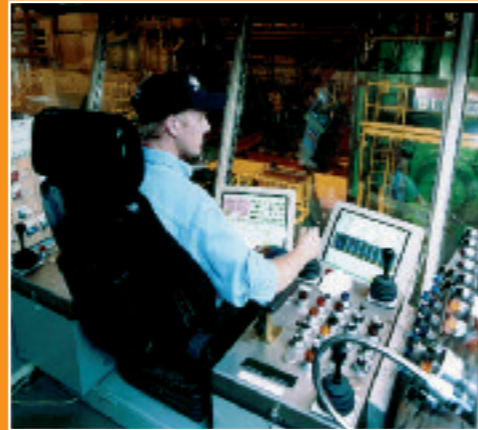




Know-how and Experiences



Nidec ASI S.p.A. - your tangible intangible asset

Know-how and experience are often considered competitive intangible assets. These assets play an important role in determining success – directly impacting effectiveness, productivity, wastage and opportunity costs within an organization. This in turn impacts issues close to your heart: costs, revenues, product quality, customer satisfaction, market value and share price. With over 150 years of experience, we are one of the most reliable suppliers of electrical and automation systems world-wide. Whether assisting you with a Greenfield turn-key project or revamping your existing plant, Nidec ASI provides tangible value you can measure.

Nidec ASI S.p.A.
has installed more than 800 automation
and control systems worldwide



Providing you with the flexibility to innovate

Today's market leaders are changing the way the Metals industry does business by actively participating in their Customer's Design Process to produce innovative new products that are taking raw materials to new edges of the technological spectrum. Since the day it was founded, Nidec ASI has always used this approach with its customers.

It is a fundamental part of our corporate DNA. Not only can we help you design the process to manufacture these new products, we can also provide valuable assistance to you in working with your customers.

Our in-house design software, RTStudio, part of our **ARTICS** software suite, allows us to configure plants rapidly, allowing you to create models of the production sequence that provide reliable feed-back on conceptual design ideas.

More on our process simulation tools

Nidec ASI can provide a wide range of simulation services.

Our family of simulators was conceived as a standard tool for software testing, commissioning and training of personnel. These powerful tools not only aid in the design process, they help reduce start-up time and allow the customer to become familiar with the production process before it is actually in place. ARTICS is particularly suitable for online upgrades and revamping, which can be implemented during a normal shutdown period. Plus, the "monitor mode" allows new system to be tested before retiring the old one.



Hot Rolling Mills for Flat Products

- Hot Strip Mills
- Plate Mills
- Steckel Mills

Hot Rolling Mills for Long Products

- Bar & Wire Rod Mills
- Section Mills
- Rail Mills

Seamless Pipe Mills

- Piecer/Mandrel/Sizing Mill

Continuos and Coil-two-Coil Cold Rolling Mills

- Single/Two Stand reversing Mills
- Temper Mills
- Tandem Mills
- Cluster mills

Processing Lines

- Annealing Lines
- Pickling Lines
- Galvanizing Lines
- Tinning Lines
- Coating Lines
- Painting Lines
- Cutting & Slitting Lines
- Inspection Lines

Iron & Steel Making

- Blast Furnaces
- BOF/LD Meltshops
- Electric Arc Furnaces
- Slab/Bloom/Billet Continuous Casters
- Thin Slab Casters
- Strip Casters

Non-Ferrous Mills

- Strip Casting Machines
- Aluminium Mills
- Copper and Brass Mills





What is AIRTICS?

The AIRTICS difference: real time control and flexibility

User-friendly operation

Nidec ASI Real Time Integrated Control System (AIRTICS) is our automation solution for process control and real-time data collection.

The AIRTICS platform integrates and simplifies several steps in the automation architecture to help mechanical and electrical equipment control and to improve the production process.

AIRTICS is designed to exceed even the most stringent real-time requirements, developed for real time control of fast processes with cycle times in the milliseconds. Anyone who has purchased a computer program recently knows that it may not be compatible with the hardware and software at home. This issue has always been a concern with customers. The AIRTICS software platform was developed with this issue in mind.

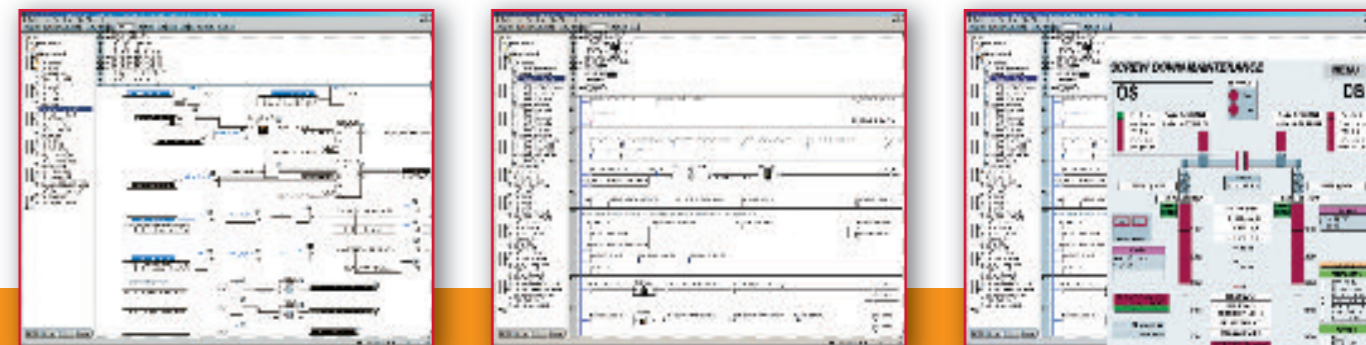
As an open and standard platform AIRTICS can be used with off-the-shelf hardware and allows integration with the most popular programmable logic controllers (PLCs) and common standard software tools and, if new products come to market, there's no problem integrating them into the system. In other words, AIRTICS provides you with the flexibility to innovate and change to meet tomorrow's market challenges.

AIRTICS proves its reliability and versatility every day in hundreds of installations worldwide.

AIRTICS seamlessly interfaces with third party components such as PLCs or local/remote input/output devices which means you don't have to make costly changes your existing system's architecture.

Nidec ASI's Real Time Integrated Control System

AIRTICS was designed and developed to help solve hardware and software integration problems



An easy graphic interface is your gateway to AIRTICS powerful process management tools.

AIRTICS gives you detailed diagnostics on drives - just point and click on a selected drive and AIRTICS displays load, back up, status and download information.

AIRTICS allows you to define a common software and data architecture with your existing system based on your plant's global database. This means you only define the data used by each level of automation once and there is no need to create complicated interfaces for information exchange within the system.



Nidec ASI guarantees product compatibility on all product upgrades for the life of your system.



Brief Product Description

1 Power Quality

Nidec ASI has significant experience in the design and manufacture of Static Var Compensation and HVDC systems. We can design solutions to guarantee maximum reliability in terms of power quality to the network.

2 Drives

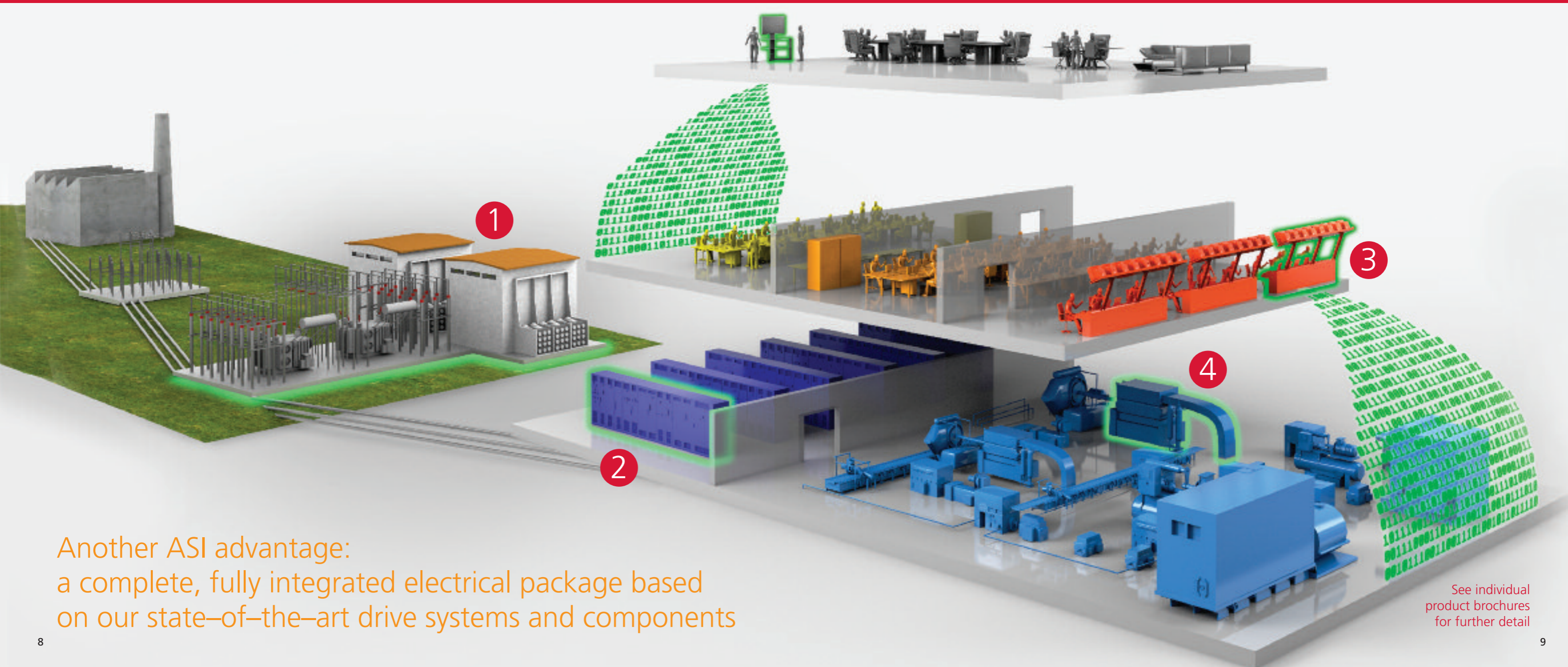
Our full range of low and medium voltage drives offers versatility, reliability and convenience. Along with maximum flexibility, our high-performance AC and DC drive designs also provide superior power factor and harmonic control capabilities.

3 Automation System

Our automation platform is based on the ARTICS architecture, a flexible, powerful open software platform. Our extensive library of algorithms and our advanced application software tools manage basic automation and process control functions, ensuring enhanced process automation and quality. Designed with flexibility in mind, our system can manage numerous communication interfaces at the same time and integrate different typologies in the same unit. There can be both slave (for an higher network integration) and master (for remote I/O connection) interfaces. This reduces the complexity and the cost of wiring and makes it possible to work with pre-existent communication architectures providing seamless system integration effortlessly.

4 Motors & Generators

Nidec ASI manufactures a wide range of AC and DC motors and generators. Our rotating machines are based on proven designs that give you the best in advanced drive technology. Known for their robust design and reliability in heavy-duty applications, these machines provide superior quality, maximum efficiency and low maintenance costs. They also play an important role in guaranteeing maximum plant availability.



A u t o m a t i o n F u n c t i o n s

HOT ROLLING MILLS FOR LONG PRODUCTS	HOT ROLLING MILLS FOR FLAT PRODUCTS	COLD MILLS	PROCESSING LINES	SEAMLESS PIPE MILLS	NON FERROUS MILLS (ALUMINIUM, COPPER & BRASS)	CONTINUOUS CASTERS	IRON & STEEL MAKING
<p>Level 2 System</p> <ul style="list-style-type: none">• Production Management System:<ul style="list-style-type: none">- Production lots setup and scheduling- Lot tracking based on single billet- Yield evaluation (Kpi, OEE)- Quality data acquisition and collection- Reporting• Analysis of energy efficiency versus rolling parameters• Manufacturing calendar, team and shift management• Downtimes and production delay management• Maintenance management, equipment database and planning• Maintenance costs and resources prediction• Rolls Management, rollshop database and logging• Rolls and guides warehouse management• Shear (dividing, trimming, ...) setup• Mill pacing• Basic Functions<ul style="list-style-type: none">- Piece tracking and billet/coil yard management- Piece management (rolling programs, PDI, ...)- Historical data management (data collection, reporting system, quality management system)- System reliability care (cold and hot backup, ...)- Level 3 interface <p>Level 1 System</p> <ul style="list-style-type: none">• Technological Controls<ul style="list-style-type: none">- Mill speed coordination with single or multiple exits- Multislitting control (2-3-4 slitting)- Minimum tension control- Looper's control- Cut-to-length optimization- Cooling bed discharge systems with aprons or fast delivery- Bundling and/or stacker machines control- Fast finishing block control with one or multiple blocks- Laying head synchronization and control- Coils forming, cooling conveyors and delivery systems• Speed Master• High speed shear control (Start-Stop, Clutch&Brake, Chopping, Diverters)• Basic Functions<ul style="list-style-type: none">- Main and auxiliary logic- Sequences and interlocks- Interface with 3rd party packages- HMI system (SCADA based on Client-Server architecture)- Drive control <p>Level 0 System</p> <ul style="list-style-type: none">• Complete system supply, management and supervision of:<ul style="list-style-type: none">- Power distribution- Motor and drive system- Field sensor and instrumentation- Technological measuring instruments- Auxiliary systems	<p>Level 2 System</p> <ul style="list-style-type: none">• Complete autoadaptive mathematical models for rolling schedule calculation in:<ul style="list-style-type: none">- Roughing Stand- Edger (including AWC setup)- Finishing Mill (including down coilers)- 1-stand / 2-stand Plate Mills- Steckel mills (including furnace coilers)• Shape setup• Sensitivity coefficients to technological controls• Finishing mill exit temperature setup• Accelerated cooling setup• Coiling temperature setup• Hot and cold leveller setup• Shear (dividing, trimming, ...) setup• Mill pacing• Basic Functions<ul style="list-style-type: none">- Piece tracking and slab/coil yard management- Piece management (rolling programs, PDI, ...)- Historical data management (data collection, reporting system, quality management system)- System reliability care (cold and hot backup, ...)- Level 3 interface <p>Level 1 System</p> <ul style="list-style-type: none">• Technological Controls<ul style="list-style-type: none">- Width Control (dog-bone, natural spread, necking)- Thickness Control (Hydraulic Gap Control, Automatic Steering Control, Automatic Gauge Control and Monitor)- Automatic Flatness Control (including roll thermal crown and wear evaluation and bending control)- Roll Eccentricity Control- Rectangularity Control- Electric and Hydraulic Looper Control (including loop control)- Coiling Temperature Control- Down coiler control (tension control, pinch roll control, wrapper roll and jumping control)- Hot and cold leveller control• Speed Master• Shear (flying, dividing, trimming) control• Basic Functions<ul style="list-style-type: none">- Main and auxiliary logic- Sequences and interlocks- Interface with 3rd party packages- HMI system (SCADA based on Client-Server architecture)- Drive control <p>Real-time Simulation Tools</p> <ul style="list-style-type: none">• ASTRO: Asi n-STand ROLLing mill simulator <p>Level 0 System</p> <ul style="list-style-type: none">• Complete system supply, management and supervision of:<ul style="list-style-type: none">- Power distribution- Motor and drive system- Field sensor and instrumentation- Technological measuring instruments- Auxiliary systems	<p>Level 2 System</p> <ul style="list-style-type: none">• Complete autoadaptive mathematical models for rolling schedule calculation in:<ul style="list-style-type: none">- Coil-to-coil tandem mills (including threading and low speed setup)- Continuous tandem mills (including flying setup change)- Double and single stand reversing mills (including Sendzimir/Cluster mills)- Temper mill (Single and two stands)• Shape setup• Sensitivity coefficients to technological controls• Basic Functions<ul style="list-style-type: none">- Piece tracking and coil yard management- Piece management (rolling programs, PDI, ...)- Historical data management (data collection, reporting system, quality management system)- System reliability care (cold and hot backup, ...)- Level 3 interface <p>Level 1 System</p> <ul style="list-style-type: none">• Technological Controls<ul style="list-style-type: none">- Thickness Control (Hydraulic Gap Control, Automatic Gauge Control including mass flow and monitor control)- Tension Control- Automatic Flatness Control (including roll thermal crown and wear evaluation and bending control)- Eccentricity Control- Automatic Elongation Control (temper and skin pass)- Weld Tracking (continuous tandem)- Speed Master• Basic Functions<ul style="list-style-type: none">- Main and auxiliary logic- Sequences and interlocks- Interface with 3rd party packages- HMI system (SCADA based on Client-Server architecture)- Drive control <p>Real-time Simulation Tools</p> <ul style="list-style-type: none">• ASTRO: Asi n-STand ROLLing mill simulator <p>Level 0 System</p> <ul style="list-style-type: none">• Complete system supply, management and supervision of:<ul style="list-style-type: none">- Power distribution- Motor and drive system- Field sensor and instrumentation- Technological measuring instruments- Auxiliary systems	<p>Level 2 System</p> <ul style="list-style-type: none">• Complete preset schedule management, quality data collection and quality diagnostic in:<ul style="list-style-type: none">- Annealing Lines- Pickling Lines (including model for acid concentration)- Galvanizing Lines- Tinning Lines- Coating Lines- Cutting & Slitting Lines- Inspection Lines• 1:n, n:m coil production management and cut optimization• Basic Functions<ul style="list-style-type: none">- Piece tracking and coil yard management- Piece management (rolling programs, PDI, ...)- Historical data management (data collection, reporting system)- System reliability care (cold and hot backup, ...)- Level 3 interface <p>Level 1 System</p> <ul style="list-style-type: none">• Technological Controls<ul style="list-style-type: none">- Weld tracking (continuous lines)- Technological controls for skin pass and stretch leveler (galvanizing lines)- Speed master/Tension control- Inspection/defects management• Basic Functions<ul style="list-style-type: none">- Main and auxiliary logic- Sequences and interlocks- Interface with 3rd party packages- HMI system (SCADA based on Client-Server architecture)- Drive control <p>Level 0 System</p> <ul style="list-style-type: none">• Complete system supply, management and supervision of:<ul style="list-style-type: none">- Power distribution- Motor and drive system- Field sensor and instrumentation- Technological measuring instruments- Auxiliary systems	<p>Level 2 System</p> <ul style="list-style-type: none">• Basic Functions<ul style="list-style-type: none">- Piece and lot tracking- Piece management (rolling programs, PDI, ...)- Historical data management (data collection, reporting system, quality management system)- System reliability care (cold and hot backup, ...)- Level 3 interface <p>Level 1 System</p> <ul style="list-style-type: none">• Technological Controls<ul style="list-style-type: none">- Impact speed drop compensation- Metal in stand management- Load balance- Hydraulic Gap Control- Speed master• Basic Functions<ul style="list-style-type: none">- Main and auxiliary logic- Sequences and interlocks- Interface with 3rd party packages- HMI system (SCADA based on Client-Server architecture)- Drive control <p>Level 0 System</p> <ul style="list-style-type: none">• Complete system supply, management and supervision of:<ul style="list-style-type: none">- Power distribution- Motor and drive system- Field sensor and instrumentation- Technological measuring instruments- Auxiliary systems	<p>Level 2 System</p> <ul style="list-style-type: none">• Complete mathematical models for rolling schedule calculation in:<ul style="list-style-type: none">- Coil-to-coil tandem mill (included threading and low speed setup)- Single stand mill• Shape setup• Sensitivity coefficients to technological controls• Basic Functions<ul style="list-style-type: none">- Piece tracking and coil yard management- Piece management (rolling programs, PDI, ...)- Historical data management (data collection, reporting system, quality management system)- System reliability care (cold and hot backup, ...)- Level 3 interface <p>Level 1 System</p> <ul style="list-style-type: none">• Technological Controls<ul style="list-style-type: none">- Thickness Control (Hydraulic Gap Control, Automatic Gauge Control including mass flow and monitor control)- Tension Control- Automatic Flatness Control (including roll thermal crown and wear evaluation and bending control)- Eccentricity Control- Speed Master• Basic Functions<ul style="list-style-type: none">- Main and auxiliary logic- Sequences and interlocks- Interface with 3rd party packages- HMI system (SCADA based on Client-Server architecture)- Drive control <p>Real-time Simulation Tools</p> <ul style="list-style-type: none">• ASTRO: Asi n-STand ROLLing mill simulator <p>Level 0 System</p> <ul style="list-style-type: none">• Complete system supply, management and supervision of:<ul style="list-style-type: none">- Power distribution- Motor and drive system- Field sensor and instrumentation- Technological measuring instruments- Auxiliary systems	<p>Level 2 System</p> <ul style="list-style-type: none">• Complete system and mathematical models for Slab Continuous Casters & Thin Slab Casters including:<ul style="list-style-type: none">- Casting speed optimization- Material tracking- Cut length optimization- Optimal strand closing- Mould temperature mapping- Dynamic solidification control/temperature tracking- Secondary cooling calculation• Basic Functions<ul style="list-style-type: none">- Heat, materia and slab tracking- Heat and slab management (casting programs, PDI, ...)- Historical data management (data collection, reporting system, qualitymanagement system)- System reliability care (cold and hot backup, ...)- Level 3 interface <p>Level 1 System</p> <ul style="list-style-type: none">• Technological Controls<ul style="list-style-type: none">- Hydraulic tundish adjustment- Tundish level control- Remote adjustable mould control- Hydraulic mould oscillation control- Mould level control- Hydraulic segment adjustment- Liquid core reduction- Spray water control- Strand surface temperature measurement- Speed master• Basic Functions<ul style="list-style-type: none">- Main and auxiliary logic- Sequences and interlocks- Interface with 3rd party packages- HMI system (SCADA based on Client-Server architecture)- Drive control <p>Level 0 System</p> <ul style="list-style-type: none">• Complete system supply, management and supervision of:<ul style="list-style-type: none">- Power distribution- Motor and drive system- Field sensor and instrumentation- Technological measuring instruments- Auxiliary systems	<p>Level 2 System</p> <ul style="list-style-type: none">• Complete system and mathematical models for BOF/EAF/LF including:<ul style="list-style-type: none">- Heat thermal and chemical status monitoring- Production supervision- Heat tracking- Charge material calculation- Alloy calculation- Mass and energy balancing- Process prediction- Determination of process setpoints- Energy consumption monitoring• Basic Functions<ul style="list-style-type: none">- Heat tracking- Heat and material management (rolling programs, PDI, ...)- Historical data management (data collection, reporting system)- System reliability care (cold and hot backup, ...)- Level 3 interface <p>Level 1 System</p> <ul style="list-style-type: none">• Complete system for Blast Furnaces and DRI plants including:<ul style="list-style-type: none">- Top temperature control- Top pressure control- Horizontal probe management- Cowper pressure control- Top gas analysis- Cooling system control- Recipe management- Charging material (skip/conveyor/hopper) management- Material distributor and furnace charging management- Charging material consumption monitoring• Electrodes setpoint definition and control• Basic Functions<ul style="list-style-type: none">- Main and auxiliary logic- Sequences and interlocks- Interface with 3rd party packages- HMI system (SCADA based on Client-Server architecture) <p>Level 0 System</p> <ul style="list-style-type: none">• Complete system supply, management and supervision of:<ul style="list-style-type: none">- Power distribution- Motor and drive system- Field sensor and instrumentation- Technological measuring instruments- Auxiliary systems

Project management

Our experience in managing the development of Greenfield plants allows us to provide you with a highly skilled project management team.

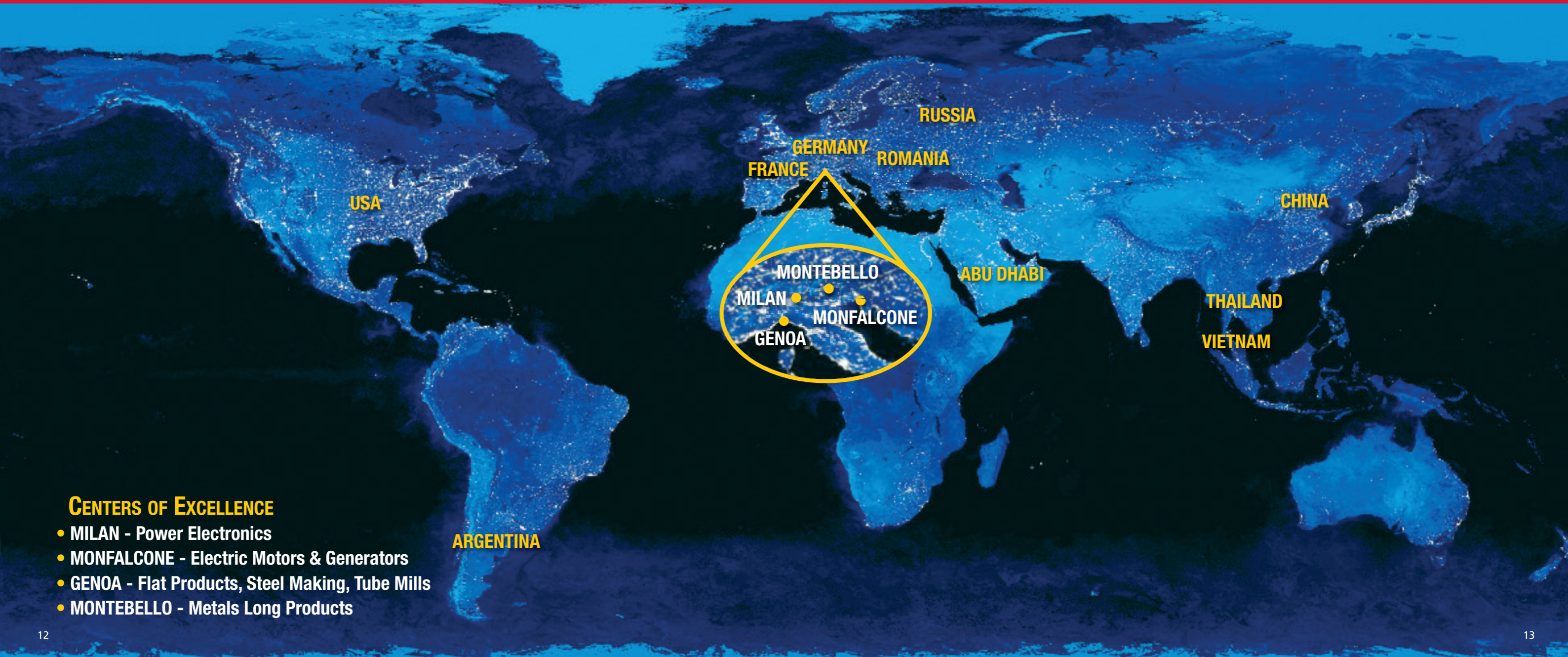
Our team of professionals prides itself in meeting or beating our customer's expectations in terms of project deadlines and overall quality. From basic engineering to final commissioning, our Project Managers are fully accountable and dedicated to providing you with the support you need.

Customer Service & Support

Our commitment doesn't end with final commissioning and plant start up.

Nidec ASI is dedicated to life-cycle assistance and provides the following Services and Support for the life of your plant:

- Call Center Support Service 24 hours a day, 7 days a week
- Remote diagnostics and on-line technical assistance & troubleshooting
- Global preventive and predictive maintenance contracts
- Original equipment manufacturer's renewal parts
- System upgrades and refurbishments
- Extensive, modular training programs on maintenance and operation
- Effective repairs to guarantee quality
- Plant optimization evaluation



CENTERS OF EXCELLENCE

- MILAN - Power Electronics
- MONFALCONE - Electric Motors & Generators
- GENOA - Flat Products, Steel Making, Tube Mills
- MONTEBELLO - Metals Long Products

Our own personal commitment towards Sustainable Development

Nidec ASI's manufacturing units are ISO 14001 certified.

Our Engineering team is dedicated to finding solutions that help customers minimize their plant's impact on the environment. Reducing footprints, energy efficiency, power quality and the study of new more environmentally friendly components and technologies are a basic part of our Research and Development activities.

A valid partner in your efforts towards Sustainable Development

By designing your electrical system to meet your process requirements, Nidec ASI can provide a significant contribution towards your efforts in sustainable development. By optimizing power quality and energy efficiency we help you make better use of valuable energy resources.

Our automation systems also help optimize the use of raw materials. Our real time control makes adjustments to your manufacturing process in milliseconds, taking you closer to your goal of zero tolerances. It's a small contribution to material savings but, when considered over the life of your plant, it can add up to several tons.

