

**Multiple connections ...**

# Chemicals

**Answers for industry.**

**SIEMENS**



**... for best results.**

**Plant Performance**

**Plant and Process Safety**

**Time to Market**

**Quality and Flexibility**

**Cost Reduction and Investment Protection**

## Why choose Siemens?

**Growing energy costs, efficient resource handling, and the globalization of markets – these are today’s biggest challenges. They demand plant availability and process safety. They also call for transparency, higher performance, high flexibility, and constant quality. As a partner you can count on, we are offering you solutions that meet these challenges and that you will be able to rely on in the future.**

New regulations, globalization, consolidation of markets, and an increased pricing pressure are defining the industry’s dynamic surroundings. Time to market is getting shorter and shorter, yet product quality has to be consistently high at the same time. That’s why we assess the situation in your industry every day. So we can offer the right answers for the many requirements in the chemical industry.

### **New technologies for more profitability**

Only a partner who knows how to make the connections can handle this industry’s complexity. We do constant research to come up with new technologies that will make your production reliable, reduce costs, and secure investments. But it’s not only innovative technology that we’re focused on, environmental responsibility is very important to us as well. We are aware of the fact that the efficient handling of

natural resources is essential in our times. That’s why we develop products and solutions with a high level of standardization.

### **Support along the entire life-cycle**

With many years of experience in the chemical industry, we transform standardized solutions into your individual success story. From greenfield projects via modernization to planning, commissioning, and maintenance. Totally Integrated Automation (TIA) and Totally Integrated Power (TIP) form the core of our offer, as they constitute comprehensive product and system spectra for the field of automation and power supply and for an increase in your performance and profitability.

## Plant Performance

**Cutting-edge competition and high pressure on costs are making maximum plant performance a critical factor to your success. Pro-found process knowledge, scalable products and tools, an integrated information flow, and efficient usage of all assets – that’s our answer. And we’ll use it to support you along the entire life-cycle.**

Fluctuations, downtimes, and breakdowns are something you can’t afford in your plant. We know what this means. Our products will provide you with the transparency and reactivity you need to predict, prevent, and act precisely when a deviation occurs.

### **Scalable systems and high-performance tools**

Field instruments (process instruments, analytical instruments, drives, and motors) deliver process data, which is then again utilized by SIMATIC PCS 7. The process control system supports you in optimally handling process-relevant notifications. Thanks to its innovative and open system architecture, its scalability enables you to keep step with growing production demands and keeps you at the cutting edge of technology to meet future demands, even when expanding your plant. Further powerful engineering tools for software development, commissioning, or system adaptations make sure your plant is running at the highest level of performance.

### **From Asset Management to intelligent maintenance strategies**

An optimum overview in your plant – that’s exactly what you get from efficient and user-friendly systems for operating and monitoring. Combined with diagnostics tools, messaging, and alarm management, the risk of unplanned downtimes can be considerably reduced. To top it off, we have integrated Asset Management and intelligent maintenance strategies for detecting imminent faults and preventing failures to our solutions. This way, together with communication capability and comfortable evaluation methods, they provide one decisive advantage: analysis of consumption data and wear is supported as well as Condition Monitoring and an accurate prognosis of possible development of plant assets. These are measures that definitely pay off.



**Less ups and downs, ...**



**... more up, up, up.**



**Burning money ...**



**... or producing profits.**

## Plant and Process Safety

**Permanent protection of people, the environment, and all assets is the key to enduring success. As a proven vendor we are systematically working to improve fail-safe products and safety-related services and to make sure you have a little bit less to worry about.**

Plant and process safety is paramount in the chemical industry. We are familiar with core processes that always come with a certain amount of risk. We also know regulations, technical safety standards, and norms and keep reanalyzing new standards that come around within this realm. To fulfill these, deliberate safety, reliability, and maintenance concepts are a must. They not only serve the protection of people and the environment, but also guarantee plant availability.

### **Safety Integrated**

The Safety Instrumented System (SIS) is an integrated part of every modern safety concept. With more than twenty years of experience in this area, we interconnect standard automation and drive components and enhance these with intelligent

safety functionalities. This is what makes us different from the competition and what offers you a unique market advantage. Safety Integrated – the comprehensive offer for safe applications that is easy to implement, operate, and maintain.

The process control system SIMATIC PCS 7 has similar differentiating factors – integrated concepts for process safety and IT security. Concurrently our Flexible Modular Redundancy concept accounts for scalable and cost-saving solutions: failsafe and highly available control systems, redundant as well to the level your application needs. To ensure a highly reliable communication supporting system networking and remote I/O, we build on modern field bus technology – PROFIBUS with PROFIsafe.

Another essential part of our integrated safety concept is the safety life-cycle engineering tool SIMATIC Safety Matrix. Using this tool, you may simply configure safety applications by intelligently matching cause and effect. This reduces engineering complexity as well as commissioning and maintenance efforts. Intervals in between maintenance cycles may be increased without any further risks – this is where our solutions for Partial Stroke Test come into play with the highest possible safety. Meaning that safety valves can be tested without actually having to stop the process. In short: crucial safety aspects that decisively contribute to your plant's availability.

### Solutions defined by your safety standards

High-quality products are our standard. But sometimes extreme conditions demand a little more than just that. Then too, we are your partner when it comes to safety. For example, we provide ruggedized and refined components: whether for extreme temperatures, in humid areas, in aggressive atmospheres, or during extensive mechanical exposures.

Safety standards in drive technology are another central topic – regarding safety switching devices, motor management systems (MCC), frequency converters, motors, or gear units. Our broad spectrum of explosion-proof motors for applications in explosive surroundings is perfectly fit for the demands in the chemical industry. As early as in the development phase of energy-efficient motors or variable-speed drives, we take the environment into account. We pay attention to low electric power consumption and refeeding of energy.

For us the topic plant safety is directly connected to your company's processes. That's why we provide solutions that are qualified for your production methods. With profound knowledge and expertise in safety matters, Siemens can assist you in optimizing your building system technology and ensuring safe communication. From plant surveillance to fire protection and access control – highest availability and safety are what matters most.



Our engineering and service teams speak the language of our customers, for example at Bayer in Thailand. It goes without saying that systems and documentation are available in the national language.

## Time to Market

**Market requirements change fast. Modifications, product change-overs, and delivery reliability only work with flexible production methods and an optimal process control. Hence our offer: solutions for plant development, short engineering times, and efficient processes – globally and right at your doorstep.**

Transparency and flexibility play a major role especially in fine chemicals. Plants have to work at optimum capacity, batch processes have to be precisely controlled, and production processes must be consistently documented. With many years of experience in the process industry, this is just our realm of expertise.

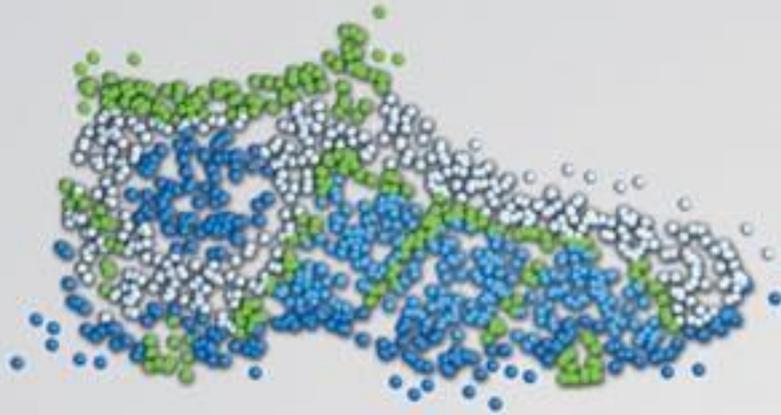
### **Fast adaptations to consumer trends**

With the S88 batch automation solution SIMATIC BATCH, you can run your plant with a state-of-the-art system that has all functions for optimal plant load integrated. A fast production adaptation to changing market demands or new production methods is made possible with the user-friendly recipe management system.

So specific batches become reproducible with consistent quality. Automatic data collection for batch protocols and the integration of material assets and quality data in the automation system make your processes transparent. All changes can be easily reconstructed using a version concept, logbook, and restricted access functionalities.

### **Highest efficiency – already in the lab**

Our integrated solutions for lab automation follow the same principle. The process from the first idea to the finished product is shortened simply by operating efficiently – already in the lab. We begin simplifying process and product development with solutions and services for short



**From the initial concept ...**



**... to the final product.**

time to market and fast return on investment. Already, they come into play when recipes or methods are developed and tested in the lab and results then need to be seamlessly integrated into the production process.

**High data availability and transparency from A to Z**

Our comprehensive approach goes even further. It not only encompasses the return flow of information from production to lab, but also the availability of data within supply chain management. What guarantees this is a direct connection between the process control system SIMATIC PCS 7 and the MES solution SIMATIC IT all the way to the integration

of an ERP system. Logistic processes are optimized with RFID – the entire material flow is tracked along the value chain all the way from vendors to customers. All of this benefits your time to market.

**Modular solutions for fast commissioning**

Making products become available in short time is one thing, enabling plants to be up and running fast is another. This is why Siemens offers modular container solutions for MCC and I/O peripherals as well as entire analyser shelter. These containers have the needed components, are tested before delivery and therefore “ready to use”. Aside from considerably reduced installation costs, fast commis-

sioning benefits profitability. Another module for accelerating engineering and commissioning times is SIMIT. This simulation package provides for seamless integration to the project configuration, improved scenario testing, operator training, and “Fastest to First Batch”.

Choosing Siemens pays off. Higher load rates of production plants in combination with high production flexibility – short time to market is the result. This is what benchmarks in Total Cost of Ownership (TCO) are made of.

## Simple starting points ...



## Quality and Flexibility

**To be able to react to increasing demands and regulations, you need the right tool to ensure sustainable quality. In a competitive price range, regardless of an enormous product variety. The key is an effective usage of all assets, process control, and data transparency.**

From resource to finished product, high quality is unquestionable. In petro and basic chemicals, a constant grade of all products is the essence, in fine chemicals the focus is on consistent retraceability. Because to be able to deliver products that fulfill market demands in every segment, your products have to be outstanding. For instance, the degree of purity plays a decisive role in many chemical processes – measuring and analyzing, regulating and controlling is critical to retaining customers and profitability.

### **Precise measurement, analysis, and control**

Our sensor solutions for process instrumentation are simply precise. We have developed innovative measurement and

analysis technologies to offer you exactly what you need to ensure the highest quality. Advanced Process Control, Asset Management, and Condition Monitoring play a role here as well.

### **Fit to scale**

Flexibility is called for when reacting to changing market demands. Totally Integrated Automation and SIMATIC products answer these requirements perfectly. Modular controllers, panels for various application levels, add-ons for different environments, and especially our process control system constitute a precise automation solution, tailored to your needs.



**... for broadest spectra.**

## Cost Reduction and Investment Protection

**Without a complete cost overview, you won't be able to calculate your company's success. That's why we see Total Cost of Ownership (TCO) encompassing investment protection from plant development to process optimization all the way to retrofit.**

When it comes to life-cycle services we think in time frames of up to 15 years. They reach from initial concept, engineering to commissioning, maintenance and retrofit. We take this time span into account when starting the development and subsequent the production of new hardware and software products. New technologies and innovations are part of our contribution to securing the future.

Life-cycle calculations or risk analysis help when assessing TCO. The compact design of our components and systems as well as integrated networking and fieldbus technologies ("smart devices") considerably reduce the need for extensive space in your plant. Concepts for condition-based monitoring, demand-oriented trainings, and long-time product support help reduce operating and maintenance costs.

All contribute to a good overview of your economic success.

### **Reducing change management risk with simulation**

Engineering and commissioning can be accelerated with our modeling and simulation solutions – changes in production processes may be virtually tested online without disturbing the production flow. The result: more planning security and delivery reliability, less costs and risks without disregarding quality standards. Simulations can be used for plant optimization and operator training as well. The evaluation of cost saving potential over the entire life-cycle of a plant plays a decisive role here.



**The right decision ...**

**... for sustainable profitability.**

**From a single source ...**



**... to all options you can imagine.**

## One partner for all challenges

**Siemens is a world leader in innovation with over 60,000 active patents. Research and development projects are driven forward from a global perspective, very often in cooperation with renowned universities and technology partners. We invest over six percent of our total revenue into R&D – this is how we come up with answers for industry.**

Siemens is a financially strong company with a long history and tradition and with a worldwide network of experts. Based on solid industrial know-how we offer products and solutions that are individually fit to specific industries and sub-segments. The commitment of employees in more than 190 countries makes us a partner you can rely on.

### **At home in the world**

As a global player, we are always at your side – anywhere and anytime, whenever you need us. We fulfill this promise with closely interlinked experts and local competence centers. We can support you all over the world, in every phase of your project, with process engineers, automation specialists, or project managers.

Or in combination with industry partners such as system integrators, process OEM /machine builders, EPC licensors, and contractors as well.

Only a partner who knows how to make the connections can handle this industry's complexity. Hence we offer the complete portfolio of solutions for the chemical industry. With Siemens and its close network you are optimally prepared for current challenges and those that might lie ahead. We will be at your side when it comes to safety, efficiency, ensured quality, and investment protection. This way you can profit from a cost-optimized, flexible, and highly available production. You will be securing your future and will always be the decisive step ahead.