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 valve positioners, gas analyzers and motors of every type - will be online and sharing their data. We saw this coming and we’re ready to help Fiber 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.

The SIPAPER product family offers perfectly coordinated solution modules to meet the requirements of the fiber industry – today and in the future. SIPAPER is built with advanced technology for optimal efficiency, maximum plant availability, and the long-term security for your investment. In addition, our SIPAPER Services combines maintenance and business optimization measures to ensure you receive the full benefits of a product family perfectly aligned with the fiber industry.

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.
**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 SIPAPER, SIMATIC S7, Sinumerik and 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)

**Safety Systems**

- TÜV certified to SIL 3
- Supports redundant architectures
- Burner management
- High integrity protection (HIPPS)
- Fire and gas
- Reduce nuisance trips
- Cause & effects programming
- Supports flexible redundant architectures
- Compliant to OSHA regulations

**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, SIPAPER and control system engineering
- Project and plant documentation
- 3D virtual reality visualization

**Automation Solutions**

**Distributed Control System (SIMATIC PCS 7)**

- Continuous, batch and sequential control
- Integrated asset management
- Advanced process control
- Scalable
- Flexible redundancy
- Integrated process safety
- Batch management
- Cyber security
- High performance graphics
- Virtualized solutions
- Service and support
- Process simulation (SIMIT)
- Energy management solutions
- Alarm management

**Industrial Identification**

- 1D, 2D code reading systems
- HF and UHF RFID systems
Operations Intelligence Software (XHQ)

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

Process Instrumentation

Pressure
• Gauge
• Absolute
• Differential
• Hydrostatic

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

Level
• Radar
• Ultrasonic
• Guided Wave Radar
• Capacitance
• Point Level

Flow
• Coriolis
• Ultrasonic clamp-on
• Vortex
• Electromagnetic

Valve Positioners
• Digital
• Electro Pneumatic
• Pneumatic

Weighing
• Belt scales
• SITRANS solids flow meters
• SIWAREX PLC based weighing systems

Migration Solutions
• Honeywell
• ABB/Bailey
• TI
• APACs
• Rockwell
• Allen Bradley
• Siemens S5
• Teleperm XP
• Gateways for integration – CM104, CM105

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

Automation Solutions (continued)

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 200SP/ET 200S/ET 200pro CPU)
• Software controllers for PC-based Automation (S7-1500 software controller, WinAC)
Factory Automation (continued)

Distributed IO (SIMATIC ET200)
- I/O Systems for Control Cabinets, IP20 (ET200SP / ET200MP / 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

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

Drives, Motors and Motion Control

Low Voltage Drives

General Purpose Drives
- SINAMICS V (.16–20 hp)
- SINAMICS G (.5–250 hp)
- MICROMASTER (.16–350 hp)

High-Performance Vector and Servo Drives
- SINAMICS
  - S110 (.25–125 hp)
  - S120 (.25–1500 hp)

DC Drives
- SINAMICS
  - DC Master (5–24,000 hp)
  - Base Drive Panels (5–500 hp)
  - DC Master Control Modules

Enclosed (Cabinet) Drives
- SINAMICS Enclosed (Cabinet) Drives – 480V
  - General Purpose 1–800 HP
  - High Performance Clean Power 150-3000 HP
- SINAMICS Enclosed (Cabinet) Drives – 600V NEMA / 690V IEC
  - General Purpose 150–800 HP
  - High Performance Clean Power 150-3000 HP
  - Engineered common bus drives

Industrial Computers (IPC)
- 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)
Drives, Motors and Motion Control (continued)

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
- All weather environmental enclosures (NEMA 3R, 4R and 4X)

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
  - Drying Cylinders
- Hydrapulpers
  - Output torques from 5,800 to 230,000 Nm can be achieved.
- M.G. Cylinders
  - FLENDER gear units for M.G. cylinders are suitable for torques from 14,000 to 100,000 Nm.
- Paper Machines
  - Output torques of up to 820,000 Nm can be achieved

NEMA Control

- Contactors
- Non-combination starters
- Combination starters
- Reduced voltage starters
- Solid-state and thermal overload relays
- Pump controls
- Lighting and heating controls
- Manual starters and switches

High-Performance Motors – Inverter Duty

Low Voltage Motors

NEMA Induction Motors
- Severe Duty  1 HP - 400 HP

IEC Induction Motors
- Severe Duty  0.18kW - 200kW

IEC Technology Motors
- Servomotors  0.06 – 92 lb-ft
- Torque Motors  74 – 5163 lb-ft
- Linear Motors  34 - 2332 lb-ft

Low, Medium and High Voltage Motors

AboveNEMA Motors 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

Motion Controllers

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

Gear Motors

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

Medium-Voltage Switchgear, Circuit Breakers and Controls, Low Voltage Switchgear

- 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 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)

Installed components:

- Automation
- Control
- Power distribution devices
  - AC drives
  - Circuit Breakers
- SIMOCODE Pro – provides solid-state overload protection, local control and extensive data communication:
  - SIMOCODE pro C
  - SIMOCODE pro V

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.

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 (continued)

**Power Distribution Solutions**
- Energy and power monitoring and control software
- Ethernet / MODBUS / PR PROFIBUS / PROFINET meters

**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

**Industrial Controls**
- SIRIUS IEC power control
  - Starters
  - Contactors
  - Motor starter protectors
  - Busbar systems up to 1400A
- Solid state relays and contactors
- Solid state soft starters
- Pilot devices
- Relays
- Stack lights/signal beacons

**Circuit Protection**
- Molded case circuit breakers
- 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- SSJ: power circuit protection
- UL 1066- SSY-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
- State-of-art DC Motor replacement – 25HP to 1500 HP

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

**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
**Industrial Power Generation**

**Gas Turbines**

- **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-A65TR (Industrial Trent 60) and SGTA45

- **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-2000E, SGT5000F, SGT8000H and SGT9000HL

**Medium-Voltage Generator Switchgear for 100MW to 400 MW Machines**

Siemens offers a fully customizable stationary type vacuum, generator circuit breaker switchgear tested to IEEE C37.013. Each design is engineered to meet the specific electrical and mechanical application requirements of the project. All medium-voltage switching components, including the vacuum generator circuit breaker, are mounted on a removable, fully-integrated, compact switching module for each pole. The switchgear has continuous current ratings of 6,300 A, 8,000 A, 10,000 A and 12,500 self-cooled, interrupting ratings of 80 kA and 100 kA, and maximum design voltage up to 24 kV.

**Industrial & Utility Steam Turbines**

- **Industrial Steam Turbines**
  - Market leader with a reliable and versatile range from 0.1 to 250 MW
  - Flexible layout provides easy constructability, fast startup and economical operation
  - Solutions with controlled and uncontrolled extractions
  - Line includes: SST-150, SST-200, SST-300, SST-400, SST-500, 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-5000, SST-6000, and SST-9000

**Compressors**

- 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
- CO2 compression solutions for various range of applications with volume flows of 140,000Nm3/h and pressures up to 200 bar
- More than 50 years of experience in chemical processes