Discover and leverage the potential of digitalization

Siemens press conference with Peter Herweck, CEO of Process Industries and Drives Division
Siemens serves the process industries with a comprehensive portfolio

Process Industries and Drives

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<tr>
<th>Engineering Management Level</th>
<th>COMOS Plant Engineering</th>
<th>SIMIT Simulation</th>
<th>XHQ Operations Intelligence</th>
<th>MES Solutions</th>
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<tr>
<td>Operation and Control Level</td>
<td>SIMATIC PCS 7 Process Control System</td>
<td>S7-400</td>
<td>SINAMICS Drive Systems</td>
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<tr>
<td>Field Level</td>
<td>Industrial Communication</td>
<td>Power Supplies</td>
<td>Industrial Identification</td>
<td>Process Instrumentation</td>
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</table>

- Oil and Gas
- Petro-/Chemicals
- Pharmaceutical
- Food and Beverage
- Glass and Solar
- Mining and Cement
- Fiber Industries
- Marine & Shipbuilding
- Others

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Customers in process industries value Siemens as partner for their digital transformation

Statements on digitalization, extracted from a customer survey:

We listen to our customers, we understand their requirements, and we make their challenges our own.

- Resource efficiency
- Completely integrated digital processes
- Quality
- Mobile applications
- Automation
- Improved decision processes
- Culture
- Big/smart data and advanced analytics
- Higher
- Transparency
- Resource optimization
- Data security
- Software and apps
- Missing technical standards
- Visualization
Siemens digitalization technologies optimize businesses in the process industries along the entire lifecycle of plants.

Four elements of the lifecycle of a plant in process industries:
- Plant Design/Engineering Phase
- Installation/Commissioning Phase
- Operation/Maintenance Phase
- Continuous Optimization
Siemens digitalization technologies optimize businesses in the process industries along the entire lifecycle of plants.

Optimization through Digitalization

Identical twins

Identical data for all lifecycle phases
One data model on all levels, consistency in communications
With digitalization Siemens seamlessly connects engineering, commissioning, and operation

**Plant Design/Engineering**

**Installation/Commissioning**

**Operation/Maintenance**

**Benefits**

- Lower CAPEX
- Optimal OPEX
- Optimum efficiency
- Increased reliability
- Higher quality
- Smarter decisions
- Greater flexibility in optimization

**Optimization through Digitalization**

Digital plant design, tools, and processes with...

Production excellence with...

Integrating engineering processes and tools on the basis of one data model with interface/interplay of different engineering tools. Cooperation between different functions through increased intelligent and uniform data usage.
With digitalization Siemens seamlessly connects engineering, commissioning, and operation

Optimization through Digitalization

Digital plant design, tools, and processes with...

Production excellence with...

Integrated Engineering

Integrating engineering processes and tools on the basis of one data model with interface/interplay of different engineering tools

Integrated Operation

Cooperation between different functions through increased intelligent and uniform data usage

Benefits

Lower CAPEX
Optimal OPEX

Optimum efficiency
Increased reliability
Higher quality
Smarter decisions
Greater flexibility in optimization
With Integrated Engineering, Siemens ensures increased engineering rates, higher engineering quality, and more flexibility for optimization.

COMOS
Integrated software solution for plant design engineers, plant operating personnel, company management, and solution partners with a continuous flow of data

- Efficiency
- Quality
- Greater flexibility

Bi-directional interface between COMOS and SIMATIC PCS 7 with seamless transfer of engineering data into DCS and vice versa

Parallelization of workflows by keeping a high engineering quality

SIMATIC PCS 7
Siemens’ innovative Distributed Control System: flexible, scalable, powerful
With Integrated Engineering, Siemens ensures increased engineering rates, higher engineering quality, and more flexibility for optimization.

**Scope of supply**
- Engineering based on COMOS from OEM
- DCS (SIMATIC PCS 7) based solution, including instrumentation for both plants

**Specific benefits**
- Reduced Cost of Ownership
- Coordinated efforts with OEM to reduce plant installation / commissioning time

"It always gives us the feeling that we have gone to the right vendor."

B. Rama Krishna, Head of Project Engineering, Archean Chemical Industries Pvt Ltd
With Integrated Engineering, Siemens ensures increased engineering rates, higher engineering quality, and more flexibility for optimization

**Integrated Engineering @ DSM, Switzerland**

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**Scope of supply**
- Consistent, and integrated data management platform – from engineering to automation
- Plant and project documentation

**Specific benefits**
- Higher engineering quality and efficiency
- Consistent data and documents
- Reliable document management
- Global collaboration standards

"We see the advantage of object-oriented work in a unified database – we can easily create new components or visuals."

Thomas Müller, Head of Tools and Document Management, DSM Nutritional Products

DSM’s Nutritional Products division is the largest manufacturer of vitamins A and E – and both vitamins are produced exclusively in Sisseln, Switzerland

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With Siemens’ solutions for installation and commissioning, plants can be brought into operation faster, with high quality.

- Faster time to operation
- High quality in ramp-up

**SIMIT**
Virtual commissioning of equipment, machines, and processes, operator training and real-time simulation

**COMOS Walkinside**
3D virtual reality visualization software which directly accesses all plant information to display the current status of a plant in visually appealing, realistic 3D graphics

**Installation / Commissioning**
With Siemens’ solutions for installation and commissioning, plants can be brought into operation faster, with high quality.

**COMOS Walkinside @ TOTAL E&P, France**

TOTAL is a global, integrated energy producer and provider, the world's fifth-ranked international oil and gas company.

**Scope of supply**
- Walkinside Immersive Training Simulator (ITS) for field operators in a 3D virtual reality model

**Specific benefits**
- Reduced costs for asset-related training through remote instruction
- Efficient collaboration for project stakeholders
- Faster time to first oil

"If you participate in ITS you have less loss of production due to human error."

Nicolas Tarisse, Field Operations Training Manager at TOTAL E&P, France
With Siemens’ solutions for installation and commissioning, plants can be brought into operation faster, with high quality

BASF SE is the largest chemical producer in the world. Its portfolio ranges from chemicals, plastics, performance products and crop protection products to oil and gas

**Scope of supply**
- SIMIT Simulation Framework as the tool for virtual commissioning for a process automation migration project

**Specific benefits**
- Significantly shorten the commissioning time for the real plant with the use of virtual commissioning
- Increased engineering efficiency
- Checking the automation software without modifications in a simulated system

"With virtual commissioning we expect an early start-up of the plant to increase productivity and return on investment."

Dr. Michael Krauß, Senior Automation Manager, BASF SE
With Siemens’ solutions for Integrated Operation, plants run reliably and safely. High transparency allows improved decision-making processes.

**Operation / Maintenance**

- **Transparency**
- **Reliability**
- **Safety**
- **Improved decisions**

**COMOS MRO**
Encompasses the complete management, engineering and organization of operation and maintenance – all in one system.

**XHQ**
Operations intelligence system that aggregates, relates and presents operational and business data in real-time.

- Consistent data storage during operation show the plant “as is”
- Active data use for optimization
- Preventive maintenance from DCS to EAM with support of virtual reality
With Siemens’ solutions for Integrated Operation, plants run reliably and safely. High transparency allows improved decision-making processes.

XHQ @ SK Energy, Asia-Pacific

SK Energy is one of the largest oil and gas companies in the Asia-Pacific region.

**Scope of supply**
- Comprehensive Visualized Operations-Intelligence-System (VOIS) based on XHQ
- Obtaining essential information for day-to-day use

**Specific benefits**
- Prevents unscheduled downtime
- Optimized operations
- Increased overall plant efficiency

"Our people are smart, and giving them the right tools empowers them to make the right decisions at the right time. This helps to improve efficiency, productivity and profitability."

Hag-Yong Sung, Senior Vice President Production Management & Strategy at SK Energy
With Siemens’ solutions for Integrated Operation, plants run reliably and safely. High transparency allows improved decision-making processes.

**Bilfinger Chemserv** is a leading provider of maintenance and engineering for the process industry.

**COMOS MRO @ Bilfinger Chemserv**

**Scope of supply**
- Management, planning, and organization of plant turnarounds, incl. documentation
- Complete system integration for high planning accuracy

**Specific benefits**
- Preventing unscheduled downtime
- Optimized operations
- Reduction of the planning costs – up to 30 percent (4,800 fewer working hours)

"This type of undertaking can only succeed if every workflow step is captured, every action is coordinated, and every participant is properly integrated."

Helmut Lef, Turnaround-Manager at Bilfinger Chemserv
Customers already today can reach a significant optimization in CAPEX and OPEX with "Integrated Engineering" and "Integrated Operation".

- Efficiency
- Quality
- Greater flexibility

Digitalization

- Transparency
- Reliability
- Safety
- Empowered decisions

- Faster time to operation
- High quality in ramp-up
Siemens’ portfolio seamlessly connects engineering, commissioning, and operation.

Plant Design/Engineering

Installation/Commissioning

Operation/Maintenance

Optimization through digitalization

**COMOS**
- SIMATIC PCS 7
- Automation Solutions
- SIMIT
- Automation Solutions
- XHQ
- MES
- SIPAT/APC
- Pressure, Temperature, Level, Flow
- Positioner
- Weighing

**SITRANS Library**
- PIA Lifecycle Portal incl. COMOS Interface
- Analytic Solutions/Analytic System Houses
- Analyzer System Management
- Continuous Gas Analyzers/Gas Chromatographs
- SIMATIC Net, Scalance, RuggedCom
- RFID/Code Reading
- SINEMA Server Network Management
- Drives
- Motors
- Gears
- Value added Services
- Life Cycle Services
- Data-Driven Services
- Engineering and Consulting

Automation and Engineering

Process Instrumentation

Process Analytics

Industrial Communication

Integrated Drive Systems

Services
Siemens continuously innovates its portfolio

### Highlights and innovations at Achema 2015

#### Plant Design/Engineering
- Automation and Engineering
  - Continuous operation with PCS 7 V8.1 including Condition Monitoring
  - Integrated Engineering with COMOS and SIMATIC PCS 7
- SIPROCESS GA700
- SIMATIC IT eBR Paperless manufacturing

#### Installation/Commissioning
- Process Instrumentation
  - XHQ Operations Intelligence
  - PIA Lifecycle Portal incl. COMOS Interface
- Process Analytics
  - Analyzer System Management
  - Continuous Gas Analyzers/Gas Chromatographs
- Industrial Communication
  - SIMATIC Net, Scalance, RuggedCom
  - RFID/Code Reading

#### Operation/Maintenance
- Services
  - Integrated Drive Systems
  - Siemens Cloud for Industry

### Optimization through digitalization

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Questions and answers