wieland

COMBUSTION TECHNOLOGY

HELLO **COMBUSTION**

Solutions for safe, decentralized control
of industrial furnaces.

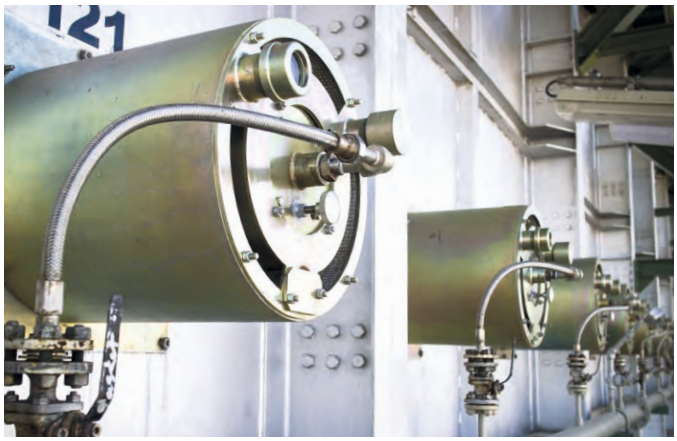
+ COMPONENTS
+ REQUIREMENT PROFILES
+ APPLICATION SOLUTIONS

“Our safe control systems for furnaces are particularly notable for their trustworthy, solution-oriented, and future-proof engineering.”

MARKUS KICK

Business Development Manager for Combustion Technology

HELLO **COMBUSTION**



TAILORED SOLUTIONS FOR COMBUSTION TECHNOLOGY.

As your trusted and experienced partner, Wieland offers reliability, efficiency and a focus on the extreme demands of product performance to the market through a robust, industry-leading portfolio. From efficient safety solutions, to smart products for control cabinets, to customized concepts for a variety of combustion applications, Wieland is sure to have the solution that's right for you.

With the constant evolution of combustion plant requirements, from large scale industrial operations to process furnaces, important measures are required to ensure the optimization or upgrading of existing systems with the latest combustion and associated safety components. As trusted leaders, we advise and support plant manufacturers with technical documentation, a comprehensive risk analysis during the planning phase, and global TÜV/DEKRA acceptance inspections after the completion of construction. At the heart of all of this however, is our practical safety solutions and control cabinet components. Thanks to standardized, open interfaces, your project can be designed according to your exact needs.

INDUSTRY

All our system components are tailored to the requirements in combustion technology.

SOFTWARE

We offer our license-free samos® PLAN 6 software tool for diagnostics and data analysis in a combustion operation.

APPROVALS

All our components have international approvals and can be used anywhere in the world.

SOLUTIONS FOR PLANT CONSTRUCTION IN:

+ STEEL INDUSTRY
+ GLASS INDUSTRY
+ CERAMICS INDUSTRY
+ CHEMICAL INDUSTRY
+ CEMENT INDUSTRY
+ REFUSE INCINERATION
+ PAPER MANUFACTURING
+ TEXTILE INDUSTRY
+ AND OTHERS

wieland

SYSTEM **SOLUTIONS** FOR ANY **COMBUSTION** APPLICATION.

Our system solutions offer additional advantages that will enable you to win new projects and impress your clients with optimal performance. To allow your boilers, melting tanks, or blast furnaces to fire safely you need confidence above all else, and we can give you that with our components at any stage in the life of your machine or process!

SAFETY COMPONENTS

With our safety-related products, we offer reliable components of the highest quality, which make a decisive contribution to industrial safety in the operation of modern combustion plants.

- License-free safety controller
- Safety and expansion relays
- Safety sensors
- Multifunctional safety modules

INTERFACE COMPONENTS

Our interface components are the link from the field to the sensor/actuator level and through to a wide variety of control and visualization levels. We enable safe access, data transportation, and communication with many different protocols in the Industry 4.0 age.

- Industrial Ethernet switches (managed, unmanaged)
- Power over Ethernet switches
- WLAN access points
- Industrial mobile routers
- HMI touch panels
- Decentralized I/O systems and fieldbus couplers

CONTROL CABINET COMPONENTS

Our control cabinet components reveal their unique strength every time current flows and signals are processed. With our wide range of relays, power supply components, and overvoltage protection units as well as our interface modules and analog isolation amplifiers, we are the full-service provider for your control cabinet.

- Power supplies
- Coupling relays and solid-state relays
- Time and monitoring relays
- Analog measuring and isolation amplifiers
- Uninterruptible power supply

RELEVANT **STANDARDS.**

INDUSTRIAL THERMOPROCESSING PLANT

Definition:
Machinery Directive

Applicable directive:
2006/42/EC

Applicable standard:
EN746-2

Electrical requirement:
EN60204

Equipment as per:
Type-tested or SIL/PL

STEAM BOILER/ THERMAL OIL HEATER

Definition:
Pressure Equipment Directive

Applicable directive:
2014/68/EU

Applicable standard:
EN12592/12953 and EN4754

Electrical requirement:
EN50156-1/2

Equipment as per:
Type-tested, safety loop suitable as per SIL incl. additional requirements

ADVICE + SUPPORT

Our experts will be on hand with help and advice at every stage of your project – expertise you can rely on. We offer sound, independent advice, especially in relation to the modernization of heating systems or combustion plants.

- Safety service for all processes, from start to finish
- Support with risk analyses and conformity assessments
- Training in functional safety

SYSTEM **COMPONENTS** FROM A–Z.

CONTROL LEVEL

PLANT INTERFACE

DECENTRALIZED LEVEL

SELOS + FASIS

Our range of terminal blocks, with the three connection techniques (screw, tension spring, and push-in), offers the right choice for any installation task.

WIPOS

Compact power supply in a robust design for harsh environments and a wide temperature range.

FIELD LEVEL SENSORS/ACTUATORS

From the terminal to the fail-safe heating controller to the World Wide Web with IoT and VPN, we address a huge variety of process technology requirements. With our decentralized solutions we connect the control level to the field level.

WIENET

The industrial Ethernet switches, WLAN access points, and industrial mobile routers ensure a secure connection to the internet through data encryption over VPN in an entirely protocol-independent manner. They create the foundations for Industry 4.0 and increase availability thanks to predictive maintenance or live support for personnel on machines.

SAFE RELAY

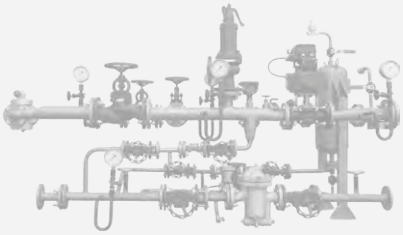
Universal safety relays in a compact form with safe internal logic for monitoring valves and limit switches. Can be used up to PLe/category 4 or SIL3.

SAMOS® PRO

The safety controller with maximum performance capability in confined spaces with integrated industrial Ethernet protocol and possible use of additional gateways.

HMI ECO TOUCH PANELS

With the HMI panels for simple human-machine communication, you will never lose sight of your process and can intervene to control it via the touch user interface.

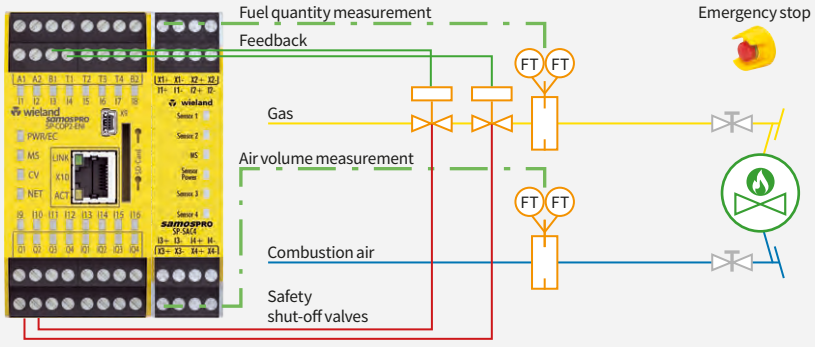


RATIO MONITORING.

SAFETY FUNCTION

Fuel quantity measurement
Ratio monitoring up to SIL3/PLe

Basis: EN 746-2, EN 50156-1/2



REQUIREMENT

The ratio between the air mass flow and the fuel mass flow must always be such that it allows safe operation and ensures a functionally safe and stable combustion process on every single burner throughout the area.

APPLICATIONS

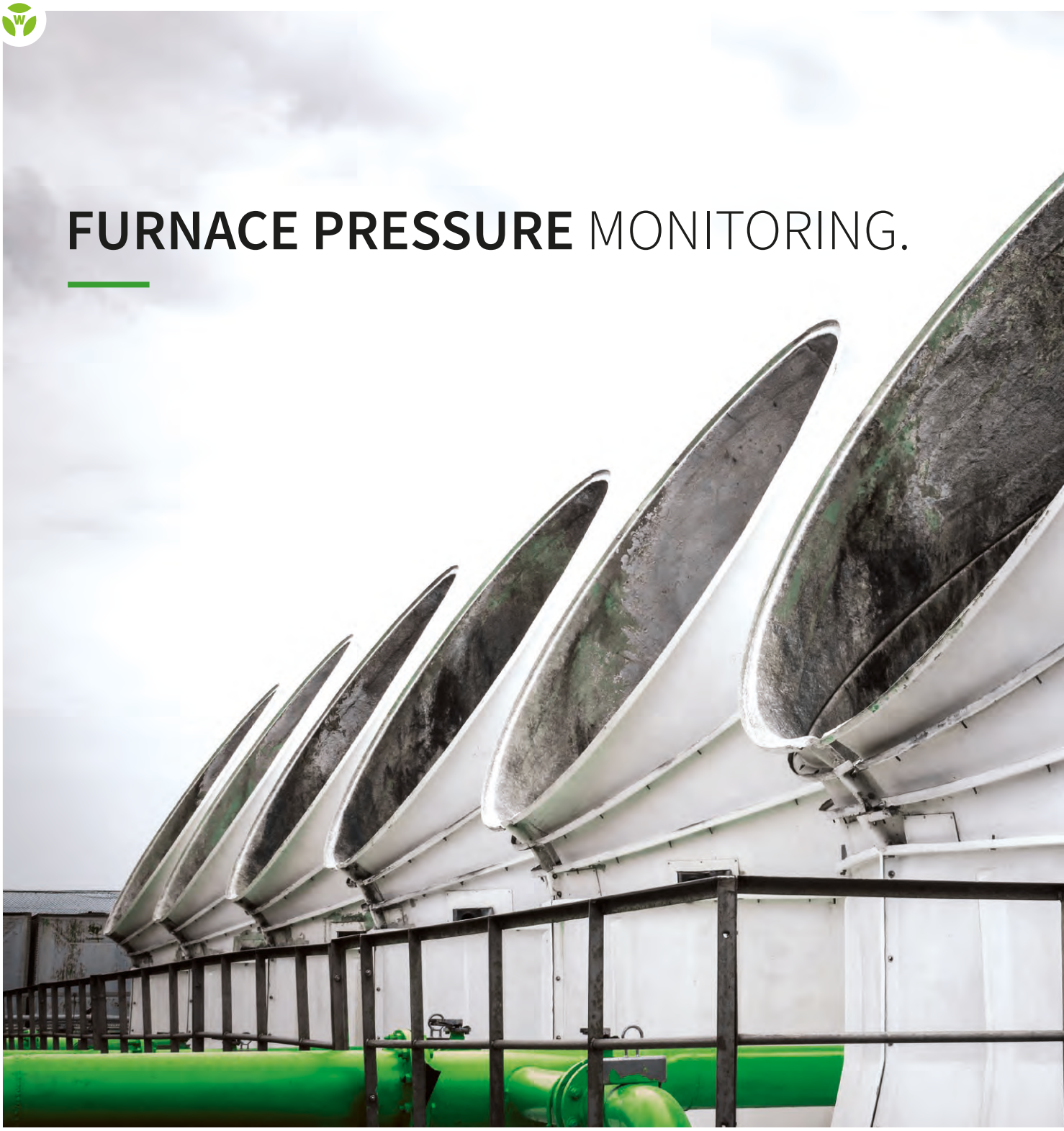
Monitoring of:

- Fuel conditions for low and high temperature plants
- Fuel conditions for steam boilers and thermal oil heaters
- Fuel conditions on general incineration and drying plants in various chemical processes

ADVANTAGES

- License-free implementation in samos® PRO COMPACT
- Ready-built “ratio monitoring” function module
- Ratio monitoring safety function can be implemented up to SIL3/PLe
- Any transducer for measuring air volume or fuel quantity as well as any differential pressure monitor can be analyzed in 2/4-wire technology using 0/4..20 mA
- Scaling/dimensioning using absolute and real values is possible

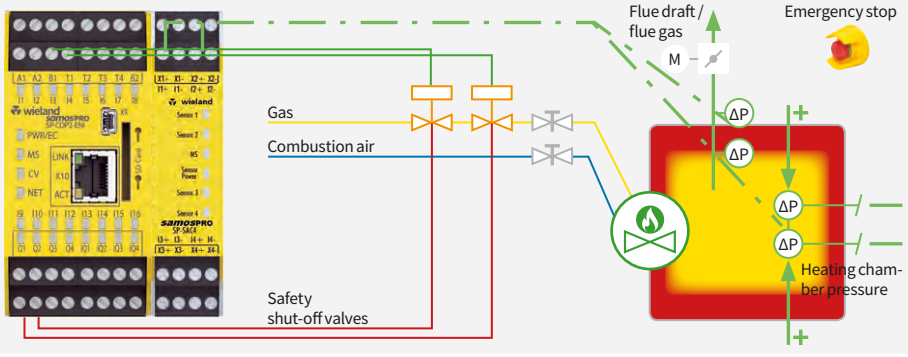
FURNACE PRESSURE MONITORING.



SAFETY FUNCTION

Furnace pressure measurement
Ratio monitoring up to SIL3/PLe

Basis: EN746-2, EN50156-1/2



REQUIREMENT

The minimum and maximum pressure inside the combustion chamber and the minimum permissible exhaust air flow or flue draft must always be within safe limits. Given that both are close together physically, they must be evaluated on an application-specific basis.

APPLICATIONS

Monitoring of:

- Flue draft and induced draft
- Differential pressure measurements on boilers and thermal oil heaters
- Furnace pressure system or heating chamber pressure system on a wide variety of melting furnaces and blast furnaces

ADVANTAGES

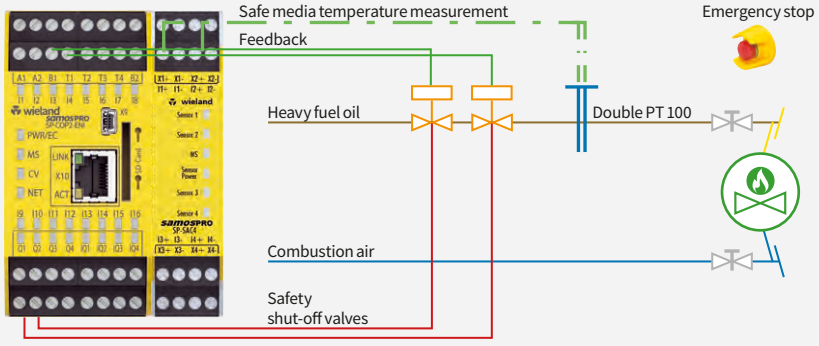
- License-free implementation in samos® PRO COMPACT
- Ready-built “safe furnace pressure” function module
- Furnace pressure safety function can be implemented up to SIL3/PLe
- No need for external potential-free measuring transducers
- Scaling/dimensioning using absolute and real values is possible

TEMPERATURE MONITORING.

SAFETY FUNCTION

Heavy fuel oil measurement
up to SIL3/PLe

Basis: EN 746-2, EN 50156-1/2



REQUIREMENT

The maximum operating temperature of the particular burner medium must be checked before starting the burner and during the process in a functionally safe manner.

APPLICATIONS

Monitoring of:

- Ambient temperatures of processes and plants
- High-temperature plants using thermocouples
- A wide variety of fuel temperatures (gases, oils, etc.) using resistance thermometers and universal transmitters

ADVANTAGES

- License-free implementation in samos® PRO COMPACT
- Ready-built “safe temperature analysis” function module
- Temperature monitoring safety function can be implemented up to SIL3/PLe
- External temperature monitors and measuring transducers are no longer needed!
- Scaling/dimensioning using absolute and real values is possible

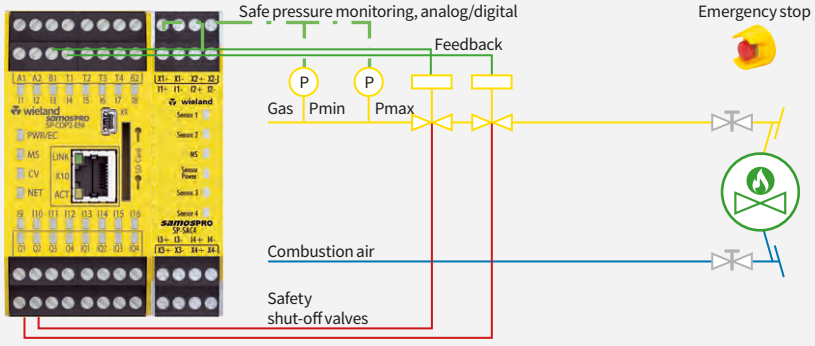
PRESSURE MONITORING.

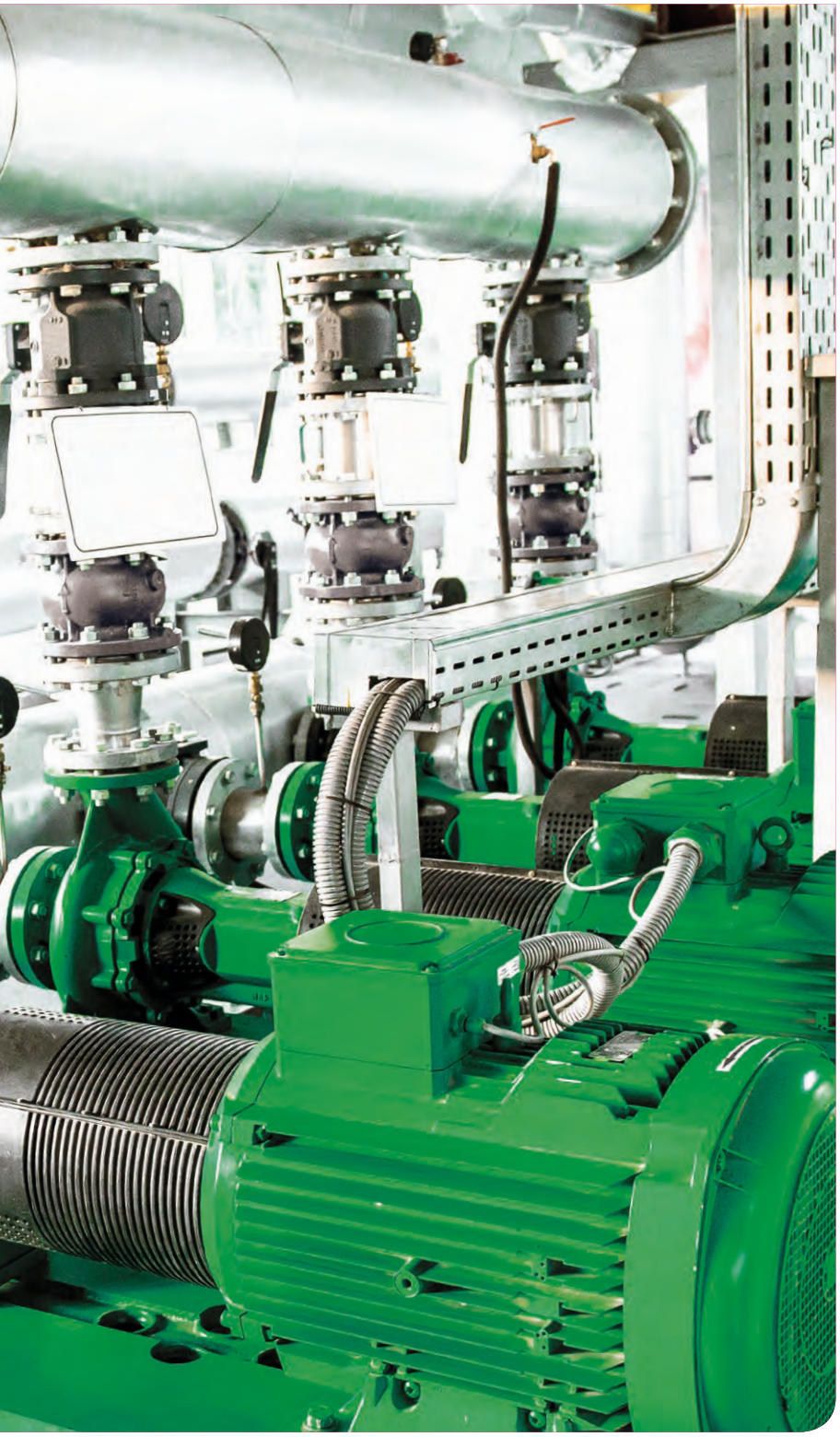
SAFETY FUNCTION

Air, gas, oil pressure monitoring up to SIL2/PLd

Safe pressure monitoring, analog/digital

Basis: EN746-2, EN50156-1/2





REQUIREMENT

The minimum and maximum permissible operating pressure of the particular burner medium must be checked before starting the burner in a functionally safe manner. Low-level cutouts for the burner medium and burner medium pressure relief devices are essential in pure pressure stations or mixed stations.

APPLICATIONS

Monitoring of:

- Fuel pressures
- Fluid pressures in cooling and hot water units
- Atmospheric and air pressures

ADVANTAGES

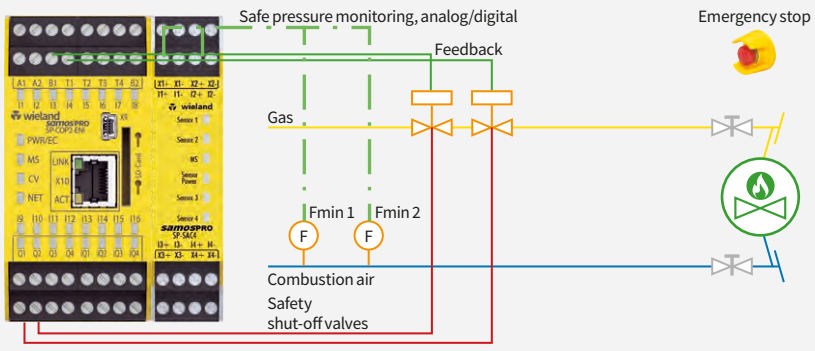
- License-free implementation in samos® PRO COMPACT
- Ready-built “safe pressure monitoring” function module
- Pressure monitoring safety function can be implemented up to SIL3/PLe
- No need for traditional potential-free pressure monitors or to increase the number of contacts, and sensors can be spared on the plants
- Scaling/dimensioning using absolute and real values is possible

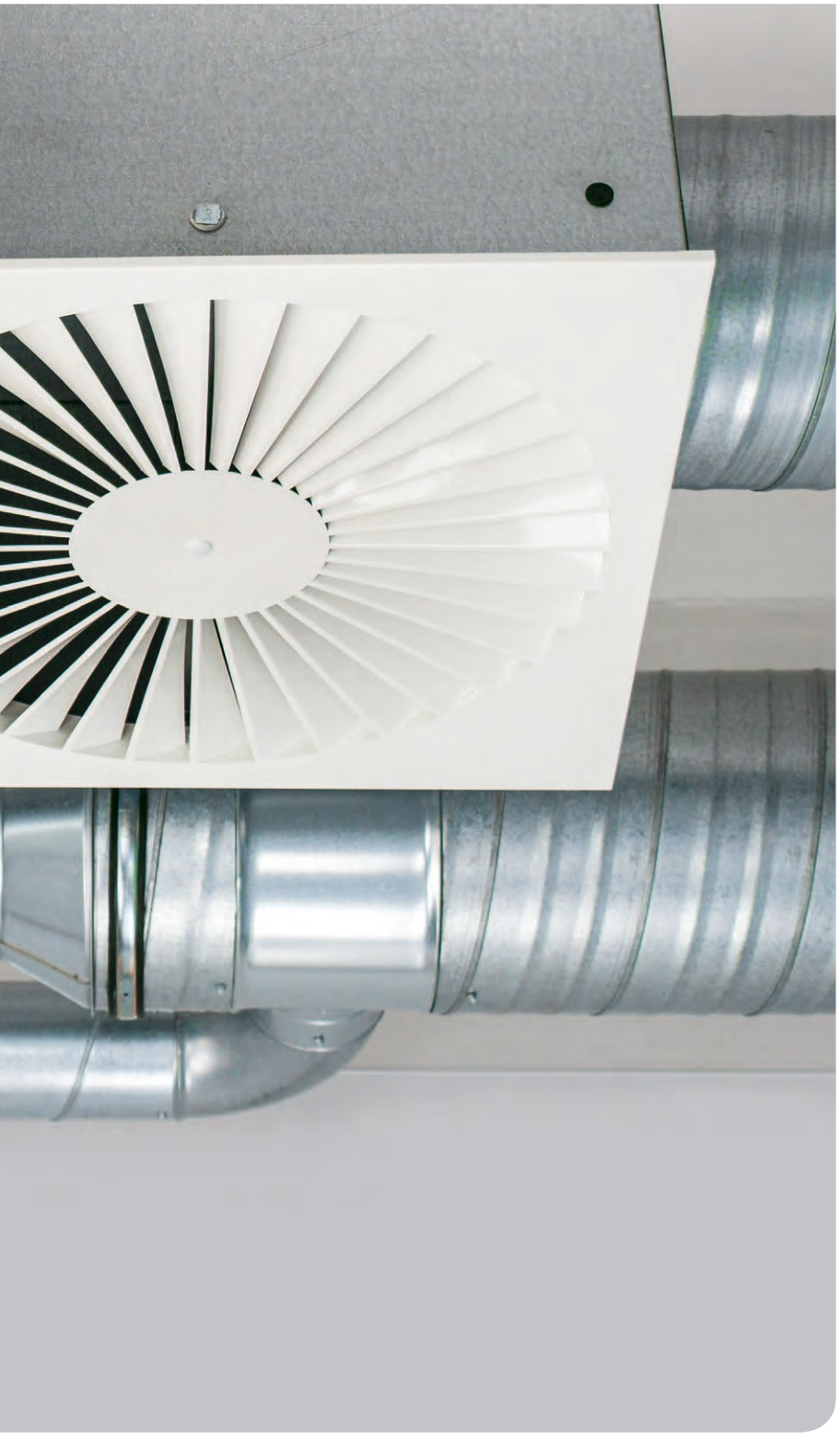
COMBUSTION AIR **FLOW** MONITORING.

SAFETY FUNCTION

Air flow monitoring
up to SIL2/PLd

Basis: EN746-2, EN50156-1/2





REQUIREMENT

Combustion processes with burners for “mechanical” flue gas evacuation must be executed with a system for monitoring adequate air flow during the pre-purge, ignition, and operation of the burners.

APPLICATIONS

Monitoring of:

- Measuring orifices and their functionality
- Filter applications and their pollution levels
- Combustion air supplies and their flow

ADVANTAGES

- License-free implementation in samos® PRO COMPACT
- Ready-built “safe flow monitoring” function module
- Flow monitoring safety function can be implemented up to SIL3/PLe
- No need for traditional potential-free flow monitors or differential pressure monitors, or to increase the number of contacts, and sensors can be spared on the plants
- Scaling/dimensioning using absolute and real values is possible

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INTUITIVELY **PROGRAMMED.** **SAFETY** INTEGRATED.

The functional safety and process of a combustion plant requires considerable operational reliability, functionality, availability, and economic efficiency.

Through customized, dedicated and readily understandable solutions, especially in the Industry 4.0 age, applications that include mechanical engineering, supply technology equipment, combustion plants and machinery all benefit from a simplified approach that might otherwise get lost within a large program that is hard to understand.

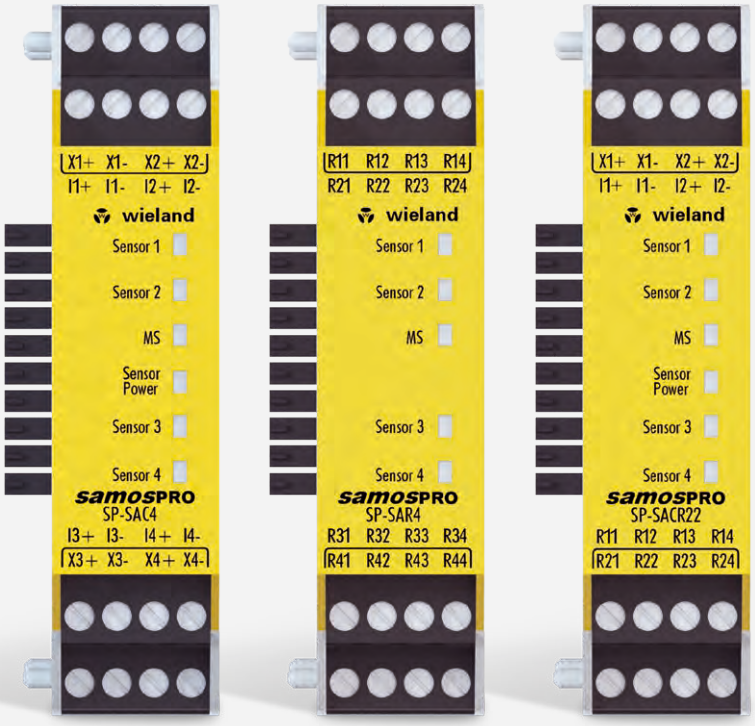
Our safety PLC samos® PRO COMPACT and its gateways can communicate with any kind of control and visualization system or any protocol thanks to its decentralized approach.
With our safety controller samos® PRO COMPACT, we offer a license-free, open controller with multiple fieldbus capabilities, which can be used to easily implement complex safety functions.

Wieland is a strong, trusted partner for combustion technology, its operators, and suppliers!

YOUR BENEFITS

+ Customized solutions
+ Automatic verification report with circuit diagram
+ Simultaneous communication with up to 3 fieldbuses is possible
+ Very easy programming for complex processes
+ Combustion library for analog, digital, and potential-free monitoring

NEW!
ANALOG **SAFETY** MODULES.



SP-SAC4
Current

SP-SAR4
RTD

SP-SACR22
Current/RTD

- Up to four analog inputs can be connected in 2/4-wire technology cost-effectively and universally
- Quick optical diagnostics and fault indication directly on the modules
- Transmission of all raw values and ongoing situation analysis within samos® PLAN 6
- Real mathematical functions can be executed
- Transmission/mapping of actual analog values to higher-level controllers as well as HMI panels
- Dimensioning and scaling of current signals into physical units
- Safety functions can be implemented up to SIL3/PLe

CONNECTABLE SENSORS/TRANSMITTERS:

Strength · Temperature · Pressure · Flow · Distance/angle · Measuring transducer · Flow rate/quantities

SAMOS® PLAN 6 PROGRAMMING SOFTWARE.

Intuitive + flexible + license-free.

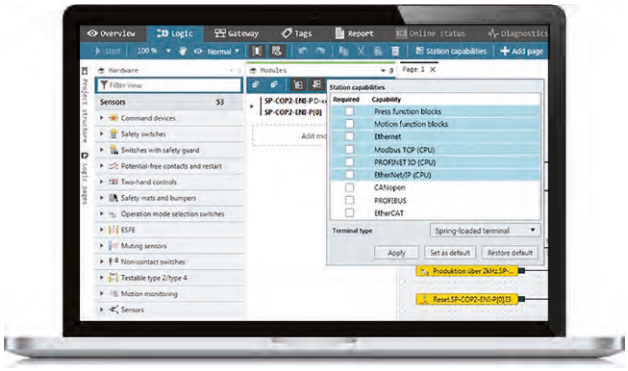
Our samos® PLAN 6 programming software for the samos® PRO COMPACT series now makes programming even easier. samos® PLAN 6 assists PLC programmers, electrical design engineers, and developers with the planning, validation, verification, and documentation of the safety application.

+ Intuitive operation through automatic hardware configuration
+ Fault-free commissioning through integrated simulation and logic analysis
+ Comprehensive library with TÜV-certified function blocks
+ Convenient operation with multiple screens as well as docking and undocking window applications
+ Fast commissioning of the machine through forcing
+ Configurable project documentation at the touch of a button (one-click report)
+ Many other function blocks, tailored and absolutely customer-oriented, are possible

INTUITIVE CONFIGURATION

samos® PLAN 6 offers automatic hardware configuration.

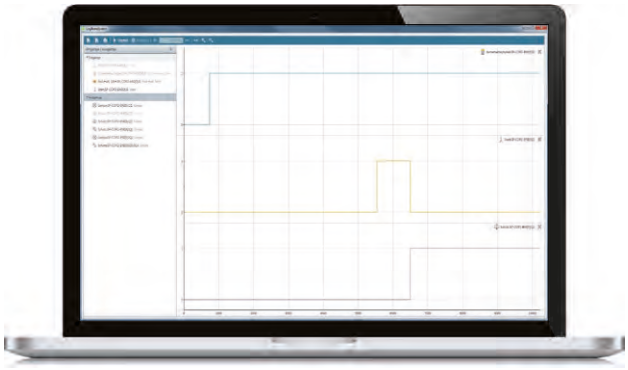
- Easy introduction to programming
- No detailed product knowledge required
- Selection of features instead of modules
- Configuration & programming in one step “on the fly”
- Less engineering effort



FASTER VALIDATION

In online mode with oscilloscope function, you can quickly validate, verify, and document your safety function directly on-site.

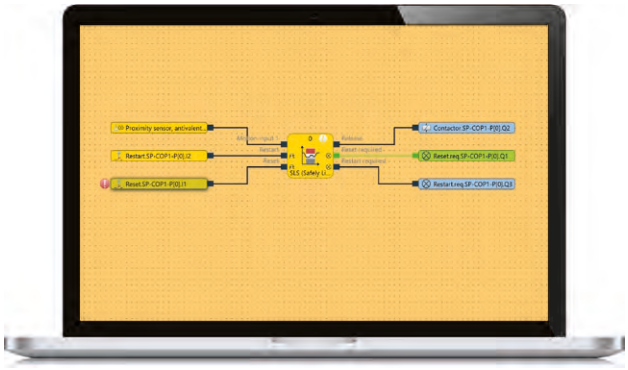
- Online recording on a laptop
- Long-term recording for troubleshooting
- Validation and verification on-site
- Fast documentation via PDF export



QUICK COMMISSIONING

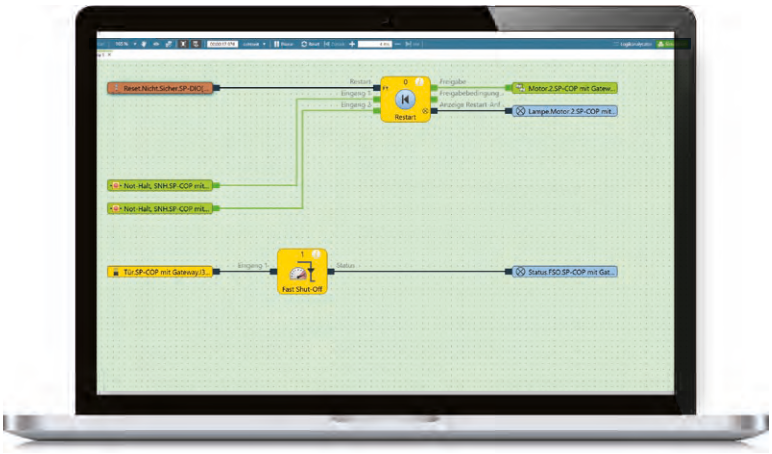
Simply emulate sensors not yet in place with the forcing function.

- Convenient commissioning with forcing for missing sensors
- Time-limited forcing up to 8 hours
- Minimal errors at shift change
- Fast error rectification thanks to diagnostics messages



WITH **SAMOS®** PLAN 6 SAFE **COMBUSTION.**

samos® PLAN 6 enables intuitive and flexible parameterization for analog sensors in combustion technology. With selectable sensor dimensioning, work can be carried out with clarity in the desired physical unit.
Numerous function modules have been prefabricated according to product standards (EN746-2) and can be customized. There are modules available to choose from for pressure, temperature, and flow for many applications.



MINIMUM ANALOG PRESSURE FUNCTION BLOCK

- Available preset in the combustion library
- Monitoring for any fall below an analog pressure or differential pressure
- Reset function as well as reset alert
- Up to 4 limit values can be set
- Can be physically dimensioned and scaled
- Hystereses configurable relatively and absolutely
- Time-limited mute and bypass functions selectable

ANALOG RATIO FUNCTION BLOCK

- Available preset in the combustion library
- Monitoring for any fall below or exceeding of a limit ratio, or window monitoring of a limit ratio
- Reset function as well as reset alert
- Can be physically dimensioned and scaled
- Hystereses configurable relatively and absolutely
- Factorized ratio input
- Time-limited mute and bypass functions selectable

SERVICES FOR THE **COMBUSTION** INDUSTRY.

No matter where in this world, our international, committed team will always be there for you. Our incentive is to increase productivity and availability for your processes.

As an industry-leader in “safety & monitoring” for machine building and plant engineering, Wieland supports client projects with the implementation of safety components, even during the planning phase and as experts in this field, we include all aspects of design, function and monitoring. In particular, we view ourselves as an independent, expert consultant for major or minor changes to your supply technology or electronic heating equipment.

We offer training courses and seminars that deal specifically with thermoprocessing plants as part of our safety service, among other services we provide to clients.

Get in touch with us today to learn more! Our trained, expert staff is looking forward to discussing the details with you during an initial consultation.

WE ARE WITH YOU ALL THE WAY

- From the first idea through to concept development
- From the construction through to the commissioning
- From the risk analysis through to the technical documentation

+ CONCEPTION
+ CALCULATIONS
+ OPTIMIZATION
+ REALIZATION
+ PRODUCTION
+ DELIVERY

SUCCESS **STORY.**

HORN GLASS INDUSTRIES

OUR CLIENT

HORN Glass Industries AG, a German specialist in the development and supply of complete glass melting technology, is a partner for solutions in the glass industry worldwide. With more than 130 years of experience in the field of glass melting technology, HORN has extensive experience in the development, manufacture, and delivery of various types of melting tanks for the production of domestic glass, containers, cast glass, flat glass, solar glass, and technical glass products.

The range of products and services covers not just supply equipment, such as combustion systems, electrical measuring and control technology, and modern process control systems of the highest level, to name just a few, but also the design, construction, and on-site service.

www.hornglass.com

THE TASK

Our client wanted a decentralized safety-oriented controller for its plant, capable of controlling all the safety functions within a gas mixing skid. The products needed to be absolutely reliable, field-tested, and furnished with international certifications.

OUR SOLUTION

+ samos® PRO COMPACT satisfies all functional safety directives and standards
+ It can communicate with all major fieldbus systems
+ It is intuitive and easy to use
+ Suitable software is license-free

“Wieland offers absolutely tried and tested solutions for our industry which we unreservedly recommend!”

MATTHIAS SCHELL

CSE-Certified Safety Engineer by SGS-TÜV Saar

Functional Safety & Technical Documentation at HORN Glass Industries AG

Nitrogen-hydrogen mixing skid, with safety technology monitored decentrally by samos® PRO COMPACT

samos® PRO COMPACT with PB-DP connection, I/O modules for communication with the control system and potential-free, linkable expansion relays

YOUR **CONTACT.**

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INFO **TO GO.**

OUR WIELAND BROCHURES SERVICE

To make life easier for you, we offer all our product catalogs and industry brochures in the downloads section of our website.

https://www.wieland-electric.com/en/download

Further information and a product overview is available here:

INTERFACE CATALOG
Solutions for the Control Cabinet
Art. No. 0800.1

WIPOS CATALOG
Pure Power
Art. No. 0821.1

SAFETY CATALOG
Safe System Solutions for Automation Technology
Art. No. 0860.1

DIN RAIL TERMINAL BLOCKS CATALOG
DIN Rail Terminal Blocks with Screw, Tension Spring, and Push-In Connection Technologies
Art. No. 0500.1

SERVICE CATALOG
Services for the safety of your machines
Art. No. 0870.0

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