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The background is a photograph of a large industrial chemical plant at night, with various towers, pipes, and storage tanks illuminated. Overlaid on this image are several technical diagrams. On the left, a flowchart shows 'INPUT 1' and 'INPUT 2' entering a 'MIX' unit, which then feeds into a 'TANK-01'. To the right of the tank, there are boxes for 'SIGNALS AND MEASUREMENT', 'PROCESSING', and 'OUTPUTS'. Further right, a 'HOLD CHAMBER' is shown. On the far right, a vertical stack of tanks is labeled 'PROCESS-01' and 'PROCESS-02'. A line graph is visible in the upper right corner. The Siemens logo and tagline are in the top left corner.

SIEMENS

Ingenuity for life

Setting new standards in safety and efficiency

Lifecycle instrumentation solutions for
chemical production

[siemens.com/sensors/chemicals](https://www.siemens.com/sensors/chemicals)



Strengthening every link of the chemical value chain

The food and water that nourish our bodies. The clothing that keeps us warm. The fuel that powers our vehicles on the roads, across the oceans and in the air.

Chemicals are the building blocks of our everyday lives – and of the global economy. Safe, efficient oversight of chemical plants and processes represents one of the most pressing challenges in the development of a sustainable future. That's why chemical operators must protect every infrastructure investment with rugged, reliable measurement technology.

Siemens has an array of high-performance field instruments to monitor the health of any application along the chemical value chain, including petrochemicals, fine and specialty chemicals, industrial gases and the production of hydrocarbons from renewable resources. Our flow, pressure, temperature, level, positioning and weighing products meet the stringent measurement standards set by the chemical industry without high installation costs.

By choosing Siemens, you'll also gain access to a broad range of products designed to complement and optimize our process instrumentation – including analyzers, industrial communication components and process controllers.

And with our digital solutions for the chemical and other process industries, you can prepare confidently for what lies ahead. The SITRANS IQ digital field device platform includes a growing range of connectivity devices and applications that help you achieve more with the data collected by your instruments – from higher performance and reliability to easier servicing and reduced downtime.

Robust instrumentation designed with flexibility in mind

- Conforms with the most rigorous industry standards, ensuring full compliance with tightening safety and environmental regulations
- Exceptional accuracy even in harsh and fluctuating conditions
- Customizable selection of process connections, materials of construction and mounting options
- Low total cost of ownership

Everything you need from a single supplier

- Comprehensive product portfolio to improve performance and increase productivity for more cost-effective operations
- Seamless integration of all Siemens process instrumentation, analytics and industrial communication into automation systems
- Expert-level technical support network covering every corner of the globe, with both on-site and remote options available



Learn more about Siemens instrumentation solutions for the chemical industry at:
[siemens.com/sensors/chemicals](https://www.siemens.com/sensors/chemicals)

Raw material storage



Naphtha storage tanks



Naphtha

Steam

Cooling water

High pressure steam

Pyrolysis furnace

Fuel gas

Steam cracking



Compressor

Compressor

Quencher

First wash column

Second wash column

Leaching column

Dryer

Deethanization via distillation



Heat exchanger

Cracked gas

Expander

Refrigeration agent

Liquefied cracked gas

Refrigeration agent

Condenser

Exhaust gas

Condensation tank

Distillation tower

Evaporator

Steam

Bottoms steam

Separation of higher cracked products



Hydrogenation reactor

Propylene

Raw C₄-fraction

Gasoline stripper

Pyrolysis gasoline

Hydrogenation reactor

Debutanizer

Depropanizer

Demethanization, H₂-methanization & ethylene/ethane splitting



Heat exchanger

Refrigeration agent

Ethylene/ethane splitter

Hydrogen

Methanizer

First demethanizer

Dryer

Second demethanizer

Ethylene

Ethane

Processing of ethylene derived products



Ethylene storage tank



Temperature



Pressure



Flow



Level



Positioner



Process protection



Continuous gas analysis



Gas chromatography

Ethylene plant

1 Raw material storage

Floating roof tanks are used to store large quantities of naphtha, a petroleum product. Each tank is comprised of an open-topped cylindrical steel shell equipped with a roof that floats on the surface of the stored liquid. The roof rises and falls with the liquid level in the tank. Tank level monitoring ensures continual availability of raw material for ethylene processing – a challenging task carried out by Siemens radar level instruments mounted on top of the still pipe.

Level: SITRANS LR250

- Compact, radar-based level measuring device for use in many different processes with challenging conditions, e.g. liquid bulk storage tanks with functional safety requirements
- Process Intelligence signal processing for improved measurement reliability and Auto False-Echo Suppression of fixed obstructions, providing easy commissioning and best-in-class performance
- Communication using HART®, PROFIBUS PA or FOUNDATION Fieldbus

2 Steam cracking

Steam cracking is a petrochemical process in which long-chain hydrocarbons, e.g. naphtha, are converted into short-chain hydrocarbons in the presence of steam by thermal cracking at process temperatures higher than 800 °C. Hydrogen, methane, ethylene and propylene are derived as the main products. Siemens measurement devices help to monitor steam crackers, one of the most complex plant types among petrochemical processes.

Pressure: SITRANS P500

- Provides high-reliability pressure monitoring with fast response times in compression units, despite extreme chemical and mechanical loads
- For aggressive and non-aggressive gases, vapors and liquids
- Extensive diagnosis and simulation functions, which can be used on-site or via HART
- Optional separate replacement of measuring cells and electronics without recalibration

Flow: SITRANS FX330

- Highly versatile vortex flowmeter capable of steam monitoring around the pyrolysis furnace
- Ideal for a broad range of chemical applications due to new features and enhanced functions, including an integrated heat meter, NAMUR NE107 conform status alarms, extensive Ex approvals and SIL2 certification according to IEC 61508

3 Deethanization via distillation

Fractional distillation is the most common separation or purification technology used in petroleum refineries as well as in petrochemical and chemical plants. Industrial distillation is typically performed in large, vertical cylindrical columns 6 to >60 m high, known as fractionation towers. Separation of cracked gases via distillation is carried out at temperatures down to -150 °C and other finely tuned conditions – a task efficiently completed with Siemens process instrumentation.

Pressure: SITRANS P420

- Absolute pressure monitoring of the distillation column according to SIL 2/3
- Extensive diagnostic and simulation functions provide necessary insights during commissioning and operation
- Advanced communication and predictive maintenance functions optimize maintenance cycles
- Hazardous area classifications with intrinsically safe and explosion-proof options

Flow: SITRANS FC330

- Suitable for precise monitoring of the reflux from the condensation tank into the distillation tower to control the sensitive balance adjustment
- Measures gases and liquids with high accuracy and repeatability
- Insensitive to entrained gases and aeration up to 10%

Level: SITRANS LG250

- Guided wave radar instrument for level measurement of the distillation column sump installed in a bypass chamber
- Advanced diagnostics available for a high degree of safety; SIL 2/3 qualified
- Suitable for extreme pressure and temperature conditions
- Second line of defense via an additional sealing for critical processes

Ammonia plant

1 Natural gas pre-treatment

The typical modern ammonia-producing plant first converts natural gas into gaseous hydrogen in a process known as reforming. During the natural gas pre-treatment, the process stream is compressed, pre-heated and desulphurized. Siemens devices allow for the adjustment of process components in the correct ratio via defined interaction of flow and compression.

Flow: SITRANS F O delta p

- Differential pressure measurement with SITRANS P320/P420 results in universal flow monitoring for liquids, gases and vapors
- Provides accurate results even with high temperatures and extreme pressures
- Very robust and can be used with a wide range of nominal diameters

Positioner: SIPART PS2

- Negligible air consumption in stationary operation, which is a key advantage for efficiency in petrochemical processes such as reforming
- Extensive diagnostic functions for valves and actuators, including a partial stroke test for emergency shutdown valves
- Available in Makrolon, stainless steel, aluminum or flameproof enclosure

2 Secondary reforming

In the secondary reforming step, compressed air is fed into the process stream. The oxygen content reacts with hydrogen to form water at around 800 °C. Nitrogen remains and further reacts with hydrogen in the ammonia synthesis process. The exhaust heat is recovered via steam production within a process gas cooler and a steam drum reactor, a process in which the exact values delivered by Siemens instruments are important for plant efficiency.

Temperature: SITRANS T Series

- Modular design makes it possible to customize the TS500 temperature sensor for most applications, while still being able to use many standardized individual components
- Can be direct- or remote-connected to TH/TR/TF transmitters for universal usage and used with a resistance thermometer, thermocouples or as a field indicator for any 4-20 mA signal, HART®, PROFIBUS PA or FOUNDATION Fieldbus
- Sensors and transmitters for head, rail and field mounting offer total installation flexibility

Pressure: SITRANS P320

- Available as an absolute, differential or relative pressure measuring device, which can be combined with orifices for flow measuring
- High reliability even under extreme chemical and mechanical loads
- High-accuracy performance at high pressures

Flow: SITRANS F M MAG 3100 with MAG 6000I

- Magnetic flow measurement for cooling water monitoring within the reforming step
- Excellent chemical resistance despite high process temperatures
- Designed to allow patented MAG in-situ verification using the SENSORPROM fingerprints
- Approved for hazardous areas

3 Ammonia synthesis

Ammonia synthesis takes place in a giant high-pressure reactor at approximately 200 bar and temperatures between 400 and 500 °C. The naturally inert gas nitrogen reacts with hydrogen to ammonia in the Haber-Bosch process. This synthesis step is efficiently monitored by Siemens instruments due to their high compatibility with harsh and corrosive process conditions.

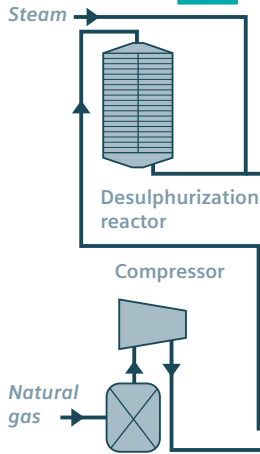
Temperature: SITRANS TO500

- Fiber-optic multipoint temperature measuring system enables inline measurement of temperature profiles in confined space applications, e.g. tube or tube bundle reactors, to reduce temperature oscillations and optimize performance
- 4-channel interrogator can be equipped with up to 4 fiber-optic measuring lances that can be connected to up to 48 temperature sensors each
- Measuring lance diameter of <2 mm for more reactor space and thus faster response times

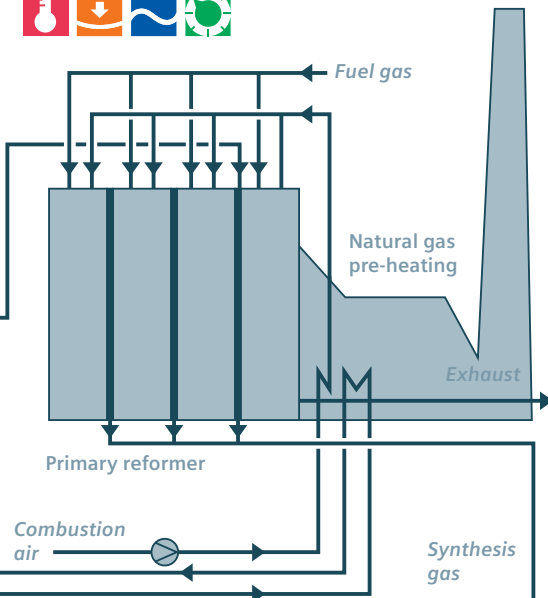
Pressure: SITRANS P420

- Pressure device for precise measurement with corrosion-resistant diaphragm and process connections
- Wetted parts made of high-grade materials (e.g. stainless steel, Hastelloy, gold, Monel and tantalum)
- Local transmitter operation via 4 push buttons without a "hot work" permit or via the relevant communications interface
- Developed according to IEC 61508; SIL 2/3 certified for remote safety handling

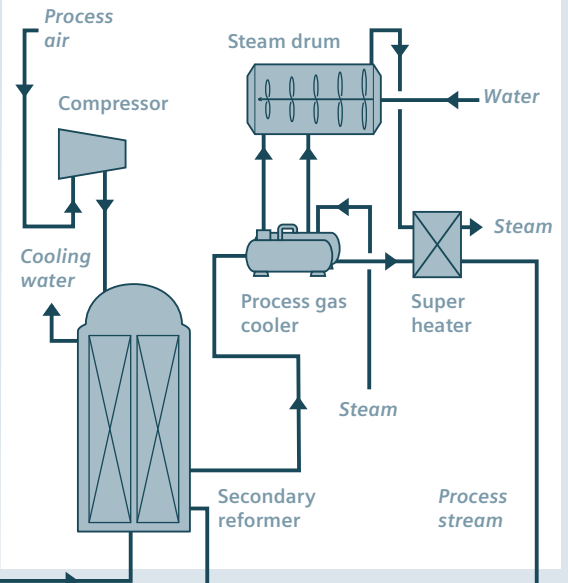
Natural gas pre-treatment



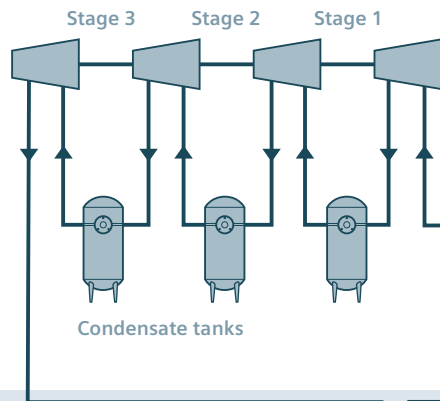
Primary reforming



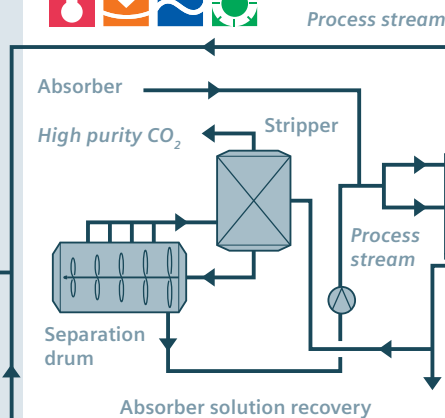
Secondary reforming



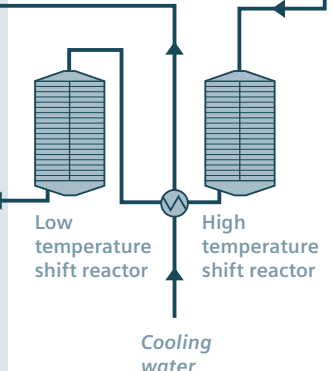
Process gas compression



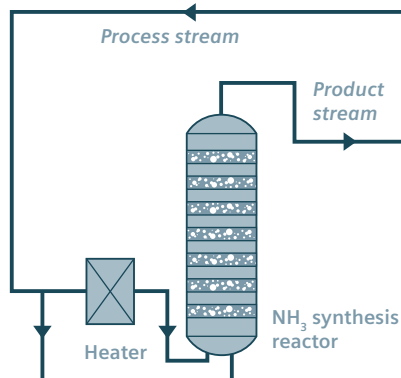
Carbon dioxide absorption & removal



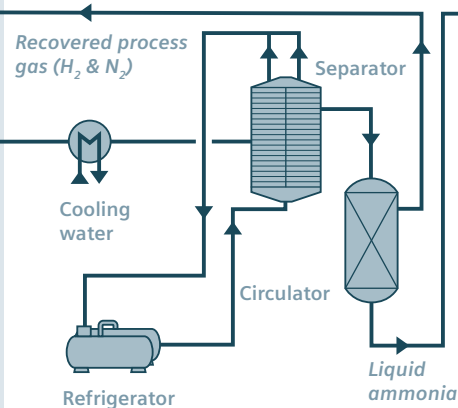
Carbon monoxide conversion



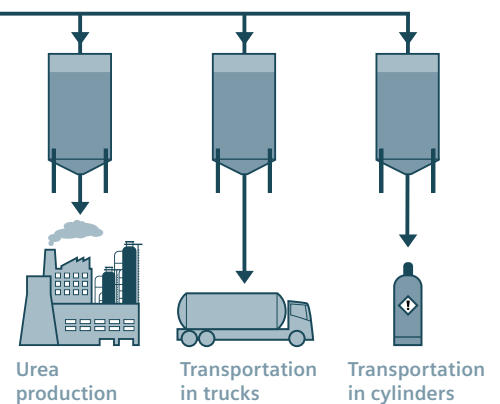
Ammonia synthesis



Ammonia separation



Ammonia storage



Temperature



Pressure



Flow



Level



Positioner



Process protection



Continuous gas analysis



Gas chromatography

Release of gaseous nitrogen & oxygen



Gaseous nitrogen
Gaseous oxygen
Gaseous nitrogen & argon release unit

Refrigeration & expansion of air



Expander
Heat exchanger
Liquefied air

Storage & filling of liquefied gases



Liquid nitrogen storage tank
Liquid argon storage tank

Filtration & further compression of air



Filtered & compressed air

Turbo compressor
Air cleaning unit

Cryogenic rectification of air



Low pressure column
Liquid nitrogen
Raw liquid argon
Liquid oxygen
High pressure column

Cryogenic rectification of argon



Raw argon column
Pure argon column
Exhaust gas

Pre-cleaning & compression of air



1

Heat exchanger
Air compressor
Water cooling

Storage & filling of liquefied gases

Liquid oxygen storage tank



Air separation plant

1 Pre-clean and compression of air

As a first step in the air separation process, the air is sucked in, pre-filtered of dust and compressed to about 6 bar. This creates heat and requires a first cooling interval. For maximum efficiency, the pre-cleaning and compression unit must be kept within a very specific range of operating parameters. Siemens measurement devices help to maintain an ideal environment for the process at all times, even under the most difficult conditions.

Temperature: SITRANS T series

- Modular design makes it possible to customize the TS500 temperature sensor for most applications, while still being able to use many standardized individual components
- Can be direct- or remote-connected to our TH/TR/TF transmitters for universal usage and used with a resistance thermometer, thermocouples or as a field indicator for any 4-20 mA signal, HART®, PROFIBUS PA or FOUNDATION Fieldbus
- Local display, field-changeable electronics and remote-mount options available
- Explosion protection according to ATEX and IEC EX intrinsic safety; flameproof and non-sparking

Pressure: SITRANS P320/420

- Pressure transmitter with local display, programming and extensive diagnostic and simulation functions for the industry's best on-site usability
- Measuring range of 250 mbar to 700 bar
- New HMI that meets NAMUR NE107 requirements for determining device status at a glance

2 Cryogenic rectification of air

Liquefied air is then separated in a double-column rectification system consisting of a pressure column (~6 bar) and a low-pressure column (~1.5 bar). Pre-separation into oxygen in the column sump, argon in the middle section and nitrogen gas at the column top takes place in the pressure column. Via a feed-line, the liquefied gases are moved to the low-pressure column where further separation takes place. Accurate measurement in this separation unit with the help of field instruments from Siemens is vital due to the narrow boiling point range (10 °C) of the elementary gases.

Flow: SITRANS F O delta p

- Differential pressure measurement with SITRANS P320/P420 with orifice plate enables flow monitoring of cryogenic liquids at temperatures of -196 °C
- Provides stable measurement even with pipeline icing due to temperature decoupling by means of shut-off valves and a differential pressure line

3 Storage and filling of liquid nitrogen, argon and oxygen

The pure liquefied gases are supplied by pipeline to large industrial users near the production plant, then transferred to tanks for storage or transportation. Compressed with pumps up to 300 bar, the gases are also moved into gas cylinders in smaller quantities. Complete impermeability of the overall plant, including Siemens measurement instruments, is required for safety due to the presence of explosive liquid oxygen.

Pressure: SITRANS P320

- Total flexibility for every tank storage pressure need (e.g. gauge, absolute, differential pressure or flow and level)
- Wide variety of process connections provide enough flexibility for installation virtually anywhere
- Developed according to IEC 61508; SIL 2/3 certified for remote safety handling

Positioner: SIPART PS2

- Fits every valve application as a result of simple installation and automatic commissioning, including self-adjustment
- Easy local operation and configuration using push buttons
- Offers various mounting kits to fit different non-standardized actuator setups

Chemical reactors

1 Batch stirred tank reactor

Batch stirred tank reactors (STRs) generate a homogenous substance distribution, which results in high product yields and selectivities. STRs are generally used for the small-scale production of high-priced products and therefore require very accurate monitoring with Siemens field devices during the manufacturing process.

Pressure: SITRANS P420

- Easy-to-install pressure transmitter with automatic commissioning and self-adjustment of zero and span
- New data logging function with up to 1500 measuring points – ready for digitalization
- High accuracy of $\leq 0.04\%$

Level: SITRANS LR250 FEA

- Fully encapsulated horn antenna design with a PTFE lens for use in environments where aggressive and corrosive chemicals (e.g. acids, alkalis and others) are used
- 25 GHz high frequency and 50 mm process connection/ antenna allow for easy mounting
- Short blanking distance for improved minimum measuring range to 50 mm from the end of the antenna

2 Plug flow reactor

Inside a plug flow reactor, the chemicals transform as they flow continuously along the plug, leading to a constantly changing concentration gradient. The process is applied in large capacities because of its efficient use of reactor volume, leading to low operating costs. A non-invasive flow device from the Siemens instrumentation portfolio further increases the level of cost-efficiency by serving as a portable measuring point.

Flow: SITRANS FS230

- Digital clamp-on ultrasonic flowmeter for easy installation at any time, without interruption of production flow or disconnection of pipes
- Minimal maintenance; external sensors do not require periodic cleaning
- Large dynamic range, bidirectional and highly sensitive in the low-flow range
- Market-leading accuracy and repeatability according to ISO 11631

3 Spray tower

Spray towers are generally used for mass and heat transfer between gases and liquids, especially during the washing process in fine chemical synthesis, in the field of air pollution control and in quenching applications. Different spray zones distribute the gas droplets through large nozzles and can remove up to 90% of particulates depending on their size. Reliable level detection increases availability and operational safety – a task which is carried out with Siemens SIL-certified level switches.

Level: SITRANS LVL200

- Standard vibrating level switch that can be used in all liquid and slurry applications and helps to prevent overflow in a spray tower
- Compact insertion length of 40 mm for confined space applications
- Fault monitoring for corrosion, loss of vibration or line break to the piezo drive
- SIL 2 qualified for high-level and dry-run applications

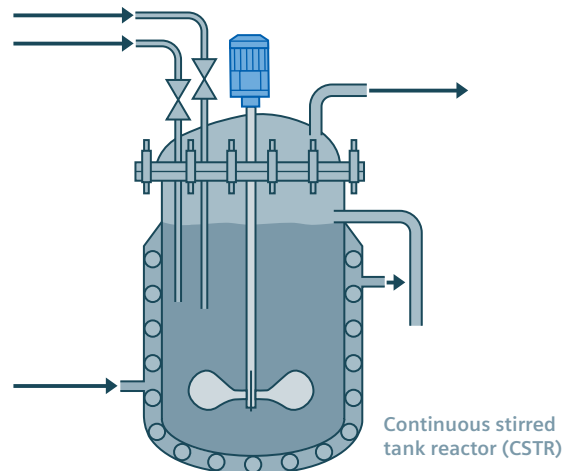
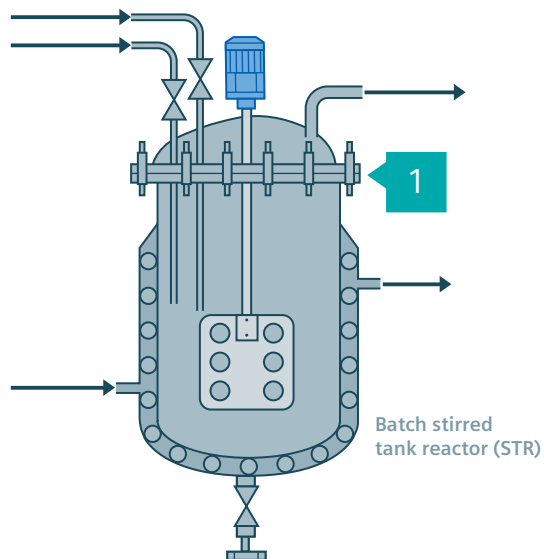
4 Tube bundle reactor

A tube bundle reactor is used mainly for strongly endothermic or exothermic catalytic gas phase reactions. The dissipated heat is usually recovered as process heat. Compared to a packed bed reactor, detecting temperature profiles with Siemens field devices is the optimal way to suppress undesired temperature hot spots.

Temperature: SITRANS TO500

- Optical multipoint temperature measuring system consisting of a transmitter and glass fiber-based sensors
- Delivers a customized solution through flexible positioning of fiber Bragg gratings as individual sensors on the measuring probe
- Provides a gap-free temperature profile due to a total of 192 measuring points for process optimization
- Enables detection of the active catalyst phase or makes plant shutdown for catalyst displacement schedulable for operators

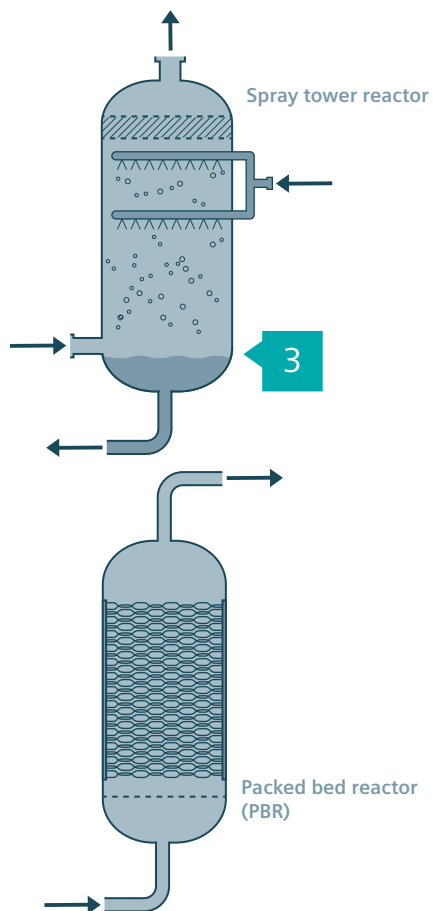
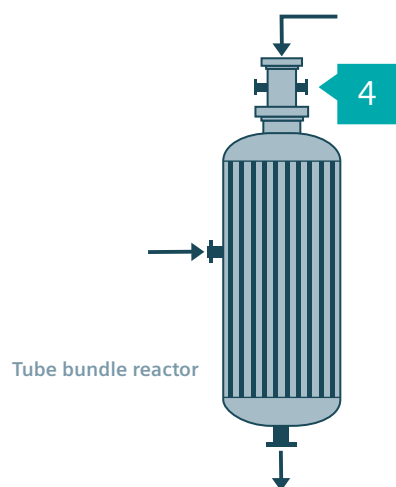
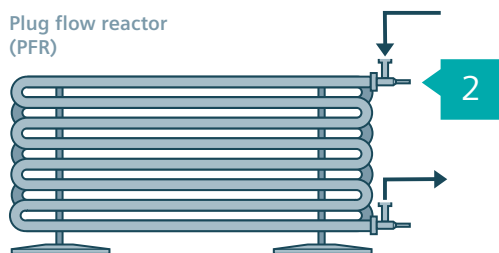
Stirred tank reactors



Flow reactors



Plug flow reactor (PFR)



Temperature



Pressure



Flow

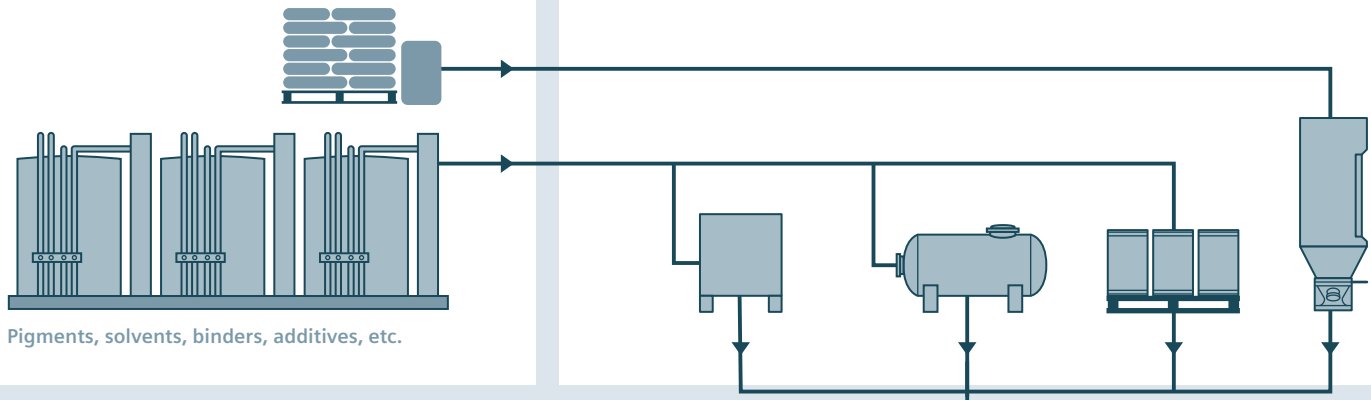


Level

Raw material storage



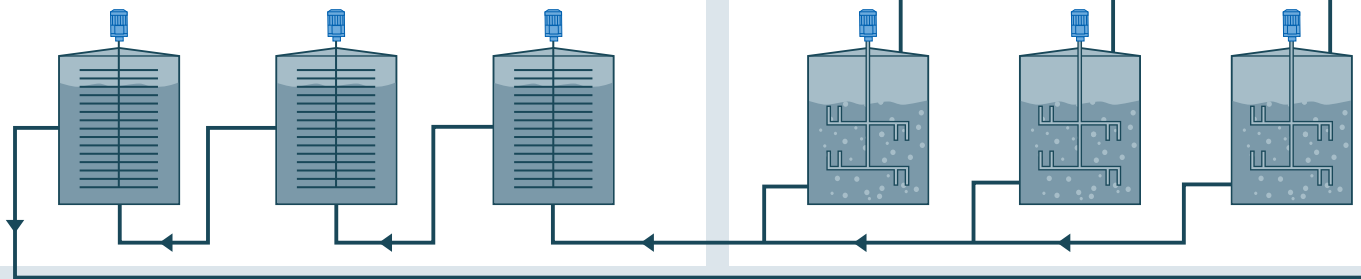
Feed hoppers & metering deck



Milling & dispersion



Pre-mixing



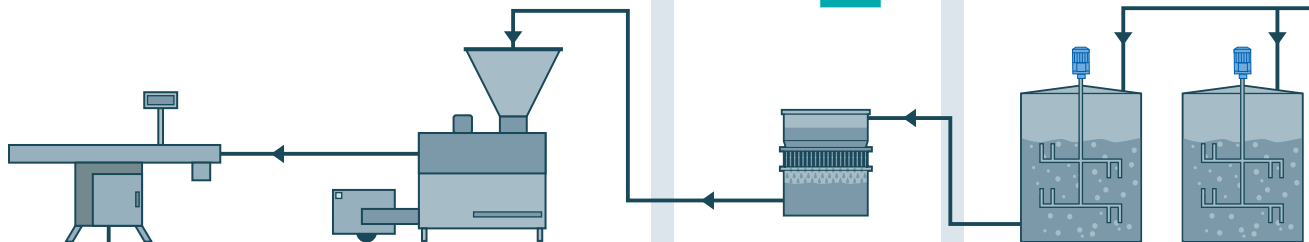
Filling & labelling



Filtering



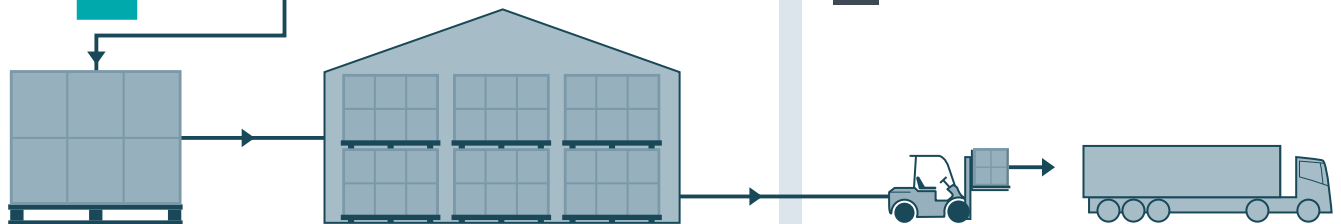
Final blending



Packaging & storage



Shipment



Temperature



Pressure



Flow



Level



Positioner



Weighing



Industrial communication

Paint production plant

1 Feed hoppers and metering deck

In order to prepare the feed properly for the mixing process, exact measurement of the various ingredients including pigments, solvents, binders and additives is necessary. This often takes place at a central metering deck, where the liquids and powders are measured separately. Accurate flow and weighing instruments from Siemens assure consistently high levels of product batch quality and reproduction.

Flow: SITRANS F C MASS 2100/FCS300 with FCT030

- Coriolis flow system for direct control of valves in dosing applications
- Wide range of sensor sizes available, beginning from DI 1.5
- High immunity against process noise
- $\leq 0.1\%$ accuracy

Weighing: SIWAREX WP231, WP321, WP521 and load cells

- Easy integration into the TIA Portal and SIMATIC PLC family due to compatibility with S7-1200, S7-1500 or SIMATIC ET200
- Complete parameterization and commissioning via the TIA Portal and HMI panel
- Easy commissioning via SIWATOOL software without SIMATIC knowledge required
- Legal for trade available

2 Pre-mixing

The binders, pigments and a portion of the solvents and additives are put together in a defined order and mixed into a homogenous compound. Process instruments from Siemens monitor the final feed from the pre-mixing vessels to ensure that the exact recipe is followed and that the agitation process thoroughly blends the pigment particles into the mixture – and the devices can react immediately to any changes in this fast-moving application.

Temperature: SITRANS T series

- Wide application flexibility due to a broad selection of head-, rail- and field-mounted transmitters as well as an extensive range of available certificates

Level: SITRANS LR250

- Narrow beam for easy setup and high-level performance
- Graphical HMI, Quick Start Wizard and display diagnostics
- Antenna system with high solvent resistance

Positioner: SIPART PS2

- Intelligent diagnostic functions and multiple communication possibilities
- Suitable for both rotary and linear actuators from 3 mm up to 200+ mm of stroke
- Easy local operation and configuration using push buttons

3 Filtering

After the batch dilution, which may be needed to obtain the required degree of fineness, the batch is filtered to remove non-dispersed pigments and any entrained solids. Constant monitoring by intelligent and reliable field devices from Siemens minimizes the amount of maintenance required on the filter.

Pressure: SITRANS P320

- Optimizes filter monitoring using differential pressure and high-quality remote seal accessories
- High-accuracy performance even at high pressures

Flow: SITRANS FC330

- Fast response to rapid changes in flow
- Space-saving, with the option for remote sensor installation to ensure optimal transmitter placement
- Easy to install, commission and maintain
- Sensor sizes up to DN150 available

4 Packaging and storage

The finished paints and coatings are dispersed into cans, buckets or drums, which are then labeled, packed and moved to storage before being shipped to customers. Siemens offers a comprehensive range of weighing electronics to perform the filling task.

Weighing: SIWAREX WP251, FTA and load cells

- Easy integration into the TIA Portal and SIMATIC PLC family due to compatibility with S7-1200, S7-1500 or SIMATIC ET200
- Complete parameterization and commissioning via the TIA Portal and HMI panel
- Easy commissioning via SIWATOOL software without SIMATIC knowledge required
- Legal for trade available

Industrial communication: SIMATIC RF portfolio

- Siemens RFID systems open up new possibilities by making the entire production and supply chain visible
- Allows for monitoring of material flows at all times
- Portfolio offers transponders, anchors, gateways and more
- Easy integration into any system setup

Biogas plant

1 Feedstock delivery

Biogas processing starts with the transportation of renewable feedstock from the storage facility to the digester feeding system. Overfilled storage tanks and line blockage are significant concerns throughout the transportation process – but these challenges can be overcome with the right combination of Siemens flow, level and weighing instrumentation.

Flow: SITRANS F M MAG 5100W with MAG 6000

- Cost-efficient electromagnetic flow system capable of measuring aqueous slurries with short lead times
- Accuracy of $\leq 0.4\%$ of flow rate
- EPDM or NBR hard rubber liner for water and wastewater applications

Level: SITRANS Probe LU

- Ultrasonic technology for continuous level measurement with a range up to 12 m; ideal for a slurry pit
- Contactless and optimally protected against deposits due to a vibrating sensor face
- Simple, parameter-based programming for quick and easy setup

Level: SITRANS LH100

- Transmitter for hydrostatic level measurement of open, pressureless tank systems
- Compact design, simple installation, small error in measurement ($\leq 0.3\%$) and IP68 degree of protection

Weighing: SIWAREX WP231, WP321, WP52x, WT231 and load cells

- Monitors feedstock delivery via truck scales and silo weighing
- SIWAREX modules are directly integrated into SIMATIC PLC systems, but can also operate as stand-alone systems
- Simplifies the implementation of plant extensions

2 Fermentation

Biogas is extracted in the fermenter, where the substrate is continuously mixed and decomposed by microorganisms. Foam development and resistance against the sulfuric compounds produced by fermentation are two key obstacles at this stage, both of which can be addressed with Siemens level detection solutions.

Level: Pointek CLS200

- Versatile inverse frequency shift capacitance level switch with optional rod/cable choices and configurable output, ideal for detection of foam
- Suitable for fermentation process conditions, with a temperature range of -40 to $125\text{ }^{\circ}\text{C}$ and pressure specifications up to 25 bar

Level: SITRANS LR200

- Low-frequency microwave transmitter mounted on top of the fermenter and offering substrate level measurement
- Cost-effective solution using either a horn antenna for large openings or a PTFE rod antenna for openings as small as 50 mm
- Perfect redundant measurement with Pointek CLS200 for foam detection

3 Biogas treatment

Biogas is desulfurized and then fed as purified, methane-enriched gas directly into the gas network or compressed to CNG as a fuel. Siemens instruments support the processing of gas, absorption (pressurized water scrubbing) and adsorption.

Temperature: SITRANS T series

- Programmable basic transmitter SITRANS TH100 in a head type B (DIN43729) or larger, or on a standard DIN rail, provides a low-cost alternative to high-performance temperature transmitters
- Intrinsically safe version for use in potentially explosive areas

Pressure: SITRANS P series

- Includes analog and digital pressure transmitters for measuring gauge pressure, absolute pressure, differential pressure, flow and level
- Tailor-made functionalities for varying application requirements

Feedstock delivery

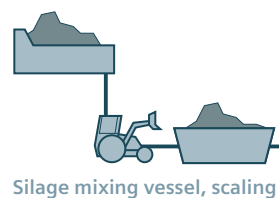
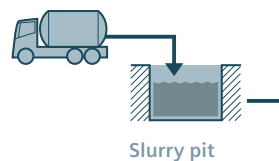
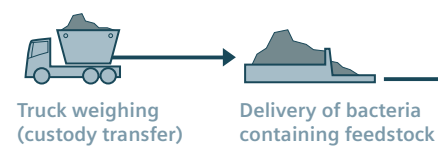


Heat exchanger

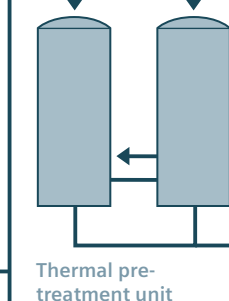


Cogeneration (Block heat and power unit)

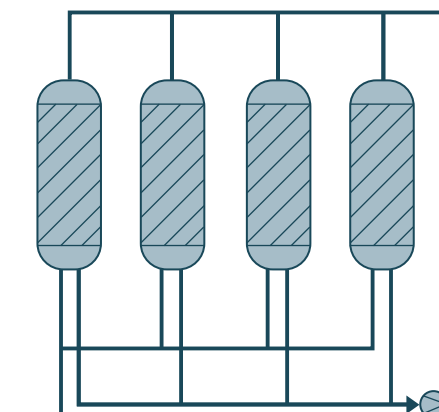
Power & heat distribution



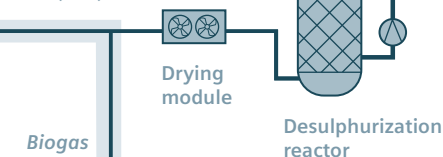
Hygienization



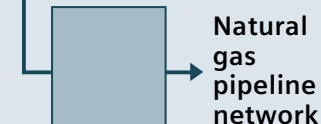
Biogas treatment



Pressure swing adsorption unit (PSA)



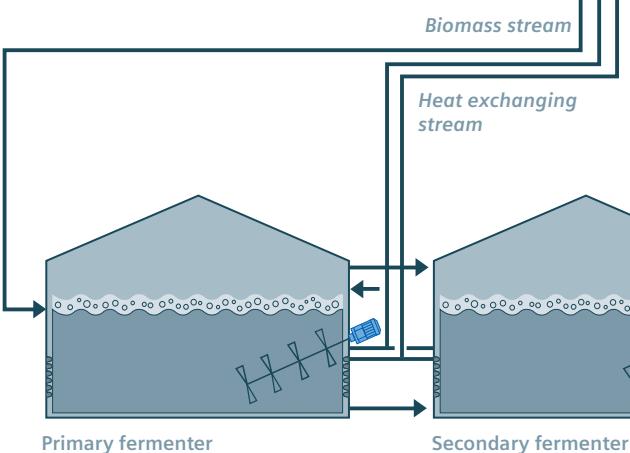
Feed in biogas



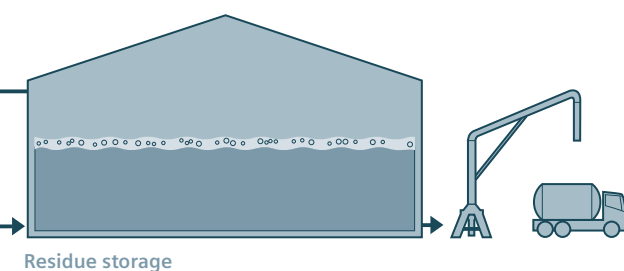
Flare



Fermentation



Storage



Customized solutions for every chemical process

Consistent quality and reliability – Paints and coatings

BOSS paints, a family-owned paint manufacturer and seller based in Beveren-Leie, Belgium, decided it was time to upgrade their equipment in new installations. Having had a previous positive experience with a Siemens PLC, they turned immediately to Siemens for instrumentation.

Within their high-density polyethylene storage tanks, the biggest challenge is maintaining very strict operating parameters to achieve exact dosing – which ultimately determines paint quality. SITRANS F C Coriolis and F M electromagnetic flowmeters fulfill this demand by measuring with exceptional accuracy. Additionally, all instruments must be resistant to the chemicals that are pumped from the storage tanks to the production site. A wide variety of products within the SITRANS P portfolio meet this requirement and are used to measure related pressure and level applications.

Both BOSS paints and their OEM supplier, CGK, have experienced that Siemens provides in-depth project consultation to help select the ideal devices for their demanding applications. The Siemens devices thus fit perfectly into their corporate culture.

Key customer benefits

- Chemical-resistant devices available as part of the standard Siemens instrumentation portfolio
- Low maintenance requirements and reliable operation ensure exact dosing and continuous production flow
- Consistent performance provides ongoing proof of quality and value

Complete process package – Biogas

The German biogas expert Arnold Blume Bioenergie GmbH chose a comprehensive instrumentation package from Siemens for their plant in Rhinow, which is operated with corn and grass silage as well as liquid manure.

The quantity in the gas collector is measured using a SITRANS P differential pressure transmitter specially designed for very low pressures. A SITRANS F M electromagnetic flowmeter records the liquid manure flow and a SITRANS T S temperature sensor provides exact measurement in the fermenter. Biogas plants also require various level measurements in a wide range of physical and chemical conditions. Accordingly, the whole SITRANS L level portfolio is used – including ultrasonic, radar, capacitive and hydrostatic technologies.

The experts in Rhinow all agree: the efficiency and cost-effectiveness of a biogas plant increases with a greater degree of automation. The integrated Siemens devices allow operators to measure the processes securely and precisely, making them transparent and optimizing performance.

Key customer benefits

- Complete process instrumentation portfolio that fulfills all requirements of a biogas plant
- Easy project handling with only one partner for instrumentation
- Cost efficiency, performance and reliability in order to facilitate automation in plants of any size





Continuous, safe and efficient operation – Basic chemicals and intermediates

Evonik is one of the leading global manufacturers of specialty chemicals. After an unfortunate accident in their chemical plant in Marl, Germany, Evonik took up an ambitious project to restore normal operations in record time. They chose to work with Siemens, a reliable and experienced partner who understood the complexities of a chemical plant and could deliver the project quickly. A project coordinator from Siemens ensured timely ordering, manufacturing, factory acceptance testing and delivery of 150 SITRANS P DS III transmitters along with complete technical documentation despite several last-minute changes. This was considered a benchmark project within the chemical industry during that time period.

Several years later, Evonik faced a new challenge: improving the efficiency of their tube bundle reactor operation. Siemens worked out a solution based on the state-of-the-art SITRANS TO500 multipoint temperature measurement system, which operates with fiber-optic technology. After months of testing, Evonik confirmed the results to be in line with expectations. This solution helped to reduce consumption of the expensive catalyst and also considerably reduced plant downtime, which was otherwise unavoidable when the catalyst needed to be refilled.

Key customer benefits

- SITRANS P DS III ensures reliable pressure measurement in critical safety loops
- SITRANS TO500 not only provides fast, accurate and real-time temperature profiles, but is also easy to install and maintain as the measurement lance is extremely light and foldable
- Reliable partner with decades of experience in providing measurement solutions in the chemical industry

Long-term collaboration – Ethylene

A petrochemical company with facilities in Scandinavia and other parts of Europe awarded Siemens a long-term framework agreement including instrumentation and analytics products, project engineering, training and field service. The initial agreement contained basic service and commissioning – but a later upgrade is planned to add maintenance, recalibrations and remote services.

The first projects have been supplied with SITRANS P DS III and P500 pressure transmitters, SITRANS TS500/TH300/TF temperature measurement products, SITRANS LG270 guided wave radar (GWR) transmitters as well as third-party products including venturi flowmeters and GWR reference chambers. Centralized project management and documentation from a single Siemens contact partner ensures compliance with the customer's engineering standards.

After a short run-up time, the first projects were engineered and delivered in time and the customer is pleased to be able to complete their plant turnaround as planned.

Key customer benefits

- Large and growing product portfolio for the chemical industry
- Ongoing support and service during commissioning and plant startup
- Single supplier of all process instrumentation



Our portfolio has you fully covered

Siemens brings you a broad spectrum of process instrumentation, analytics, communication and automation solutions suitable for virtually every chemical application.

Flow

Electromagnetic	Coriolis	Clamp-on ultrasonic	Vortex

Reliable SITRANS F flowmeters are capable of meeting even the toughest challenges by monitoring gases and liquids of varying consistencies.

Pressure

Transmitters	Remote seals

Siemens offers a wide range of accurate, robust and intuitive devices for all types of pressure measurement.

Temperature

Sensors	Transmitters	Multipoint

SITRANS T temperature devices are designed to support all common RTDs, thermocouples, resistance and millivolt sensors.

Level

Radar	Guided wave radar	Point level	Ultrasonic

Whether you need to detect liquids, slurries, bulk solids, foam or interfaces, Siemens provides the right level measuring technology for all types of applications.

Positioner

The SIPART PS2 electropneumatic valve positioner offers extensive diagnostic functions and minimal loss of process air.

Weighing

Static weighing	Dynamic weighing	Integrators

SIWAREX PLC-based weighing electronics allow for direct integration into the Siemens range of PLCs, providing unparalleled flexibility and ease of use.



Process protection

Acoustic sensors



Motion sensors



Siemens non-contacting sensors for process protection comprise a highly reliable early warning system.



Gas analysis

Continuous gas analytics



Gas chromatography



Gas analysis instruments from Siemens cover a wide range of measuring tasks and are the ideal solution for process and quality control.



Industrial communication

Switching and routing



Wireless communication



Remote communication



Network security



Siemens industrial-grade communication solutions enable secure, reliable and high-availability network connectivity in harsh environments.



WirelessHART communication

Adapters



Transmitters



With Siemens WirelessHART solutions, users profit not only from a lower total cost of ownership, but also from significantly improved process diagnostics, productivity and security.



Automation and engineering solutions

Process control systems



Plant engineering



Simulation



Operations intelligence



To maximize efficiency and competitiveness in an increasingly digitalized world, Siemens provides innovative solutions for process control, plant engineering, simulation and operations intelligence.