



**SIEMENS**  
*Ingenuity for life*

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#### Security-Hinweise

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, systems, machines and networks.

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens' products and solutions only form one element of such a concept.

Customer is responsible to prevent unauthorized access to its plants, systems, machines and networks. Systems, machines and components should only be connected to the enterprise network or the internet if and to the extent necessary and with appropriate security measures (e.g. use of firewalls and network segmentation) in place.

Additionally, Siemens' guidance on appropriate security measures should be taken into account. For more information about industrial security, please visit <http://www.siemens.com/industrialsecurity>.

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends to apply product updates as soon as available and to always use the latest product versions. Use of product versions that are no longer supported, and failure to apply latest updates may increase customer's exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed under <http://www.siemens.com/industrialsecurity>.

Added value  
throughout the  
plant lifecycle  
Services for the chemical industry

[siemens.com/chemicals](http://siemens.com/chemicals)

# Greater efficiency, lower costs throughout the plant lifecycle

Safe production processes and high plant availability play a key role in all areas of the chemicals industry. We focus specifically on these prerequisites when delivering services for automation technology, electrification, and digitalization customized to meet your requirements.

## Customized lifecycle services

Our services are geared to the entire plant lifecycle and create added value in every phase – for sustained reduction of total cost of ownership and greater availability, safety, and efficiency.

Plant, automation, and process engineering services include data analysis and recommendations for process optimization and modernization – especially with regard to process control systems, plant assets such as motors or compressors, digitalization, and safety. We offer support in process control system design, condition monitoring and spare parts supplies, in planning and setting up integrated safety management systems, and across a range of services such as digitalization, IT, infrastructure, and financing.

Whether you need basic automation technology support, an individual service agreement, on-site technicians, or training – we can offer you a package tailored to meet your unique requirements. In addition, our expert technical and online support is available to respond quickly to any queries, 24/7, 365 days a year.



## Expert advice from the start

Our consulting experts are available to provide assistance throughout the plant lifecycle. We offer reliable support in the design, development, planning, and commissioning of production and laboratory facilities, or digitalization consulting.

Our engineering and consulting services cover everything from process engineering, feasibility studies, conceptual design, and basic engineering to front end engineering design.

Digitalization consulting services help you to define a customized roadmap for the digital transformation, including specific recommendations for the integration of digitalization solutions. This roadmap includes a gap analysis, priority digitalization projects with clearly defined financial and operational key performance indicators (KPIs), and a step-by-step project plan for implementation.

## Your benefits:

- High plant availability with customized technical support, thus minimizing downtimes and unscheduled breakdowns
- A clear focus on reducing total cost of ownership by optimizing resource utilization, maintenance, and spare parts logistics
- Greater future viability of your plant and single assets with projectable expansions, modernizations, and services

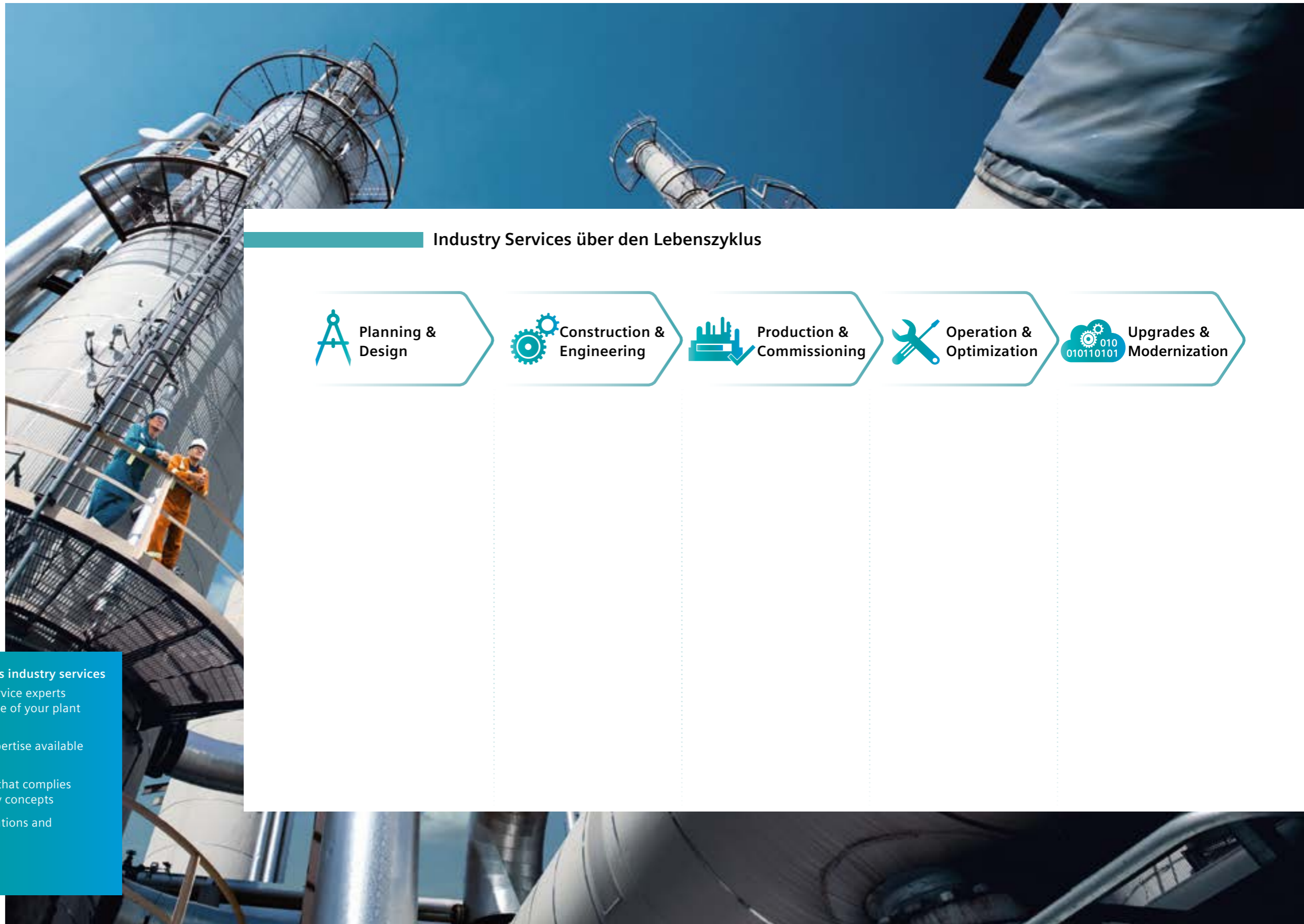
**Benefit at all stages**

- **Planning:** A system audit provides clarity regarding the current status of the safety or automation system or of the serviceability of individual components. This creates the basis for the intelligent design of service strategies.
- **Operation:** Using condition monitoring, predictive maintenance, or systematic optimization, we help you to extend the lifespan of your machinery and plants. Our experts can monitor, analyze, and repair your components remotely or, if required, directly on site.
- **Modernization:** Whether you require the cost-effective expansion of an entire plant or want to migrate existing products and systems – we offer intelligent strategies that can be flexibly adapted to meet your specific needs.

**Compelling reasons to choose Siemens industry services**

Our experienced and highly qualified service experts support you at every stage in the lifecycle of your plant and equipment. Key benefits:

- Technology, product, and industry expertise available on site at your location
- State-of-the-art service infrastructure that complies with industry standards and IT security concepts
- Pioneering in data-based cloud applications and digital services



**Industry Services über den Lebenszyklus**



**Planning & Design**



**Construction & Engineering**



**Production & Commissioning**



**Operation & Optimization**



**Upgrades & Modernization**



## Digital services for the intelligent use of data

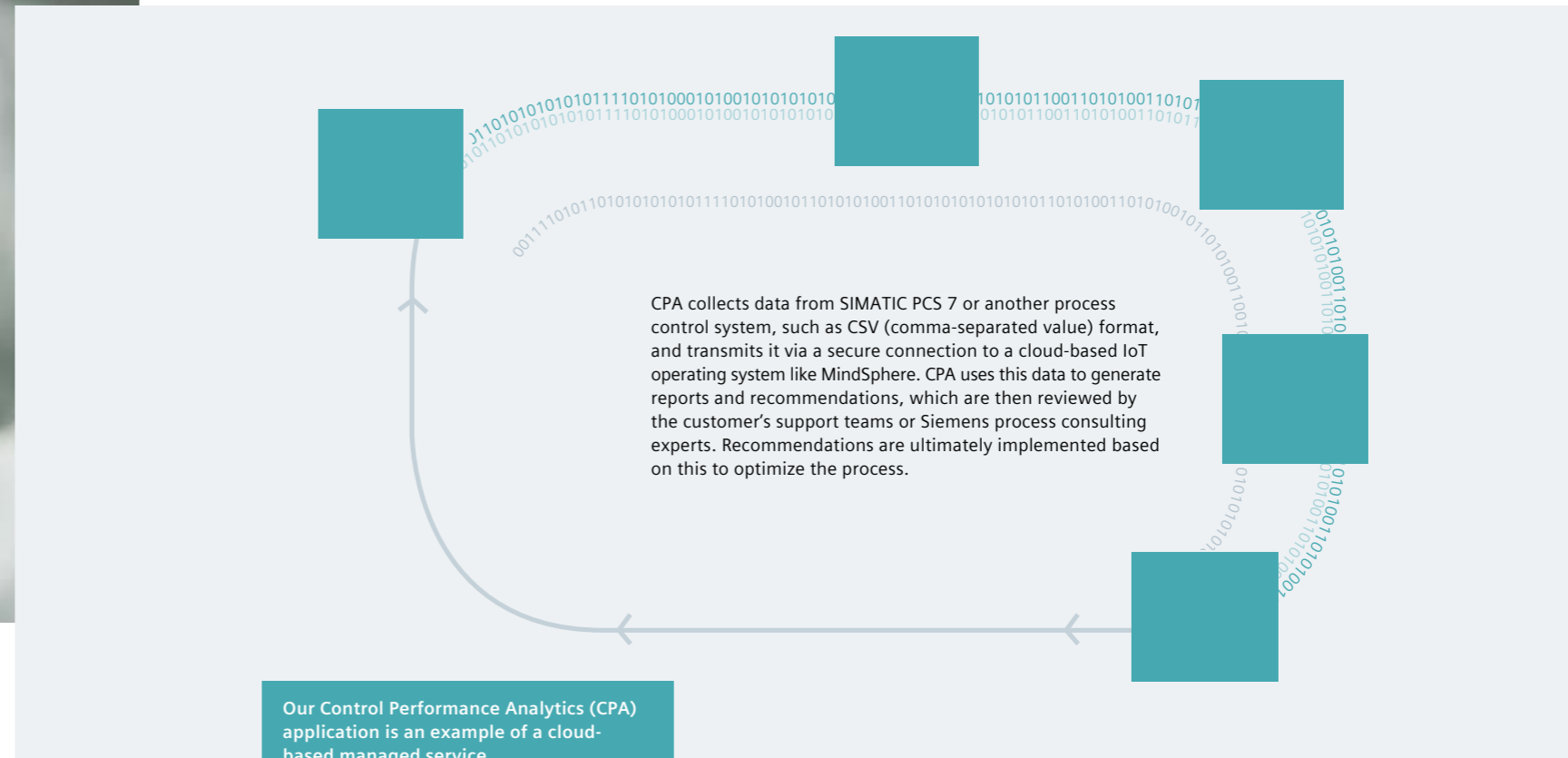
Our industrial digital services combine virtual and real worlds throughout the value chain and lifecycle. They help you to ensure transparency and leveraging the potential of digitalization for your success.

### Digital and automation technology services

Whether you want to analyze your plant data, incorporate new system components, or improve processes, our data-based and individually combinable services are available to show you the status of your plant at all times. Systematic linking of data prepares the ground for an early response to faults and, above all, preventive intervention – long before an unscheduled shutdown occurs. Your data is stored in a secure environment – a public or private cloud. This allows you to make strategic decisions, proactively plan optimization and maintenance, and propel the digital transformation forward.

### Cloud-based services: securely adding value

Cloud computing helps you tap into the enormous potential of your production data. MindSphere, our cloud-based, open-source IoT operating system, supports you in evaluating and putting your data to profitable use. The knowledge acquired in the process opens up new opportunities for faster decision-making and improved plant performance.



### SIMATIC Software Platform as a Service

Ever shorter innovation cycles demand flexible and cost-effective environments for software development. SIMATIC Software Platform as a Service is a cloud-based IT infrastructure with pre-installed and pre-configured SIMATIC engineering software. This means there are no costs for infrastructure design and configuration; instead, we simply provide the necessary virtual resources.

### SIMATIC Virtualization as a Service

Apart from maintenance of the hardware platform, it is the maintenance and care of the software components installed that primarily determine the lifecycle costs of a PC-based control system. With SIMATIC Virtualization as a Service, you can make optimum use of your hardware, carry out system upgrades and updates with ease, and centrally administer and maintain your systems.

### In full control with Managed Services

Our applications and Managed Services take data from the SIMATIC PCS 7 process control system or other control systems, analyze and evaluate it, and make recommendations for automation and optimization of the control loops. They increase transparency, quality, and safety by reducing fluctuations in process variables and minimizing operator interactions. This enables better utilization of assets and limiting resource consumption.

### Remote Services and Field Services: an innovative combination

Proactive, reactive, predictive, and preventive remote support: based on our common Remote Service Platform (cRSP), SIMATIC Remote Services enable secure and high-performance remote access to the SIMATIC automation system – from support via desktop sharing to inspection services and real-time monitoring.

This allows easy remote fault identification and troubleshooting. Field Services provide on-site maintenance support, aided by equipment such as data glasses and mobile service tablets.

### Mobile Operations Concepts for your assets

The digital transformation is giving rise to new concepts for decentralized monitoring and convenient on-site operation of sub-plants, such as the Mobile Operation Concept based on SIMATIC PCS 7 and SIPIX, our mobile, industrial tablet PCs. Remote access to process information, condition-based process control, and decentralized maintenance ensure efficient and secure asset performance as well as greater plant availability, with no increase in operating costs.

# Long-term protection for your investment, with costs you can budget for

When plant operations starts, services are required and costs incurred for operation, maintenance, optimization and upgrades for rotating equipment and the drives or process control systems. In addition, your plant's aging process requires systematic modernization and active obsolescence management.

Depending on the contract profile, you may, for example, opt for inspections in which system components are checked for wear and its causes. This means that maintenance work can be performed in good time, for example using SIMATIC Inventory Baseline Services, data-driven services that employ modern methods and tools to help make the maintenance of machinery and plants more efficient than ever before.

### Lifecycle Management Suite

The Lifecycle Management Suite optimizes the maintenance of your plants during planning, execution, and documentation of all service activities. It is based on the software solution COMOS MRO (Maintenance, Repair & Overhaul) and combines assets with services provided. The pre-configured system provides standard operating procedures for SIMATIC PCS 7 system components and process instrumentation.

Key benefits:

- Transparency and traceability with consistent data management
- Efficient service processes with real-time on-site information on mobile devices
- Continuous improvement of maintenance processes and services

### Lifecycle services contracts

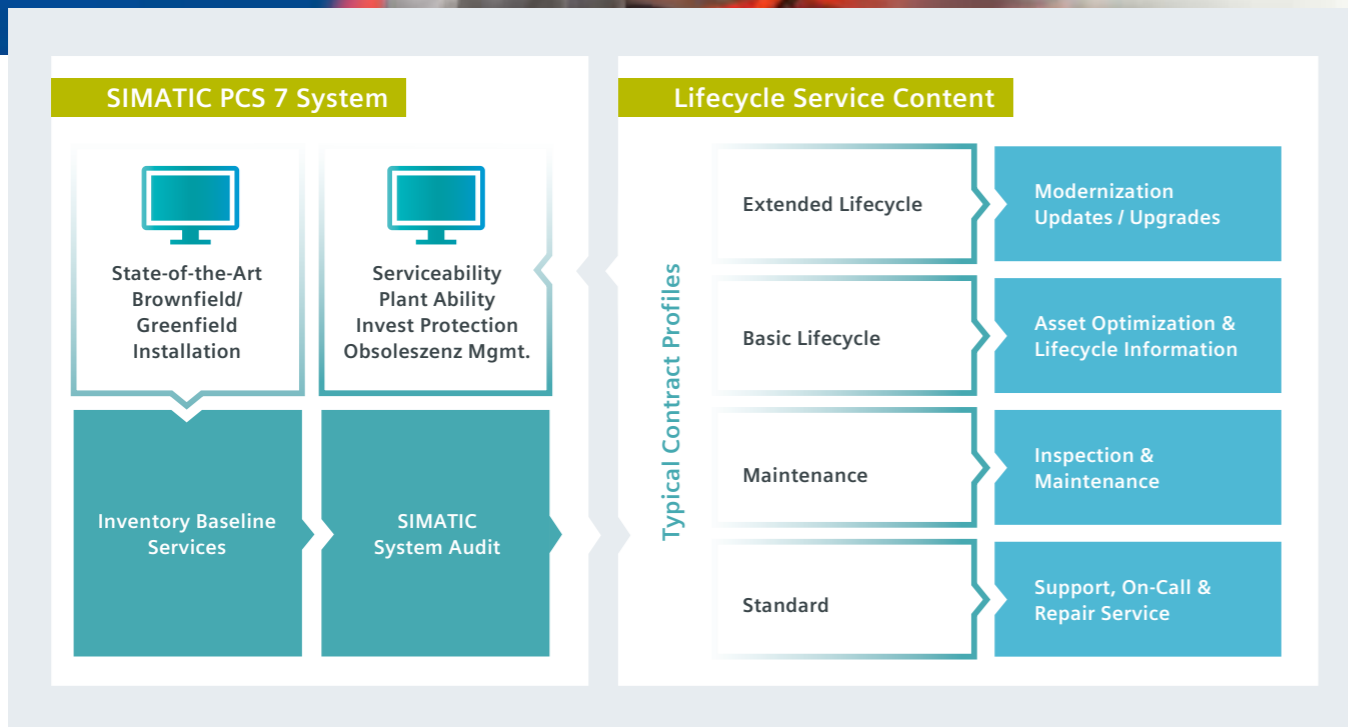
In contrast to reactive service, proactive concepts plan for the management of obsolescence and upgrades. Our one-year or multi-year lifecycle services contracts adopt this approach. This reduces the risk of equipment obsolescence to almost zero, and optimized costs for maintenance and modernization during the operating phase (OPEX) are constant and calculable. Above all, they ensure serviceability, guarantee the long-term delivery capacity of spare parts, and ensure optimized plant availability. The bottom line is a reduction in the total cost of ownership (TCO). Contracts can be entered into individually and adapted to meet requirements at any time.

### Lifecycle information services

Over a long plant lifetime, it is important to be able to make optimal use of your assets (hardware and software), easily expand systems, and carry out updates as required. Lifecycle information services provide you with important information on the status of your products, specific service recommendations for Siemens products in your installed base, and decision-making aids for further plant-specific services. This helps you to optimize your maintenance strategy.

### SIMATIC PCS 7 lifecycle services

Custom SIMATIC PCS 7 lifecycle services ensure that your process control system keeps pace with advances in system technology, while maintaining full use of its functionality. Since the single service modules are ideally matched to SIMATIC products and systems, you benefit from high security of investment and optimum performance.



Typical contract profiles for the "SIMATIC PCS 7 Lifecycle services" program

## Innovative services for asset optimization

Systematically improving the efficiency of a process plant requires plant asset data transparency throughout the value chain and the entire lifecycle. With intelligent maintenance strategies and data-based services, we support the analysis and decision-making processes, implementation, and help improve the performance of your assets.



### Asset Optimization Services

Our Asset Optimization Services are based on a structured and systematic approach to the comprehensive supply of spare parts.

Our logistics experts ensure that replacement components reach their destination as quickly as possible – from procurement to returns management. Even products that have been discontinued or are no longer available are fully supported, helping to maintain the long-term value of your investments.

### Drive technology in focus

Drive Train Analytics and condition monitoring enable continuous monitoring of the entire drive train. Condition data is combined in a single system and evaluated by experts. This enables early detection of anomalies that could potentially cause failures, and the initiation of suitable countermeasures.

SIDRIVE IQ can be used to monitor, analyze, and optimize drive systems in a cloud-based solution, thus maximizing their availability, performance, and serviceability.

### Value-added Energy Services

Energy Analytics allow you to make your energy data management simple, cost-effective, and future-proof. Within the scope of Energy Performance Contracting, our experts support you in identifying potential savings and optimizing processes – without tying up your time or resources.

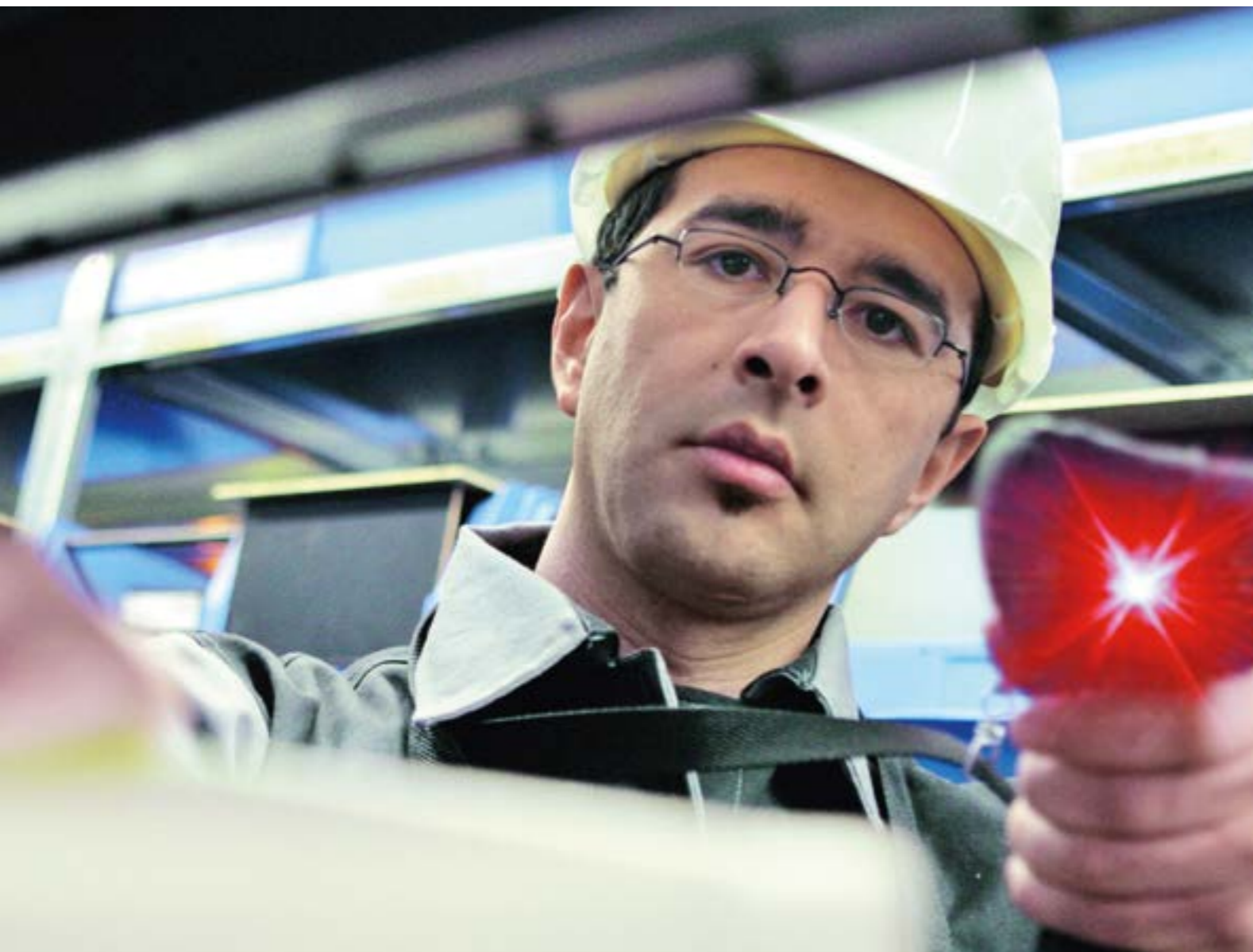
All reports on motors, drive trains, and energy efficiency can also include energy or financing concepts.

### Calibration and Verification Services

Calibrating measuring devices in situ is becoming ever more important. These tasks require specific expert skills. Whether at our factories or your location, as your partner for Calibration and Verification Services, we help to maximize process performance and increase safety – regardless of whether we supply our own or 3rd party field devices.

## For top machinery and plant availability

Reducing service costs and the total cost of ownership is a key objective of our condition monitoring services. Operators of production plants, OEMs, and machine builders all pursue the same goal: reliable, continuous operation of all systems at the lowest possible cost



### Asset Analytics Services for rotating equipment

Chemical plant assets such as pumps, compressors, or centrifuges can also be monitored online. Our Asset Analytics Services for rotating equipment cover the automated, continuous logging, analysis, and visualization of operating and condition data, such as vibration, temperature, or voltage. This improves long-term machine utilization while reducing lifecycle costs.

On request, we can assist in evaluating the data obtained and work with you in developing predictive maintenance for your assets.

### Machine Tools Analytics Services

Machine Tool Analytics Services offer machine builders and plant engineers real-time condition monitoring, visualization, reports, and alarms, including detailed information on changes based on a comprehensive online monitoring system. Continuously logging the exact condition of machinery allows necessary maintenance work to be initiated at the right time, thus significantly reducing the risk of failure.

Modular service packages can be used to upgrade services; this can include expert support, extended data evaluation, or services throughout the lifecycle. This enables holistic management of the availability of critical plants.



Thanks to the tailor-made digital service concept, the maintenance interval for the industrial gas turbine at a fertilizer plant was extended by up to 30 percent and maintenance costs were reduced by up to 16 percent.

# Services for all your needs

Our ultimate priority is your long-term success. To make sure you achieve this, our dedicated service experts around the world supply tailored solutions designed to meet present and future challenges in the chemical industry.

## Navigating the digital transformation with IT services

Big data, cybersecurity, high-performance computing, and the digital workplace: We and our partner Atos can assist you in your digital transformation journey anywhere in the world. We translate strategic approaches into specific technology and combine best practices with innovative solutions that create added business value through intelligent IT management.

## On the safe side with Industrial Security Services

The increasing level of cyber threats and dynamically changing security risks call for a preventive and industry-specific defense strategy. Our Industrial Security Services are based on the latest technologies and current security norms and standards. Threats or malware are detected at an early stage, vulnerabilities are analyzed in detail, and appropriate security measures are implemented.

## Safety for humans, the environment, and plants

The sensitive issue of process safety can only be managed effectively if all relevant aspects are taken into account. Our engineering and consulting experts support you in all safety-related matters and are available to assist with Functional Safety Services, the design of safety systems, and materials testing.

## Customized financial solutions

Technological progress is creating enormous pressure within the industrial sector to innovate and invest. We can help you to keep pace with this development, relying on our solid financial expertise and our pioneering role in technical development. This combination enables us to help you achieve your long-term business objectives.



## Services for optimum building performance

You can also count on us when it comes to the management of your buildings. Our Performance Services ensure efficient and perfectly functioning buildings, while our Advisory Services ensure the sustainable development of your building strategy. Using our Navigator analysis tool, you can rely on Digital Services for maximum building transparency.

