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“Connecting pieces of your world”
All around the world, Ansaldo STS supports its clients to create and develop more reliable and sustainable networks that ease urban mobility and solve the challenges of today’s population and cities’ rapid growth.

From passenger to freight transportation networks, from urban to intercity and cross-border high speed lines, Ansaldo STS designs and deploys cutting-edge technologies to meet operators’ needs and optimize performance independently of traffic density and complexity.

Ansaldo STS has left its mark in the rail industry by implementing advanced technologies on major projects such as:

- **ERTMS/ETCS** solutions combined with High Speed Rail, Conventional lines or Heavy Haul technologies for safer and interoperable networks
- **Satellite positioning** technology for safer and more accurate rail traffic management
- **Driverless solutions** to improve operational efficiency and flexibility and reduce operation and maintenance costs
- **CBTC** signalling technology to increase performances and reduce headway through a real moving block
- **Broad Components** portfolio, covering all aspects of signalling and systems solutions (such as Switch Machines, Signals, Level Crossings, Relays, etc.)

That’s how Ansaldo STS moves the rail industry forward, that’s how we connect pieces of your day to day life.

A leading international technology company which specializes in railway signalling and integrated transport systems for passenger and freight rail operations.

Ansaldo STS plans, designs, manufactures, installs and commissions signalling components, systems and integrated mobility solutions for the management and control of new and upgraded Railway, Transit and Freight lines worldwide and acts as a lead contractor and turnkey provider on major projects worldwide.

Ansaldo STS is listed on the Milan Stock Exchange.
Railway and Mass Transit

Ansaldo STS is a global leader in passenger rail systems, designing, building, operating and maintaining Railway and Mass Transit solutions that range from fully integrated turnkey solutions to traditional signalling systems. These systems can include any of the technological subsystems that make up a transport system, including signalling, power supply, telecommunications, rolling stock and other technologies. Globally, Ansaldo STS supports clients with every type of signalling solution, from track circuits to Communications Based Train Control (CBTC) and from High Speed Railways to Driverless and Conventional Metro Systems.

Freight

Ansaldo STS has a history in the design and production of a full range of signalling solutions and components and provides operation and maintenance services for Heavy Haul and Freight customers around the world. From the wayside, on-board and office products that comprise a Heavy Haul or Freight network, to complete turnkey systems, Ansaldo STS is a leader in freight rail solutions. Our advanced, modular and scalable planning and control systems have improved network safety, reliability and efficiency to new levels.
Key Data as of December 2016

**REVENUES**  
Min€ 1,383.8

**NEW ORDERS**  
Min€ 1,336.0

**BACKLOG**  
Min€ 6,410.4

**OPERATING INCOME**  
Min€ 135.8

**NET FINANCIAL POSITION**  
(positive net cash)  
Min€ (338.7)

**HEADCOUNT (N.)**  
3,772

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Order Backlog as of December 2015

- **Italy**: 9%
- **Rest of Europe**: 32%
- **North Africa | Middle East**: 17%
- **Americas**: 19%
- **Asia Pacific | South Africa**: 23%

6,410 Min€ by Geographic area

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Revenue as of December 2015

- **Italy**: 18%
- **Rest of Europe**: 8%
- **North Africa | Middle East**: 24%
- **Americas**: 23%
- **Asia Pacific | South Africa**: 27%

1,384 Min€ by Geographic area
Worldwide Presence
(tot. 2015 headcount 3,772)

Europe, North Africa & Middle East:

Americas:
Pittsburgh, Batesburg, Honolulu, Kansas City, Los Angeles, Rockville, Toronto, Kingston, Sao Paulo, Lima

Gaborone, Johannesburg, Beijing, New Delhi, Kolkata, Taipei, Brisbane, Newcastle, Sydney, Karratha, Perth
Main References and Projects Worldwide

**UK**
- High Speed One - Cambrian line - Fernby-Gilberdyke line
- Metro: Glasgow subway

**Germany**
- Saarbrücken - Mannheim HSL
- Berlin-Rostock HSL

**Sweden**
- Boden-Haparanda line
- Metro: Stockholm Red line

**Denmark**
- Metros: Copenhagen M1, M2, new City-Ring, Aarhus LRT

**USA**
- SEPTA PTC commuter line
- Long Island Rail Road commuter line
- East side access Speonk to Montauk
- Metros: Los Angeles Metro (Green Line), Honolulu rapid transit, New York Metro
- WMATA Silver Springs
- WMATA Dulles Phase 2
- PTAAC North Shore Connector
- NYCT Chambers Street

**Venezuela**
- Metro: Los Teques

**Peru**
- Metro: Lima lines 2 - 4

**Brazil**
- Metro: São Paulo CPTM ATP lines 7 - 12
- São Paulo CPTM ATO lines 7 - 9 - 12

**Turkey**
- Gebze - Kocaköy line
- Metro: Ankara lines 1, 2, 3, 4

**Botswana**
- Integrated Safeworking System (maintenance) Botswana Railways

**Algeria**
- Oued Telat - Tiemcen line

**South Africa**
- Witwatersrdrift

**Morocco**
- Tangiers - Kenitra HSL

**Italy**
- High Speed network:
  - Metro: Rome L A & L C, Naples L1 & L6, Milan L5, Brescia, Genoa

**France**
- High Speed network including:
  - Tours-Bordeaux (SEA), Le Mans-Rennes (BPF), Paris-Strasbourg (East Europe)
- Metro: Paris Line 3

**China**
- Shijiazhuang-Taian DPL (Shi-Tai)
- Zhengzhou-Xian DPL
- Metros: Shenyang lines 1 & 2, Chengdu lines 1 & 2, Xian line 2, Zhengzhou line 1

**South Korea**
- Seoul-Busan HSL, Osong-Gwangju (Honam) HSL, Rotem on-board program, Sudokwon HSL
- Metro: Ul Strenesol LRT

**Taiwan**
- Metro: Taipei Circular Line

**India**
- TPWS Northern railway, TPWS Southern railway
- Metros: Kolkata metro, Mumbai monorail, Navi Mumbai metro

**South Africa**
- Metro: Cape Town LRT

**Botswana**
- Integrated Safeworking System (maintenance) Botswana Railways

**Saudi Arabia**
- Metros: Riyadh Princetel, Neura Bint Abdullah Railway women’s university metro, Riyadh metro Line 3

**U.A.E.**
- Etihad rail stage one (Shah - Habban - Ruwais line)

**UK**
- High Speed One - Cambrian line - Fernby-Gilberdyke line
- Metro: Glasgow subway

**Germany**
- Saarbrücken - Mannheim HSL
- Berlin-Rostock HSL

**Sweden**
- Boden-Haparanda line
- Metro: Stockholm Red line

**Denmark**
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**USA**
- SEPTA PTC commuter line
- Long Island Rail Road commuter line
- East side access Speonk to Montauk
- Metros: Los Angeles Metro (Green Line), Honolulu rapid transit, New York Metro
- WMATA Silver Springs
- WMATA Dulles Phase 2
- PTAAC North Shore Connector
- NYCT Chambers Street

**Venezuela**
- Metro: Los Teques

**Peru**
- Metro: Lima lines 2 - 4

**Brazil**
- Metro: São Paulo CPTM ATP lines 7 - 12
- São Paulo CPTM ATO lines 7 - 9 - 12

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- Gebze - Kocaköy line
- Metro: Ankara lines 1, 2, 3, 4

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- Integrated Safeworking System (maintenance) Botswana Railways

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- Witwatersrdrift

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- Tangiers - Kenitra HSL

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  - Metro: Rome L A & L C, Naples L1 & L6, Milan L5, Brescia, Genoa

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- Shijiazhuang-Taian DPL (Shi-Tai)
- Zhengzhou-Xian DPL
- Metros: Shenyang lines 1 & 2, Chengdu lines 1 & 2, Xian line 2, Zhengzhou line 1

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- Metro: Taipei Circular Line

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- TPWS Northern railway, TPWS Southern railway
- Metros: Kolkata metro, Mumbai monorail, Navi Mumbai metro

**South Africa**
- Metro: Cape Town LRT

**Botswana**
- Integrated Safeworking System (maintenance) Botswana Railways

**Saudi Arabia**
- Metros: Riyadh Princetel, Neura Bint Abdullah Railway women’s university metro, Riyadh metro Line 3

**U.A.E.**
- Etihad rail stage one (Shah - Habban - Ruwais line)
**Competencies**

As an expert in Railway, Mass Transit and Freight signalling and turnkey projects, Ansaldo STS manages all of the phases of the project, from the design to the manufacturing and installation, testing and commissioning and operations and maintenance, independently of network size and complexity.

**Contractual Capabilities**

Ansaldo STS’s “full system approach” optimizes strategies, resources and investments and rationalizes technology types to provide state-of-the-art, viable and integrated transportation solutions within a municipality, region or country.

We act as lead contractor (or consortium partner) and system integrator for major projects around the world, under the following contractual schemes:

- Contracting for Design & Build
- Project Financing
- Public Private Partnerships (PPP)
- Build, Operate and Transfer (BOT)
- Design, Build, Operate and Maintain (DBOM).
Business Lines
Ansaldo STS delivers a full range of Railway & Mass Transit and Freight Solutions, such as…

HIGH SPEED
Ansaldo STS is present in over 50% of all High Speed lines built around world (Japan excluded).

MAIN LINES
Ansaldo STS provides full-service capabilities to large railway networks.

SUB-URBAN
Commuter rail, also called suburban rail, is a passenger rail transport service that primarily operates between a city center and the middle to outer suburbs beyond 15 km.

CONVENTIONAL METRO
A complete portfolio of solutions where the driver runs the trains up to fully ATO systems, where only limited actions are required by the driver.

FREIGHT
Ansaldo STS is a leader in the freight transportation market. In Australia, it provides innovative heavy-haul freight rail solutions for several of the country’s key iron ore mining operations.

DRIVERLESS UTO METRO
So far, Ansaldo STS has developed more than 260 km of driverless unattended metro lines, with more than 245 stations, 12 control and maintenance centers and 380 trains.

TRAMWAY
Tramway: a wide range of passenger capabilities and performance characteristics for urban mobility.
System Integration Activities

Ansaldo STS provides design, verification, manufacturing, installation, testing and commissioning, operation, maintenance and training of complete Automation and Safety related Control Systems and Equipment for Railways & Mass Transit and Freight:

- Interoperable signalling systems: ERTMS/ETCS (Railway)
- Communication Based Train Control: CBTC (Metro)
- Train control systems: ATC / ATP / ATO
- Computer Based Interlocking (CBI)
- Centralized Traffic Control (CTC)
- Wayside equipment & components
- Operation support systems
- Integrated Security systems.

Ansaldo STS’s activities encompass:

- System integration
- Traffic Management
- Train Control and Signalling Systems
- Telecommunications
- SCADA
- Power Supply
- Electrification
- Platform Screen Doors
- Fare Collection
- Depot Equipment
- Track Work
- Operations and Maintenance.
1853 Gio. Ansaldo & C. is founded in Genoa. At the time, Ansaldo was already a distinguished name in the Genoese industry. Ansaldo STS is today headquartered in one of the historical buildings owned by the Gio. Ansaldo & C.

2014 Ansaldo STS wins a turnkey contract for driverless metro in Lima, Peru. The Metro project in Lima for the L2, L4 lines includes 35 underground stations, 35 km of tunnels, 2 depots and 42 vehicles.
Turnkey Mass Transit Solutions

Mass Transit is focused on urban mobility, with stressed headway (down to 75 s) and high volumes of passengers per hour per direction on relatively short routes.

### Conventional Metro
- Genoa Metro (Italy)
- Naples Line 1 Metro (Italy)
- Naples Line 6 Metro (Italy)

### Driverless Metro
- Copenhagen M1/M2 (Denmark)
- Brescia (Italy)
- Milan Line 5 (Italy)
- Rome Line C (Italy)
- Thessaloniki (Greece)
- Taipei Circular Line (Taiwan)
- Riyadh University PNU (Saudi Arabia)
- Copenhagen City Ring (Denmark)
- Honolulu (USA)
- Milan Line 4 (Italy)
- Riyadh Metro (Saudi Arabia)
- Lima Metro Lines 2, 4 (Peru)
- Glasgow Subway (Scotland)

### Tramway
- Midland Line 1 LRT - Birmingham (UK)
- Metrolink Manchester (UK)
- Sassari LRT (Italy)
- Dublin Lines A, B, C (Ireland)
- Florence Lines 1, 2, 3 (Italy)
- Metro Campania Nord Est (Italy)
- Aarhus LRT (Denmark)
## Driverless Unattended Metros main features

The Driverless Unattended metro assures high performance, both in terms of technology and transportation capacity. The following are the main features of Ansaldo STS driverless unattended metro solutions around the world (Copenhagen M1/M2 operated by Ansaldo STS since 2002, Milan line 5, Milan line 4, Brescia, Rome line C, Thessaloniki, Taipei, Riyadh, Copenhagen Cityringen M3/M4, Honolulu, Lima, etc.).

### Turnkey Unattended Metro Around the World

<table>
<thead>
<tr>
<th>Track</th>
<th>Stations</th>
<th>Headway</th>
<th>Capacity</th>
<th>Trains</th>
<th>O&amp;M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copenhagen M1/M2</td>
<td>22</td>
<td>min 90  s</td>
<td>12,000 (6p/min)</td>
<td>34</td>
<td>3 cars per train (12m)</td>
</tr>
<tr>
<td>Brescia</td>
<td>17</td>
<td>min 90  s</td>
<td>17,000 (5p/min)</td>
<td>21</td>
<td>3 cars per train (12m)</td>
</tr>
<tr>
<td>Thessaloniki</td>
<td>13</td>
<td>min 90  s</td>
<td>21,000 (5p/min)</td>
<td>18</td>
<td>4 cars per train (12m)</td>
</tr>
<tr>
<td>Rome line C</td>
<td>30 (+12)</td>
<td>min 120 s</td>
<td>36,000 (6p/min)</td>
<td>30 (+13)</td>
<td>6 cars per train (17m)</td>
</tr>
<tr>
<td>Milan line 5</td>
<td>19</td>
<td>min 75  s</td>
<td>28,000 (5p/min)</td>
<td>21</td>
<td>4 cars per train (12m)</td>
</tr>
<tr>
<td>Taipei (CBTC)</td>
<td>14</td>
<td>min 90  s</td>
<td>26,000 (5p/min)</td>
<td>17</td>
<td>4 cars per train (12m)</td>
</tr>
<tr>
<td>Riyadh Princess Noura Univ. Campus</td>
<td>14</td>
<td>min 90 s</td>
<td>4,400 (2.5p/min)</td>
<td>22</td>
<td>2 cars per train (12m)</td>
</tr>
<tr>
<td>Copenhagen City-ring (CBTC)</td>
<td>17</td>
<td>min 100 s</td>
<td>12,000 (4p/min)</td>
<td>28</td>
<td>3 cars per train (12m)</td>
</tr>
<tr>
<td>Honolulu</td>
<td>21</td>
<td>min 90  s</td>
<td>7,200 (3.2 pm/h)</td>
<td>20</td>
<td>4 cars per train (12m)</td>
</tr>
<tr>
<td>Milan Line 4 (CBTC)</td>
<td>21</td>
<td>min 75  s</td>
<td>26,000 (5p/min)</td>
<td>47</td>
<td>4 cars per train (12m)</td>
</tr>
<tr>
<td>Riyadh Line 3 (CBTC)</td>
<td>22</td>
<td>min 90  s</td>
<td>16,000 (5p/min)</td>
<td>47</td>
<td>2 cars per train (12m)</td>
</tr>
<tr>
<td>Lima Lines 2-4 (CBTC)</td>
<td>35</td>
<td>min 80  s</td>
<td>32,000 (6p/min)</td>
<td>42</td>
<td>6 cars per train (17m)</td>
</tr>
<tr>
<td>Glasgow Subway (CBTC)</td>
<td>15</td>
<td>min 90  s</td>
<td>4,340 (2.5p/min)</td>
<td>17</td>
<td>2 cars per train (17m)</td>
</tr>
<tr>
<td>New Taipei City (CBTC)</td>
<td>12</td>
<td>min 90  s</td>
<td>8,790 (5p/min)</td>
<td>29</td>
<td>2 cars per train (17m)</td>
</tr>
</tbody>
</table>
Ansaldo STS is an international leader with a global presence in signalling and in the implementation of integrated transport solutions for Railway, Mass Transit and Freight.

We design, manufacture and implement signalling systems for the management and control of freight and passenger traffic on mainline railways and metros.

We design, develop and plan the work needed to provide the latest technology for your railway or metro system.
**Mass Transit Solutions**

Ansaldo STS Mass Transit solution is focused on urban mobility, characterized by high traffic densities; peak hours on relatively short routes that need high level of security, availability, flexibility and reliability in order to provide regular passengers comfort and operational efficiency.

**Conventional Metro**
- Milan Metro Lines 1, 2 (Italy)
- Rome Metro Lines A, B (Italy)
- Naples Metro Lines 6 (Italy)
- Paris RER A (France)
- Naples Metro Lines 1 (Italy)
- Seoul Lines 5, 7, 8 (South Korea)
- Dallas DART LRT (USA)
- Portland West Side Corridor LRT (USA)
- Shanghai Line 2 (China)
- London Line B (Portugal)
- Los Angeles Green Line (USA)
- Tianjin-Binhai (China)
- Charlotte South Corridor LRT (USA)
- Doha Metro (Qatar)
- Shanghai Line 2 East Extension (China)
- Chicago Blue Line (USA)
- Genoa Line 1 (Italy)
- Sao Paulo Lines 7, 9 (Brazil)
- Shanghai Line 2 East Extension (China)
- Pittsburgh North Shore Corridor (USA)
- Washington DC Red Line & Blue Lines (USA)
- Los Angeles County Metropolitan Transportation Authority (LACMTA), “West Side Subway Extension” (USA)
- Massachusetts Bay Transportation Authority (MBTA), “PTG System” (USA)

**Track Circuit based**
- Copenhagen Lines M1/M2 (Denmark)
- Riyadh University PNU (Saudi Arabia)
- Brescia (Italy)
- Milan Metro Lines 5 (Italy)
- Rome Metro Line C (Italy)
- Ulsan-Shinseol (Korea)
- Copenhagen City Ring (Denmark)
- PTG System (USA)

**Driverless Metro**
- Chengdu (China) Line 1 (15 km), Line 2 (41 km)
- Xi’an (China) Line 2 (26.6 km)
- Hangzhou (China) Line 1 (53.6 km), Line 2 (18.6 km)
- Zhengzhou (China) Line 1 (26.2 km)
- Ankara (Turkey) Lines M1 (32 km), M2 (18 km), M3 (6 km), M4 (5 km)
- Dalian Lines 1, 2 (China)
- Navi Mumbai (India) Metro (21 km)
- Stockholm (Sweden) Red Line (41 km)
- Southeastern Pennsylvania Transportation Authority (SEPTA) CBTC “Media Sharon Hill Lines” (29 km)
- Tianjin Line 5 (35 km)

**CBTC based**
- Copenhagen Lines M1/M2 (Denmark)
- Riyadh University PNU (Saudi Arabia)
- Brescia (Italy)
- Milan Metro Lines 5 (Italy)
- Rome Metro Line C (Italy)
- Ulsan-Shinseol (Korea)
- China Railway, Shanghai 2
- Copenhagen City Ring (Denmark)
- PTG System (USA)

**CBTC**
- Taipei Circular Line (Taiwan)
- Copenhagen City Ring (Denmark)
- Milan Line 4 (Italy)
- Riyadh Metro (Saudi Arabia)
- Lima Metro Lines 2, 4 (Peru)
- Glasgow Subway (Scotland)

**Main Signalling Project ATO**

<table>
<thead>
<tr>
<th>Shenyang</th>
<th>Line 1</th>
<th>29 km</th>
<th>Line 2</th>
<th>25 km</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chengdu</td>
<td>Line 1</td>
<td>15 km</td>
<td>Line 2</td>
<td>41 km</td>
</tr>
<tr>
<td>Xian</td>
<td>Line 2</td>
<td>26.6 km</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hangzhou</td>
<td>Line 2</td>
<td>53.6 km</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ankara</td>
<td>Line 1</td>
<td>32 km</td>
<td>Line 2</td>
<td>18 km</td>
</tr>
<tr>
<td>Alifana</td>
<td>Railway</td>
<td>11 km</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stockholm</td>
<td>Red Line</td>
<td>41 km</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paris</td>
<td>Line 3</td>
<td>12 km</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Main Turnkey Projects UTO Technology**

<table>
<thead>
<tr>
<th>Taipei</th>
<th>Circular Line</th>
<th>15.5 km</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copenhagen</td>
<td>City ring</td>
<td>16 km</td>
</tr>
<tr>
<td>Riyadh</td>
<td>Metro Line 3</td>
<td>40 km</td>
</tr>
<tr>
<td>Milan</td>
<td>Line 4</td>
<td>15.5 km</td>
</tr>
<tr>
<td>Navi Mumbai</td>
<td>Line 1</td>
<td>12.3 km</td>
</tr>
<tr>
<td>Glasgow</td>
<td>Subway</td>
<td>10.5 km</td>
</tr>
<tr>
<td>New Taipei City</td>
<td>14.3 km</td>
<td></td>
</tr>
</tbody>
</table>
Main Line and High Speed Solutions

Pioneer for advanced technologies:

For Decades, Ansaldo STS has been a worldwide Pioneer in the railway industry:

- In France as early as 1981 with the Paris-Lyon line (the first High Speed line in Europe),
- In Spain with the first HSL using ERTMS technology (Madrid-Leida)
- In UK with the first HSL (High Speed One connecting Paris to London) and the first ERTMS line (Cambrian line)
- In Sweden with Haparandabanan (first ERTMS deployment in Sweden)
- In Morocco with the Tangier-Kenitra line (the first High Speed line and first application of the ERTMS technology in Africa)
- In Italy with the first ERTMS 2 applications on High Speed National network

Technologies for Main Lines and High Speed Rails

- **TVM**: signalling system developed by Ansaldo STS in the early 80’s tailored for the needs and specificities of the first High Speed Lines in France, China and South Korea.
- **ERTMS/ETCS L1 & L2**: standard signaling solutions combined with High Speed Rail, Conventional lines and Heavy Haul technologies for safer and interoperable networks.

Ansaldo STS is among the 8 UNIFE members who developed the ERTMS project in close cooperation with the European Union, railway stakeholders and the GSM-R industry.
ERTMS/ETCS L1/L2 Main References

United Kingdom
Cambrian Line - Lev. 2

Belgium - Netherlands
Onboard Lev. 1/2

Germany
Saarbrücken - Mannheim - Lev. 2
Berlin - Rostock - Lev. 2

Sweden
Haparandabanan - Lev. 2

Scandinavia
STM Nordic

Czech Republic
Policany - Kolin - Lev. 2

Austria - Hungary
Vienna - Budapest - Lev. 1

Romania
Comarnic-Praidial - Lev. 1

Spain - France
Figueres - Perpignan - Lev. 1/2

Spain
Madrid - Lento HSL - Lev. 1/2
Atocha Bypass - Lev. 1/2
La Robla-Palma de Mallorca HSL - Lev. 2
Onboard - Lev. 1/2

Italy
Rome - Naples HSL, Lev. 2
Turin - Milan HSL, Lev. 2
Brescia - Treviglio HSL, Lev. 2
Treviglio - Pichetello Pilot, Lev. 2 (BL3)
Milan - Bologna HSL, Lev. 2
Onboard - Lev. 1/2

Morocco
Tangier - Kenitra HSL - Lev. 1/2

Algeria
Oued Tillet - Temcen - Lev. 1/2
Onboard - Lev. 1/2

Greece
Onboard - Lev. 1

Turkey
Mersin - Topakkale & Başakşehir - Yenice - Lev. 1
Gebze - Kınalıköy - Lev. 1
Onboard TCDD EM 80 - Lev 1

United Arab Emirates
Shin-Abu-Dhabi-Ruwais - Lev. 2

Greenfield Projects | Brownfield Projects | OBU-only Projects
Ansaldo STS is the global partner for heavy haul mining and freight railways. Its advanced, modular and scalable planning and control systems have improved the network safety, reliability and efficiency to higher levels.

Benefits of Ansaldo STS’s Heavy Haul and Freight System solution

The advanced signalling and telecommunications system developed by Ansaldo STS features satellite positioning, and sets a new benchmark for operational flexibility and upgradability for heavy haulage mining railways.

It’s also:

- Based on Ansaldo STS’s proven knowledge, products and experience
- Modular, scalable
- Enables cost-effective solutions that can be enhanced and expanded over time
- Allows option of simple migration to a fully automated system (including Driverless Automatic Train Operation)

Ansaldo STS has been developing and delivering signalling and transportation solutions for heavy haul mining railway operations in Western Australia for more than 25 years and is currently delivering a number of turnkey solutions in the Pilbara region in the state’s north west.

First automated Heavy Haul railway. Ansaldo STS’s automated train management technology is enabling the automation of a 1,500 km remote heavy haulage iron ore rail network.
Ansaldo STS offers a range of systems and devices to monitor the conditions of railway infrastructure

Wayside Train & Infrastructure Monitoring Systems (WTIMS).

WTIMS monitors the conditions of rolling stock and infrastructure in real time.

Train Conformity Check System.

Ansaldo STS’s TCCS™ acquires and processes accurate data for trains to 3D, thermographic and high resolution cameras to detect rolling stock defects or fire on board.

Undercarriage Thermographic Analysis.

UTA reveals overheated components underneath the trains, increasing safety.

Ansaldo STS is using the latest satellite and telecom technologies to develop cost-efficient train control systems with greater flexibility, global adaptability and optimized life cycle costs.

Satellite Localization System features:

- ERTMS / ETCS compatibility
- GPS, Glonass, Galileo
- Augmentation network
- SIL-4 compliant

Satellite & Telecoms for Train Control System

Multi-Bearer Telecommunications features:

- TETRA
- Cellular, 2G/3G/4G
- Satellite
- Intelligent routing

Ansaldo STS is currently deploying and testing satellite train control technology in Australia and in Europe, with a considerable reduction of wayside & telecom equipment along the railway lines.
Interlockings of Computerized systems designed to meet the different needs of our customers:

Simple interlocking system for railway “Multi-station” for entire rows.

Wayside platform

Since the late Nineties, Ansaldo STS has implemented the requirements for the “open” platform on standard protocols, such as: lines TVM Lyon and Marseille, ERTMS lines Rome-Naples, Turin-Milan, Milan-Bologna, Zheng-Xi, Madrid-Lleida, Cambrian, Poltjany-Kolin, Haparandaban, CBTC lines in Chengdu, Shenyang, Ankara and conventional line Turin-Padua.

Ansaldo STS has implemented the platform WSP (Wayside Standard Platform) that is able to manage a reduced number of basic components, a higher number of bodies square and train connections to integrate into one central place, security features, diagnostics and control of movement appropriate to represent the best response to the market demands increasingly sophisticated rail and metro.

Computer Based Interlocking

• For small stations / Interlocking
• For medium-sized / large stations / Interlocking
• For an entire line (“Multistations”)

Other trackside equipment:

• Automatic block systems
• Track circuits
• Eurobalises
• Hot box and hot wheel detectors
• Point machines/switch machines
• Vital relays
• Level crossings
• Data transmission equipment
• Power supply equipment
• Diagnostic System (TCCS).
Operations and Maintenance

Ansaldo STS can operate transportation systems 24/7 and provide complete maintenance to ensure full service availability. Since 2002, Ansaldo STS has successfully operated and maintained the Copenhagen Driverless Unattended Metro. Moreover, has been already awarded the O&M contract for the Honolulu Driverless Unattended Metro and other projects all over the world.

Ansaldo STS provides maintenance services for numerous railway networks and metro lines around the world, including:

- Channel Tunnel Rail Link (UK)
- Madrid-Lerida High Speed Line (Spain)
- Union Pacific, CSX (USA)
- Northwest and Perth TCS (Australia)
- Mainline railway (Botswana)
- Metros (Paris, Lyon)
- La Robla - Pola de Lena (Spain)
- Glasgow Subway (Scotland)