Sustainable solutions for greater efficiency and higher profitability
The increasing cost of raw materials, the balance between economic and environmental interests, and globalization are major challenges currently facing the chemical industry.

Development cycles and time-to-market are getting shorter and shorter. But product quality needs to be at the highest level. This requires the greatest possible plant availability and process safety, as well as innovative capability and flexibility.

These demands call for a reliable and experienced partner. Our installed base along with the many new projects in which we are involved around the world make us the number one choice for chemical companies aiming to secure long-term competitiveness.
Contents

**Sustainability** 04 – 07
Supporting our customers and leading by example.

**Integrated solutions** 08 – 11
A comprehensive portfolio for automation and energy management.

**Productivity** 12 – 17
Optimizing plant performance and maximizing safety.

**Efficiency** 18 – 23
Delivering value from top to bottom.

**Flexibility** 24 – 29
Shorter time-to-market with improved quality and greater flexibility.

**Partnership worldwide** 30 – 31
Providing excellent service and support in over 190 countries.
Protecting the environment and securing a more efficient use of resources are of the utmost importance. Like the chemical industry, we are committed to sustainability. Our solutions help chemical companies to fulfill their responsibilities – the use of alternative raw materials, eco-friendly processes, and constant process optimization.
We provide convincing answers to the questions and the challenges of our time. We constantly search for new technologies to make production more efficient and reliable, to reduce the total cost of ownership, and to secure your investment.

Social responsibility
For a sustainable and thriving society, quality, safety and environmental protection are of greater importance than ever. The chemical industry is at the front line of social responsibility. Siemens’ modern technology provides the basis for sustainable benefits for companies and the wider society.

Ecological responsibility
The balance between profitability and maintaining the environment for future generations is a major concern for chemical companies today. Protection of people and the environment through the responsible use of resources are top priorities.

Our “Green Solutions” assist our customers with energy management, emissions reduction, waste minimization, and the efficient use of process water as well as cooling water.

Economical responsibility
Modern technologies can enable environmental protection and profitability to go hand in hand. In the long run, sustainability pays dividends.

Our solutions contribute significantly to better performance, flexibility and the optimization of raw material consumption as well as product quality. Additionally, they enable the production of energy and chemical products from renewable sources. Our risk management supports you to minimize project risks while increasing the safety and profitability of your plant.
Integration and innovation – the foundation of your sustainable business success.

As a company that combines tradition and innovation in electrical engineering, our name stands for sustainability. In partnership with our customers we deliver integrated technology and process solutions, which achieve more profitability and competitiveness for the chemical industry.
In recent years we have extended our activities, both in the process industry and in plant management. Due to our strong position in other markets, such as automation, building technology and energy, our customers in the chemical industry benefit from our high level of cross-industrial competence and our many years of experience in the international project business.

Integrated Company

Comprehensive solutions for dynamic markets.

Industry automation
We develop sector-specific solutions for the efficient automation of processes and plants and the economic management of energy and operations throughout the entire lifecycle.

Drive technology
Our motors and frequency converters have been designed for maximum safety and efficiency. They enable your plant to work in an eco-friendly manner and to a uniformly high standard.
Solutions for industry
Benefit from our cross-industrial competence and global service network. You have the advantage of one supplier giving you synergies and extra possibilities.

Building technology
Our tailor-made monitoring and alarm systems are integrated into sophisticated building and hazard management systems. They permanently and reliably protect your assets.

Water technologies
We provide you with a comprehensive portfolio of innovative products, solutions and services for the production of process, purified, and cooling water as well as for the purification of industrial wastewater.

Energy technology
As a global player in energy supply, we develop eco-friendly solutions for power generation and distribution, as well as comprehensive strategies for sustainable energy management.

For the smooth implementation of international projects, you need an experienced solutions partner to support you in all your activities. We take on responsibility as the Main Automation Vendor (MAV) or Main Electrical Vendor (MEV). Our solutions cover the fundamental technology from the design and engineering stages to maintenance. We offer you the best choice of devices, and help with their procurement and integration into existing systems. They bring you simplification of plant and project management, significant cost-savings, and greater investment protection. The result is that your plant meets your expectations from the word go.

Total integration with TIA and TIP
With Totally Integrated Automation (TIA) and Totally Integrated Power (TIP) we bring automation and energy management together, consistently through the entire plant. TIA provides synchronized automation and safety concepts from field to management level. TIP enables the reliable energy supply from the low to medium voltage switchgear, transformers and compressors, to protection and substation control technology.

The advantages of comprehensive solutions
With our integrated solutions, you benefit from shorter commissioning time due to fewer interfaces and easier commissioning thanks to comprehensive design, centralized engineering as well as plant-wide operation and monitoring. Advantages are gained through optimally connected operation and maintenance procedures – for instance, when planning automation, safety, and electrical systems, expanding device features, and integrating third-party supplier devices, if required.

A head start through information
Our products have monitoring, diagnosis, and alarm functions to give you a real-time overview of your processes. They provide precise information on the current status of the plant as well as key performance indicators (KPI) for consistent operation and further process optimization.

Having one supplier makes connecting different systems and components much easier. Interaction between automation, drive and switching technology, energy supply, and infrastructure solutions sustainably increases the overall efficiency and profitability of your plant.
Our comprehensive approach sustainably increases the efficiency of your plant.

Our products, solutions and services make us a valued partner in the petro, basic, fine and specialty chemicals industries worldwide. We cover all of your needs, from project management, hardware and software development, planning and commissioning, to service and support.
State-of-the-art technologies increase productivity and open up new possibilities.

In the age of globalization, optimum plant performance and comprehensive process safety are decisive success factors. We support you with sound process know-how, scalable products and integrated communication to gain efficient utilization of all assets.
High productivity for a great future.

Performance

Fluctuations, downtime and breakdowns in your plant need to be avoided. Our products provide the information to enable you to respond immediately to anything out of the norm. Plant monitoring can also be carried out remotely. The full performance capability of the SIMATIC PCS 7 process control system comes into its own in remote use. With tools like performance screening and advanced process control (APC) it supports an even mode of operation and boosts process optimization. The system’s open architecture and scalability enable it to keep in step with changes in requirements. It simplifies engineering and facilitates comprehensive communication down to a single field device.

Asset management and intelligent maintenance concepts
Our automation systems do more than show the actual status of the plant components. The integrated diagnostic tools and the alarm and asset management functions enable predictive maintenance. Information is provided for the analysis of consumption data and wear and tear of devices and equipment, allowing condition monitoring and prognoses for the development of assets. This provides valuable data to optimize a plant through its entire lifecycle.

Integrated plant management
To bring together process technology, system planning, and automation, we provide COMOS software, an integrated business solution for the holistic management of a plant. COMOS supports
you in the engineering process, the planning of automation and energy supply, and asset management as well as in documentation and project management. It reduces the time and effort invested in planning, commissioning, operation, and maintenance of entire plants or parts of your plant. You gain the potential for cost savings and increased productivity.

**Connecting the real and the virtual plant**

Siemens’ modeling and simulation solutions speed up engineering and commissioning considerably. With our hard- and software solutions, quality is improved, and bugs are detected and removed in the earliest stage of a project. Simulation allows plant scenarios and changes in software to be tested and optimized virtually, online and independent of plant operation. Operational staff can be trained and regularly qualified to enable them to respond to incidents quickly and effectively. The result is improved security in planning, schedule stability, and savings potential as well as minimal risk. This pays at every stage of the plant’s lifecycle.

The key to top performance is the seamless integration of all tools in the engineering of the process control system. It increases plant availability, profitability, and offers previously unseen growth potential.
Safety first.

Constant protection of people, the environment and assets is the basis of sustainable success. We continually work on our products and services to help you with process and plant safety. We are familiar with statutory and safety regulations and have a strong focus on current and emerging standards. In order to fulfill them, sophisticated safety, availability, and maintenance concepts are a must.

Safety Integrated
A Safety Instrumented System (SIS) is an integral part of every modern plant’s safety. We combine safety functions with our automation and drive technology. The result is Safety Integrated – a broad portfolio of safe applications, which are easy to implement, operate and maintain. Our process control system SIMATIC PCS 7 excels through integrated process safety and comprehensive IT security.

We employ state-of-the-art fieldbus technology, such as PROFIBUS or FOUNDATION Fieldbus, for the efficient communication between controller and decentralized I/O periphery, down to the field device. This technology is suitable for hazardous zone 1 and 2 environments.

The goal: ultimate plant safety
An important part of our integrated safety concept is our safety lifecycle engineering tool, SIMATIC Safety Matrix. Safety applications are configured hassle-free on a cause and effect basis. This reduces the effort involved in engineering, commissioning and maintenance. It also allows maintenance intervals to be extended without additional risk. This is achieved by Partial Stroke Test solutions.

They verify the flawless operation of emergency-shutdown valves during uptime and enhance plant safety.
Solutions tailored to your requirements

Extreme operating conditions call for extraordinary solutions. We provide ruggedized and refined components for extreme temperature ranges, high levels of humidity, aggressive atmospheres, and mechanical stress.

Another important aspect are the highest safety standards in drive technology – from safety switchboards, motor management systems (MCC), frequency converters to motors and drives. Our broad spectrum of explosion-proof motors is designed for environments subject to dust or gas explosion hazard, and is matched to the requirements of the chemical industry.

We integrate plant safety engineering into your business processes and offer solutions from plant monitoring and fire protection to communication technology and access control.

Our portfolio is attuned to the requirements of the chemical industry such as the need for safe deployment in hazardous environments.
Efficient and transparent production maximizes your plant’s lifetime returns.

Predictable costs throughout the entire lifecycle are essential. The total cost of ownership includes comprehensive investment protection and risk minimization – from plant design and process optimization to modernization and retrofit.
Economic management of complex processes.

As a one-stop supplier we support you to improve your plant efficiency. We can give you trouble-free integration of all system components and their communications capability as well as the assessment of the entire workflow with main processes and auxiliary systems.

**Seamless information flow**
Data transparency is a vital element in ensuring the high quality of your processes and products. If data is available anywhere, any time, you receive the necessary information to respond immediately and appropriately to anything outside the normal range. This holistic approach ensures transparency between the control system and the Manufacturing Execution System (MES) SIMATIC IT, down to the integration in the Enterprise Resource Planning (ERP) system. Additionally, you can optimize your logistics processes with our material management systems. They provide a traceable overview of the lifecycle of goods from the raw materials supplier to the end-customer. Tracking systems are also available to supervise the logistics chain including the storage, maintenance and global supply of spare parts.

These systems are based on state-of-the-art technology such as RFID. They guarantee the optimal utilization of resources, the minimization of waste and contribute to an increase in overall efficiency.
Higher energy efficiency, lower costs
Our energy management strategy is comprehensive and multi-level. Totally Integrated Power (TIP) generates cost savings and a fast return on investment (ROI) in the planning, construction, and operation of your energy management. With good consultancy and innovative energy management products your consumption and the scope for potential savings become more transparent. The use of advanced control algorithms (APC) in our process control systems optimizes raw materials utilization. Energy savings can also be made using our highly efficient motors, variable speed drives, and frequency converters.

Regulatory requirements add to the importance of greater energy efficiency and lower costs, for instance by adherence to the energy supply contracts.
A new dimension in plant availability.

System availability, investment protection and optimum use of all assets through the lifecycle are decisive factors for long-term success.

**Service concepts for the entire lifecycle**
Our lifecycle management approach equips you for decades rather than years and keeps the entire lifecycle of the plant in focus. It has cost calculations and risk analyses that include all stages from investment to decommissioning. Our concepts meet all the requirements of the user association of automation technology in process industries (NAMUR) covering investment protection by standardization, cyclical modernization, spare parts availability, regular updates, IT-security and operational maintenance. Our service concept modules can be adapted precisely to your individual needs. This makes your modernization and service costs transparent and predictable over a long term.

**Long-term planning reliability**
We are an innovative company that regularly introduces state-of-the-art products and new technologies. We can help you with your lifecycle and total cost of ownership planning right from the start as our solutions cover a wide range of development and production needs. Our “smart devices” make life easier and reduce long-term costs. Our solutions for
condition-based maintenance, demand-driven training and long-term product support help minimize operation and maintenance costs.

**Minimal risk by stepwise migration**

Increasing demands on automation systems as well as on future-oriented plant extension require a modern control system. We are the ideal partners to engineer system migration with you. We offer a broad portfolio of migration solutions – for components and subsystems, for third-party systems, and for economical and risk-free transition from legacy control systems to SIMATIC PCS 7. All during uptime, of course. This gives you optimal security for your existing investments.

We help you reduce the total cost of ownership over the entire lifecycle of the plant. Increased planning safety and plant availability through operational maintenance and constant modernization are just two of the benefits made available to you by Totally Integrated Automation.
Efficient and flexible processes give you the quality and competitive edge.

The capacity to respond to increasing market and legal regulations, while always maintaining quality, demands the right tools, flexible production methods and optimum process control.
Timely commissioning, fast market introduction of innovations and immediate responsiveness to new requirements help customers get one step ahead of the competition. Short time-to-market, alterations, product changes and reliable delivery can only work effectively with flexible production methods and optimal process control. Batch processes in fine and specialty chemicals require precise control, and the production procedures have to be documented seamlessly. Our solutions for plant design, commissioning, and efficient production processes make us your ideal partner both locally and globally.

Quick adaptation to consumer trends
With the S88-compliant batch automation solution, SIMATIC BATCH, you are running your plant with a state-of-the-art system, featuring all functions required for the optimal use of your plant. Its user-friendly recipe management system supports you to adapt your production to changing market conditions and new production procedures. This ensures batch reproduction with constant quality. Automatic data recording for batch protocols and the integration of the goods’ inventory and quality data into the automation system make your processes transparent. Changes are easy to track through versioning, logbook, and access protection.
Highest efficiency starts in the lab
Our integrated laboratory automation solutions are based on the same user-friendly principles. They shorten process and product development time. Research and formula development data can be seamlessly integrated into the production process. Similarly, data can flow back from production to the laboratory to inform development.

Modular solutions for fast commissioning
Our solutions to help you shorten product development time frames also extend to the building of new plants. We provide modular container solutions for MCC and E/A peripheries along with complete analyzer shelters. These containers are equipped with all required components, ex factory tested, and are therefore ready-to-use. Together with significantly reduced construction costs, they make a significant contribution to fast commissioning and, with it, to increased profitability.

High production flexibility leads to shorter time-to-market.
Globalization demands the utmost flexibility from the chemical industry. Totally Integrated Automation and the SIMATIC range provide just that: modular controllers, panels for various performance ranges and, first and foremost, automation solutions adapted to your individual requirements.

The SIMATIC PCS 7 process control system is scalable from use in the laboratory and pilot plant to the production in a plant network with over 100,000 I/Os. This is automation offering maximum flexibility.

It must be the right quality
In order to respond flexibly to increasing requirements and statutory regulations, the right quality assurance tools are essential. For petrochemicals and basic chemicals, this means maintaining a uniform product quality. In addition to this, fine and specialty chemicals also call for seamless batch traceability.

Comprehensive field instrumentation, weighing technology and process analytics
Our broad portfolio of sensor and analytics solutions also contributes to flexibility and quality. We always have the ideal solution – a single measuring device or a complete system, a standard solution or an individual one with...
numerous innovative measurement methods and analytics techniques. With modern fieldbus communication, devices are optimally integrated into the asset management system, ensuring consistent condition monitoring and seamless diagnostic information. Condition monitoring ensures that quality is always up to your highest standards.

On the way to the digital enterprise
Even more flexibility can be attained with our software for Product Lifecycle Management (PLM) which encompasses all areas from concept design to the end of a product’s life, not to mention our planning tools for a digital enterprise and virtual 3-D simulation. PLM solutions support you in developing your products quickly, producing them, and bringing them to market successfully. Plant simulation allows you to illustrate complex production systems and business processes in computer models. You develop and optimize factory layouts and material flows as well as process and production sequences.

With Siemens you have the foundation to address all facets of today’s dynamic markets. Our portfolio gives you the flexibility you need for that all-important competitive edge – today and tomorrow.

Flexible production sustainably improves the efficiency of your plant.
A partner to meet all challenges.

Over 55,000 current patents make us one of the most innovative companies worldwide. Research and development projects are accomplished in global cooperation, which includes customers, universities, and technology partners in many cases. Five percent of our revenue is invested in research and development. This enables us to find answers to most of your questions.
We are a financially sound corporation with many years of experience and a global network of experts. The know-how and commitment of our employees in more than 190 countries as well as our strong economic foundation make us a reliable partner.

**At home in the world**
As a global player we are always close by when you need us, with an extensive network of regional representatives and local competence centers. We support you in international plant and project management at any stage of your project – with process engineers, automation technicians, and project managers, or together with industrial partners such as system integrators, licensors (EPC), and plant- and machine-builders (process OEM).

**The right partner for your future**
Our customers around the world rely on our technical expertise, our branch knowledge, and our complete solution spectrum for the chemical industry. We offer sustainable technology and implementation to support your strategic decision-making in safety, profitability, quality assurance and to make the most of your investment.

Our environmental portfolio helps you reach your climate protection targets. Partnership with Siemens supports your company’s attainment of Responsible Care and Sustainable Development program goals. You benefit from cost-optimized, flexible, and highly available production as well as securing your future and keeping a step ahead of the competition.

**Consultancy**
From planning, operation, and maintenance to plant modernization, we are your consultancy and solution partner.

**Innovation**
We are committed to supporting know-how and product maintenance through the entire lifecycle. Our portfolio is constantly refined, giving you the assurance of continual innovation.

**Responsibility**
We maintain a tradition and corporate culture of promoting corporate citizenship and environmental protection.
The information provided in this brochure contains merely general descriptions or characteristics of performance which in actual case of use do not always apply as described or which may change as a result of further development of the products. An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of contract.

All product designations may be trademarks or product names of Siemens AG or supplier companies whose use by third parties for their own purposes could violate the rights of the owners.