systems for Electrical Equipment
- Metering Information and Control System
Complex Buildings: Project Example
Children’s Oncology Hospital

Customer: Association of Friends of National Cancer Institute (AFNCI)
Partner: ACC Arabian Construction Company
Volume:
- Total Investment: 58 Mio. €
- Siemens I&S IS: 16 Mio. €
- ACC: 15 Mio. €

Scope:
- Security (CCTV, Public Address, UPS),
- Electrical (Power, Lighting, Fire Alarm, Nurse Call, Sound, TV Distribution, Tel. & Data Networks, Clock System, CCTV)
- HVAC & Plumbing (20 km Black Steel Pipes, 32 km Copper Pipes, 12 km Cast Iron Pipes, 270 Tons Duct Sheets, Chilled Water System, Fire Fighting, Plumbing Works, Boilers, Kitchen, Laundry, Cafeteria, & Medical Gases Network)

Benefits:
- Full scope M&E supplier for hospital,
- reference project for hospitals with high complexity

Highlights:
- The project is financed by donations from Egyptians as a national charity project for Egypt’s children with cancer
Complex Buildings: Project Example
Sharm El Sheikh International Conference Complex

Customer: Naama Golf & Touristic Investment Company

Volume:
- Total Investment: 30 Mio. €
- Siemens I&S IS: 12 Mio. €

Scope:
- Mechanical Works (HVAC System, Building Management System, Fire Fighting, Plumbing Works)

Benefits:
- Basic & Detailed Engineering, Supply, Installation & Commissioning of all the Electromechanical Works, Reference project for Conference Complex with high complexity

Highlights:
- The project was executed within 6 months and was fully operating to host the World Economic Forum May 2006
Sports events, large concerts and other leisure, commercial and cultural highlights are becoming more and more frequent. All these events require modern facilities to fulfill the expectations of athletes, performers and visitors.

Together with selected partners, Siemens offers the entire range of products and services to provide the infrastructure to smoothly stage large events.

For an optimum, all-round solution, experience and solutions used for previous projects and new, creative ideas are constantly being integrated into current and future events to the benefit of spectators, athletes and organizers alike.
Stadiums: Integrated Infrastructure Solutions by Siemens

Planning
- Consulting & Bid Management
- Contract & Project Management
- Engineering

Implementation
- Procurement and Shipping
- Site Management
- Installation Supervision
- Commissioning & Documentation
- Maintenance & Upgrading

Management of interfaces to Authorities, Architects, Contractors, Sub Suppliers and Mechanical Partners

Energy
- Power Supply
- Power Distribution
- Emergency power (UPS)
- Lightning protection
- Alternative Energies

Security
- Access Control
- Video Surveillance
- Fire Safety & Extinguishing
- Intrusion Detection
- Danger Management

Building Management
- Building Automation
- Parking Management

Lighting
- Exterior Lighting
- Facade & Architectural Lighting
- Arena Lighting
- Interior Lighting

Information Management
- Intelligent Communications
- Conference & Alerting
- Point of Information
- Master Clock
- I & C Networks
- I & C Security
- Audio / Public Address
- Video Wall / Score Board

Event Management
- Venue Command Centre
- Antenna Systems
## Sports Venues: Project Example
### National Stadium Main Bowl Complex, Nigeria

<table>
<thead>
<tr>
<th>Customer</th>
<th>Bilfinger Berger AG + Julius Berger Nigeria</th>
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<tbody>
<tr>
<td>Partner</td>
<td>Süddeutsche Etna for Mechanical Part</td>
</tr>
<tr>
<td>Volume</td>
<td>Investment 230 Mio. €</td>
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<td></td>
<td>M&amp;E Part 18,1 Mio. €</td>
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<tr>
<td></td>
<td>Siemens I&amp;S IS 11,9 Mio. €</td>
</tr>
<tr>
<td>Benefits</td>
<td>Full scope M&amp;E supplier for main stadium for the African Games 2003</td>
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<tr>
<td>Highlights</td>
<td>At the time of completion biggest video walls and best ProSound System of its kind on the African continent (also top equipment in this regard compared to European installations)</td>
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Race Tracks: Project Example
Formula 1 Racetrack, Bahrain

Customer: Cebarco / WCT WLL Joint Venture
Partner: PKE for race management and time keeping

Volume:
- Total Project: 150 Mio. USD
- Siemens: 8.5 Mio. USD
- PKE: 7 Mio. USD

Scope:

Benefits:
- Reference project for F1 race tracks – one of the most modern and sophisticated facilities available

Highlights:
- Project execution on time, within just 10 months
Automated People Mover (APM): Attractive Solution for Local Traffic

Siemens’ value proposition:

- Cable-propelled, fully automated and modular Cable Liner
- Joint-development, equipped with electrical engineering from Siemens and tested and proven mechanics of Doppelmayr Cable Car
- Concept for transporting great numbers of passengers over short distances comfortably, safely and, most of all, economically

The ideal transport alternative for airports, shopping malls, fair grounds, theme parks and even for urban transport networks with their specific requirements.

Customer Benefit:

- Fully-automated, operation without driver and conductor
- Economical operation
- Short waiting times for passengers
- Simple systems integration
- Environmentally friendly, emission-free operation

An attractive solution for local traffic, which has been tried and tested already in everyday practice with its future-proof and economic design and high convenience for the passengers.
Automated People Mover (APM): Project example Cable Liner Shuttle, Toronto Airport

Customer  GTAA – Greater Toronto Airports Authority
Awarding authority  Doppelmayr Cable Car GmbH in Wolfurt, Austria
Volume  Siemens app. 7 Mio. €
Scope  Complete power supply system, drive technology, automatic train control system, engineering, installation and commissioning
Benefits  Optimum system integration by aesthetic tracks, fully automatic operation, operational management and maintenance by constructor, economic operating costs
Highlights  Fully automatic cable-propelled passenger transport system with a transport capacity of 2,164 passengers per hour and direction, 3 stops, 6 vehicles, 1.4 km length of track, in operation since July 2006
Contact

Siemens S.p.A.
Sector Industry
Division Industry Solutions INF

Via Vipiteno, 4
20128 - Milan
Italy

E-Mail: infodesk.it@siemens.com
Web Site: www.siemens.it/is