Line Card

Water Industry Line Card

Complete offering – products, software, solutions and services

50% of the world's data was created in the past twelve months. Less than 1% of it was used or analyzed.

In the next few years, billions of new devices will join the Internet of Things. Devices in your own operations - like flow meters, controllers and motors of every type - will be online and sharing their data. We saw this coming and we're ready to help water & wastewater companies turn this into competitive value.

We make the digital enterprise real for customers, from the field level to the management level. For decades we have

advanced the integration and information capabilities of our industrial portfolio. We have added software offerings for engineering, design and operations management. We have added service offerings for cybersecurity and operational networking. Now, MindSphere, our cloud-based, IoT operating system, can turn your operational data into insights for better – even transformational – decision-making.

In this document you will discover a Siemens portfolio that is ready to serve you today and for decades into the future. From electrification to automation to digitalization, here are the products, software, solutions and services that will help you to define and realize your digital enterprise.

usa.siemens.com

MindSphere

MindSphere – the cloud-based, open IoT operating system from Siemens

Open standards and interfaces to exchange data of many different manufacturers
Connectivity suite is available as hardware and software
• MindConnect Nano, MindConnect IoT 2040, MindConnect Software
• Integration in SIMATIC S7, Sinumerik & other Siemens products
Industry applications and partner development ecosystem
• MindApps from Siemens and its partners
• Application Programming Interfaces (API) for developers
Aligned with relevant industry security standards (IEC 62443, ISO/IEC 27001)

Automation Solutions

Distributed Control System (SIMATIC PCS 7)

• Distributed Control System (SIMATIC PCS 7)
• Continuous, batch and sequential control
• Integrated asset management
• Advanced process control
• Flexible and scalable architectures
• Integrated control and process safety
• Batch management
• Cyber security
• High performance graphics

• Virtualized solutions
• Service and support
• Process simulation (SIMIT)
• Energy management solutions
• Alarm management
• Redundant real time IO bus (PROFINET)
• Compact, fault tolerant, environmentally robust IO (SIMATIC ET 200SP HA) Configurable IO (CFU) Scalable, redundant capable Controller (CPU 410 E)

Industrial Identification

• 1D and 2D code reading systems
• HF and UHF RFID systems

Safety Systems

• TUV certified to IEC 61508 to SIL 3
• Flexible Modular redundancy
• Burner management (BMS)
• High integrity protection (HIPPS)
• Fire and gas (F&G)
• Fault tolerant architecture to reduce spurious trips

• Safety Life cycle tools via cause and effects programming
• Compliant to IEC 61511 and ANSI/ISA standards
• Low cost standalone solutions
• Supports OSHA PSM requirements
• Cyber security

Plant Engineering Software (COMOS)

• Integrated data management over the entire plant life cycle
• Common database with object-oriented data management
• Process engineering, pipe specification and isometrics
• Electrical, instrumentation and control and control system engineering
• Project and plant documentation
• 3D virtual reality visualization

Industrial Power Supplies

• The first PROFINET enabled power supplies
• Single phase and three phase power supplies
• 24VDC power supplies and power security

Automation Solutions

Migration Solutions

- Honeywell
- ABB/Bailey
- TI
- APACS
- Gateways for integration – CM104, CM105
- Rockwell
- Allen Bradley
- Siemens S5
- Teleperm XP

Operations Intelligence Software (XHQ)

- Aggregating, relating and presenting operational and business data
- Asset performance management, analytics and visualization solutions

Process Instrumentation & Analytics

Analytical Products & Solutions

- On-line process analyzers for hydrocarbon and chemical contaminants in clean and wastewater
- Lifecycle customer support

Pressure

- Gauge
- Absolute
- Differential
- Hydrostatic

Temperature

- Head, rail and field mounted transmitters
- Temperature transmitters
- Sensors
- Wireless transmitters

Level

- Radar & Guided Wave Radar
- Ultrasonic
- Capacitance
- Point Level

Flow

- Electromagnetic
- Ultrasonic clamp-on
- Ultrasonic in-line
- Coriolis
- Vortex

Valve Positioners

- Digital
- Electro Pneumatic
- Pneumatic

Factory Automation

SIMATIC Controllers

- Basic controllers for simple & stand-alone automation tasks (S7-1200)
- Advanced controllers for medium & highly complex machine/plant automation (S7-300/S7-400/S7-1500)
- Distributed controllers for serial machines with limited footprint & machines with distributed architecture (ET 2OOSP/ET 2OOS/ET 200pro CPU)
- Software controllers for PC-based Automation (S7-1500 software controller, WinAC)

SIMATIC Distributed I/O

- I/O Systems for Control Cabinets, IP20 (ET200SP / ET2OOMP / ET200S / ET200M / ET200isp)
- I/O Systems without Control Cabinets, Machine Mount IP65/67 (ET200AL / ET200pro / ET200eco PN)
- Modular/scalable/compact
- I/O modules can be configured as remote or local
- PROFIBUS, PROFINET, or EtherNet/IP* (*only in ET200S / ET200pro)
- Failsafe options
- Intrinsically safe options (ET200S / ET200M / ET200isp)
- Integrated motor starter option (ET200SP / ET200S / ET200pro)

Totally Integrated Automation (TIA) Portal Software

- Single engineering framework
- Reduced engineering time
- Increased transparency & diagnostics
- Intuitive
- Common tag database
- Custom libraries

SIMATIC PC-based Automation

- Industrial PCs:
  - Rack (IPC347E, IPC547E, IPC647D, IPC847D)
  - Box (IPC227E, IPC427E, IPC627D, IPC827D)
  - Panel (IPC277E, IPC477E, IPC677D, HMI Panel PC Ex)
- Industrial Monitors & Thin Clients (SCD Monitors, Flat Panels, Industrial Flat Panels, Thin Clients)
- Expansion Components/Accessories
- Customization
- PC-based Controllers (S7-1500 Software Controller)
- Embedded Controllers (S7-1500 Open Controller)

SCADA System SIMATIC WinCC Open Architecture

- Object orientation
- Scalable to plus 10 million tags
- Platform-independent
- SIL3 certified according IEC 61508
- Platform for customized solutions
- Comprehensive range of drivers and connectivity

SIMATIC HMI Panels

- Comfort Panels for performance and functionality (Standard/Outdoor/INOX)
- Basic Panels for economical, high-resolution visualizasolutions (2nd gen)
- Mobile Panels for maximum mobility and flexibility (2nd gen)
- Key Panels for flexible expansion with keys or safety functions (KP8/KP8F, KP32F)

SCADA System SIMATIC WinCC

- Object orientation
- Scalable to more than 10 million tags
- Platform-independent
- SIL3 certified according IEC 61508
- Platform for customized solutions
- Comprehensive range of drivers and connectivity

SIMATIC Safety Integrated

- One controller, engineering & communication for standard and fail-safe automation
- Wide range portfolio from micro-processors to PC-base controller
- Ability for local safety modules
- Centralized Safety IO, PC based Safety, Wireless safety
- Wide range of integrated drive technology
- Safety controller with single processor for TUV approval

Motion Controllers

- Drive-based (SIMOTION D)
- PC-based (SIMOTION P)
- Controller-based (SIMOTION C)
- Distributed level-event monitoring and power metering

Industrial Controls

- Pushbuttons – both centralized (control room) and decentralized (individual asset)
- Function Relays – a subset of the available options
- Safety Relays - Software configurable and expandable, diagnostic display optional and easy integration with 3RM1 motor starters
- Softstarters for larger motors

NEMA Control

- Contactors
- Non-combination starters
- Combination starters
- Full and reduced voltage starters
- Solid state overload relays for pump applications
- Lighting and heating controls
- Manual starters

Circuit Protection

- 3VA molded case circuit breaker
- VL-150-1600A frame, global ratings and up to 100Kaic interrupt ratings
- G Frame- 125A and less and interrupt ratings to 65Kaic
- Supplementary protection
- UL489- 5SJ- power circuit protection
- UL 1066- 5SY-control circuit protection

Industry Services

On-call, on-site, and on-line 24/7 services
- Service Programs and SIEPRO® Technical Service Agreements
- Original OEM Spare Parts and Asset Optimization
- Retrofit and Modernization
- Technical Support and Consulting
- On-site and Factory-certified Repair
- Field Service and Maintenance
- SITRAIN® Workforce Development Training
- Digital Monitoring and Data Analytics

Industry Customer Care Center 800-333-7421
On-line Support (http://support.industry.siemens.com)

Industrial Network Solutions

- Industrial ethernet switches and routers for transparent industrial ethernet communications (SCALANCE and RUGGEDCOM)
  - Fiber options integrated and modular
  - Extended temperature range, ATEX, UL hazloc, Class I Div 2,
- IECex and IEC 61850
  - Integration support for PROFINET and Ethernet/IP
  - Durable wireless hardware for reliable communications
  - Security modules
  - Network management
  - Remote management solutions

Drives, Motors and Motion Control

Low Voltage Drives

General Purpose Drives
- SINAMICS V (.16–40 hp)
- SINAMICS G (.5–400 hp)

High-Performance Vector and Servo Drives
- SINAMICS S120 (.25–1500 hp)

DC Drives
- DC Converters (3 – 2000 hp)
- Base Drive Panels (3 – 2000 hp)
- Control Modules for external power sections up to 40,000 hp

DC-DC Converters
- **30kW**
- **120kW**
- **Up to 4**

Enclosed (Cabinet) Drives
- SINAMICS Enclosed (Cabinet) Drives – 480V
  - General Purpose 1–800 HP
  - General Purpose Clean Power 50-1150 HP

Medium Voltage Drives

- Engineered drives
- SINAMICS AC drives 150 HP -100,000 HP
  - SINAMICS GL150 LCI drives
  - SINAMICS GM150/SM150 NPC drives
  - SINAMICS PERFECT HARMONY GH180/GH150 drives

Drives, Motors and Motion Control

Mechanical Drives

Helical, helical-bevel and planetary gear units and couplings
- Helical and helical-bevel gear units
  - Torques 25,000 – 12,400,000 in-lbs
- Planetary gear units
  - Torques 88,000 – 23,000,000 in-lbs
- Agitators and agitator tanks
- Coupling types
  - Flexible, gear, fluid and rigid
- Aerators
  - Torques 10.5 to 173 kNm
- Agitators
  - Torques up to 240,000 Nm
- Water Screw Pumps
  - Torques 5.8 to 1,400 kNm
- Water Turbines
  - Torques 8.5 to 195 kNm

High-Performance Motors – Inverter Duty

Low Voltage Motors
NEMA Induction Motors
General Purpose 1 HP - 200 HP
Vertical Solid Shaft 3 HP – 250 HP
AboveNEMA (SLV Brg) 200HP – 800HP

IEC Induction Motors
General Purpose 0.18kW - 22.5kW
AboveNEMA 200HP - 800HP (SLV Brg)
ODP / WPI / WPII / TEAAC / TEFC / TEWAC / WPII 200 HP - 18,000 HP

Medium and High Voltage Motors
AboveNEMA Horizontal and Vertical Motors
ODP / WPI / WPII / TEAAC / TEFC / TEWAC / WPII 200 HP - 18,000 HP
Standard Specific
NEMA / API 541 / API 547 / IEEE 841

IEC Trans Norm motor
Asynchronous Squirrel Cage Motors 0.15 - 38MW
Asynchronous Slip Ring Motors 1.3- 8MW
Synchronous Motors 2.1 - 100MW

Gear Motors

- Helical Bevel
- Parallel Shaft
- Helical In-line
- Available with integral
  induction or servo motors

Power Distribution

Medium-Voltage Switchgear, Circuit Breakers & Controls

- Medium-voltage, arc-resistant and non-arc-resistant, air-insulated, metal-clad switchgear up to 63 kA
- Integrated electrical-racking system for circuit breakers and auxiliaries
- Medium-voltage, arc-resistant, low-maintenance, gas-insulated switchgear in a unique isolated-phase design
- Medium-voltage, non-arc-resistant, metal-enclosed interrupter switchgear
- Medium-voltage, arc-resistant and non-arc-resistant controllers up to 63 kA
- Power distribution center solutions to house various types of electrical equipment
- Medium-voltage, outdoor, distribution circuit breakers
- Smart low-voltage switchgear with best arc flash mitigation solutions
- Arc-resistant switchgear up to 100 kA with outdoor plenum venting

Motor Control Centers

tiastar™ Motor Control Centers
- Standard: High
-density units
- Smart
- PROFIBUS, PROFINET, MODBUS RTU, EtherNet IP
- Sm@rtGear
- Arc Resistant
- Dynamic arc-flash sentry (DAS)
- High-resistance ground (HRG)

  SIMOCODE Pro – provides solid-state overload protection, local control and extensive data communication:
- SIMOCODE pro C
- SIMOCODE pro V

Installed components:
- Automation
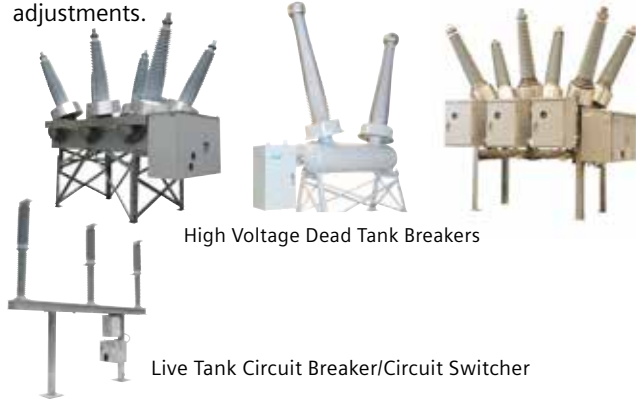- Control
- Power distribution devices
  - AC drives

Power Distribution

High Voltage Circuit Breakers

SF6 Dead Tank circuit breakers and Live Tank Breakers/Circuit Switchers are available from 15-550kV. 12 year inspection/25 year maintenance cycle, the high voltage circuit breakers are the workhorse of the system.
- Compact Construction
- Common Frame
- 3AP Arc-assist interrupter
- Spring-spring Mechanism
- All components are factory tested and require no in field adjustments.

High Voltage Dead Tank Breakers

Live Tank Circuit Breaker/Circuit Switcher

Power and Distribution Transformers

Power and Distribution transformers are a critical link between power plants, supply systems and distribution networks. Each transformer is engineered to the customer's specific needs.

- New or replacement ANSI / IEEE transformers sales and installation, oil immersed or dry type cast resin.
- Fluid Immersed Distribution Transformers for industrial applications FITformer® IND, for ratings up to 50 MVA (ONAN) and 161 kV
- Medium Power Transformers up to 250 MVA and 230 kV

- Cast Resin Dry Type Transformers up to 50 MVA and 52 kV

Substations & Transformers

- High, medium and low voltage distribution and protection
- Complete transformer rewind, remanufacture or replacement
- New transformer sales and installation, oil immersed or cast resin

MV Protection and Control (SIPROTEC and SICAM)

- MV protection and control, motor, feeder, transformer protection, arch flash sensing
- Automatic transfer schemes, fast load shedding, remote breaker operation, automatic fault record retrieval and analysis, as set monitoring
- Sm@rtGear™ Power Monitoring and Control

Power Distribution Solutions Energy Management

- Ethernet / MODBUS / PR PROFIBUS / PROFINET meters
- Energy and power monitoring and control software

Power Monitoring

- Power quality meter with web technology
- High accuracy measurement
- Energy and demand tracking
- Historical trending and harmonic distortion
- Analyzer and controller
- PROFIBUS, Ethernet and MODBUS

Building Technologies

Building Comfort

- HVAC
- Building automation
- Energy management

Fire Protection

- Fire safety systems

Electronic Security

- Access control
- Intrusion detection
- Command and control
- Perimeter intrusion control
- Remote video
- Visitor management solutions
- Video management systems
- Video analytics

Aeroderivative gas turbines
- Flexible, lightweight and compact design ranging from 4 to 66 MW
- Suitable for power generation and mechanical drive applications, including peak, intermediate, cogeneration, simple or combined cycle
- Line includes: SGT-A05 AE, SGT-A30 RB, SGT-A35 RB, and SGT-A45 TR, SGT-A65 TR
- Line includes: Industrial RB211 and Industrial Trent 60 Industrial gas turbines

Industrial gas turbines
- Compact and rugged design ranging from 2 to 54 MW
- Industrial power generation and mechanical drive applications
- Line includes: KG2 SGT-100, SGT-300, SGT-400, SGT-600, SGT-700, SGT-750, and SGT-800

Large (Heavy Duty) gas turbines
- Robust and flexible engines ranging from 100 to 425 MW
- Electrical generators from 25 to 2,235 MVA
- Designed for large simple or combined cycle power plants
- Suitable for peak, intermediate or base load duty, as well as cogeneration applications
- Line includes: SGT-8000H, SGT-4000F and SGT-2000E

Industrial & Utility Steam Turbines

Industrial SteamTurbines
- Market leader with a reliable and versatile range from 0.1 to 250 MW
- Flexible layout provides easy constructability, fast start-up and economical operation
- Solutions with controlled and uncontrolled extractions
- Line includes: SST-150, SST-200, SST-300, SST-400, SST-500, SST-600, SST-600, SST-700/900, and SST-800
- Dresser-Rand, A Siemens Business line includes: Single-stage (RLA, RLVA, RLH, 350/500/700, AVTTW/GTW, 2TA, and C) and Multi-stage (GAF, K, U, R, RS, TT14, TT22, B, Tandems/Triple Turbine, and Custom Engineered)

Utility Steam Turbines
- Comprehensive range of products from 90 to 1,900 MW
- Used in conventional steam power plants and combined-cycle power plants
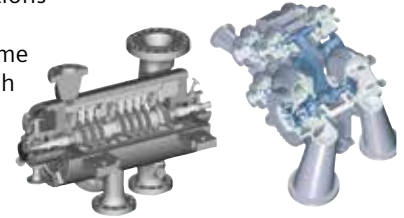- Line includes: SST-3000, SST-4000, SST-5000, SST-6000, and SST-9000

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- Turbocompressors, reciprocating compressors and expanders for the chemical industry as well as for refineries, petrochemical plants and further industrial applications
- Industrial as well as aero derivative gas turbines, steam turbines, reciprocating engines and e-drives to serve our customer needs
- Leading technology in PTA application securing future plant potential higher than 1.2 MTPA
- Process air compressor with highest efficiencies in the market for ammonia production
- Integrally geared compressors for urea production plants offering a high efficiency due to inter cooling stages
- CO_2 compression solutions for various range of applications with volume flows of 140.000Nm3/h and pressures up to 200 bar

Seawater Treatment
Produced Water Treatment
- Corrugated Plate Separators/Interceptors (CPS/CPI)
- Hydrocyclones (Liquid/Liquid; Solid/Liquid)
- Dissolved Air/Gas Flotation (DAF/DGF)
- Induced Air/Gas Flotation (IAF/IGF)
- Monosep™ Walnut Shell Filters
- PerforMedia™ Oil Removal Media

Hydrothermal/Spent Caustic Treatment
- Zimpro® Wet Air Oxidation (WAO)
- Zimpro® Electro-oxidation (ZEO)
- Wet Air Regeneration (WAR)
- Thermal Hydrolysis

Oil/Water Separation
- API Separators
- Corrugated Plate Separators (CPS)
- Hydrocyclones (Liquid/Liquid; Solid/Liquid)
- Dissolved Air/Gas Flotation (DAF/DGF)
- Induced Air/Gas Flotation (IAF/IGF)
- Monosep™ Walnut Shell Filters
- PerforMedia™ Oil Removal Media

Biological Treatment
- Petro® Membrane Bioreactors (MBR)
- PACT® Systems
- PACT® MBR Systems