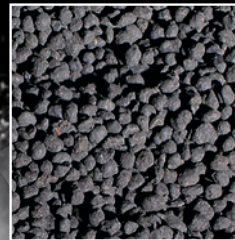


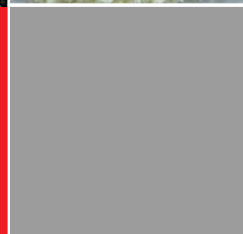


# PREVENTIVE EXPLOSION PROTECTION

Monitoring | Control | Inerting



**TURNKEY  
SYSTEMS**  
—  
**MADE IN  
GERMANY**





# PREVENTIVE EXPLOSION PROTECTION

Explosions and fires create a significant risk to people, the environment and production.

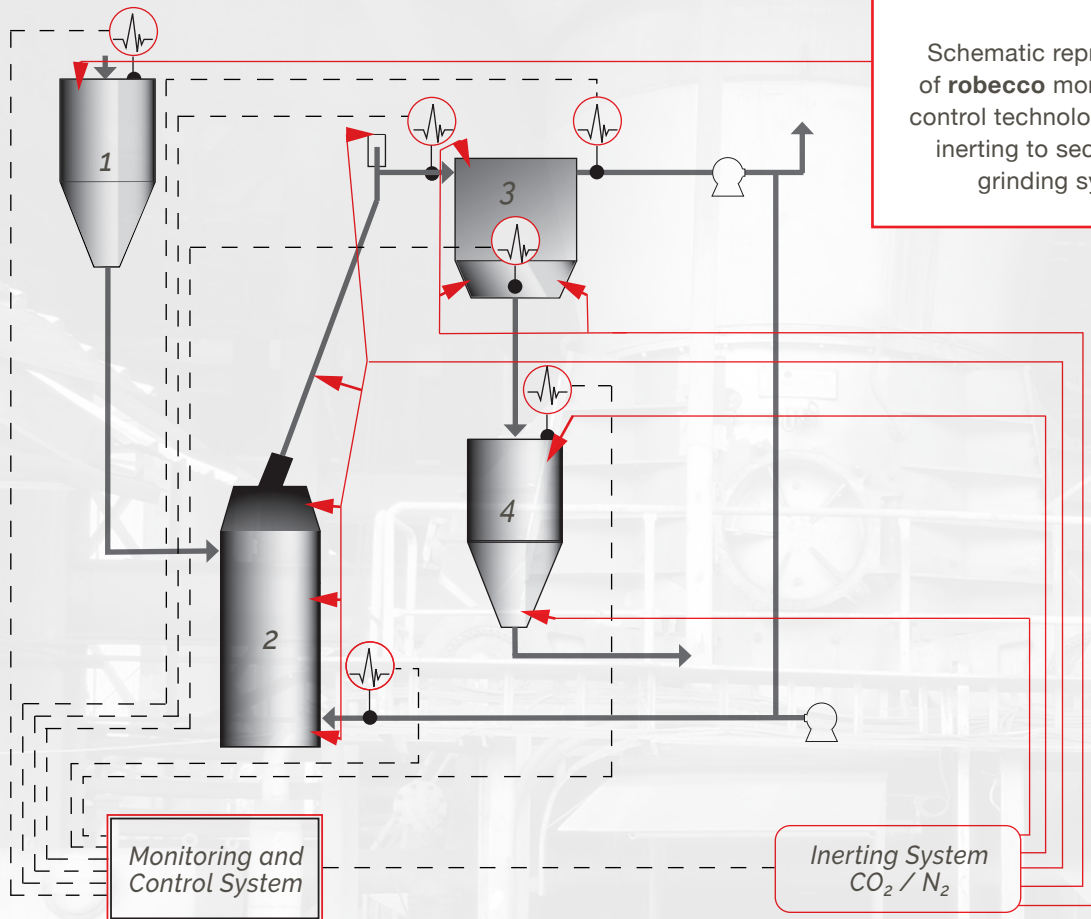
With over 25 years' experience, robecco has become a specialist in preventive explosion protection and can provide complete packages of equipment for monitoring, control and CO<sub>2</sub> / N<sub>2</sub> inerting systems from a single source and one interface according to the relevant international and European norms and rules. The company maintains long-established business relationships with customers worldwide providing preventive explosion protection solutions and automation services for the integration of solutions into customers' systems.



# MONITORING, CONTROL & INERTING CONCEPT

## EXAMPLE CONCEPT

Schematic representation of **robecco** monitoring and control technology, including inerting to secure a coal grinding system.



1. Raw coal silo
2. Mill
3. Bag filter
4. Coal dust silo

- CO/O<sub>2</sub>-Measurement
- ◀ Injection point CO<sub>2</sub> / N<sub>2</sub>

### AREAS OF APPLICATION:

- Coal grinding / storage
- Sewage sludge processing
- Biomass
- Power plants
- Minerals
- Cement industry
- Chemistry
- Food industry

## WHAT DOES INERTING MEAN?

The target of inerting is the reduction of O<sub>2</sub> in explosive atmospheres. Inert gases like CO<sub>2</sub> / N<sub>2</sub> have a low level of reactivity and reduce the Oxygen below the limiting Oxygen concentration.

By using robocco products, gas and dust explosions are prevented effectively. For all components and systems the regulations of ATEX and CEN 15281 are complied with.

robocco provides turnkey, automatic CO<sub>2</sub> / N<sub>2</sub> - inerting systems including monitoring and control.

## robocco PREVENTIVE EXPLOSION PROTECTION COMPONENTS

**HIGH-PRESSURE  
CO<sub>2</sub>-  
INERTING**

robocco **INERT**

**LOW-PRESSURE  
CO<sub>2</sub>-  
INERTING**

robocco **INERT**

**HIGH-PRESSURE  
N<sub>2</sub>-  
INERTING**

robocco **INERT**

**robocco  
GAS ANALYSER  
SYSTEM**

robocco **GAS**

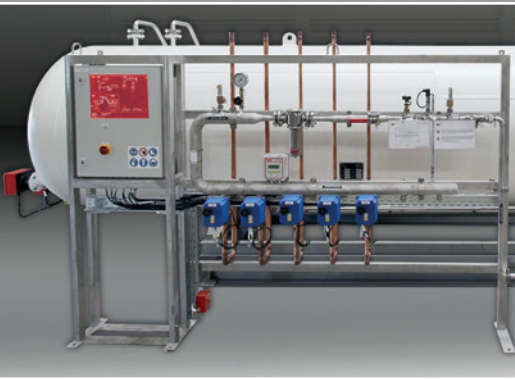
**robocco  
SECURE CENTER**

robocco **RSC**



**robocco  
provides  
SAFETY**





Valve station



CO<sub>2</sub> high-pressure tank



Visualised operation

## Technical characteristics:

### Operating data inert gas tank:

- Operation pressure: 50 - 70 bar
- CO<sub>2</sub>-temperature: +15/+28° C
- Max. pressure: 80 bar

### Pressure control:

- Pressure build-up by ambient temperature and tank-heating elements
- Water-sprinkling system or installation in an air-conditioned room

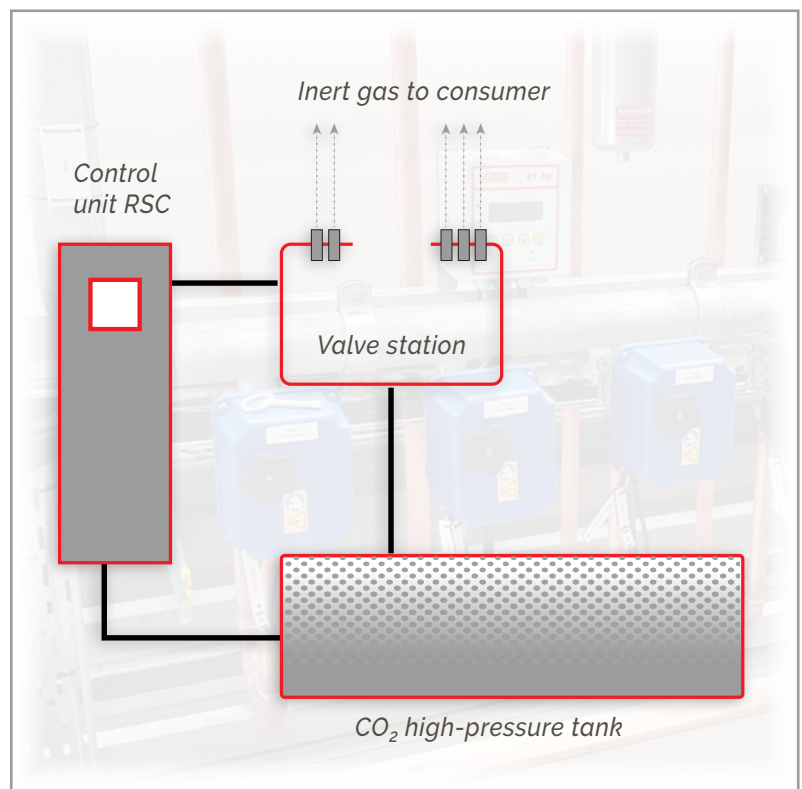
### Gas generation:

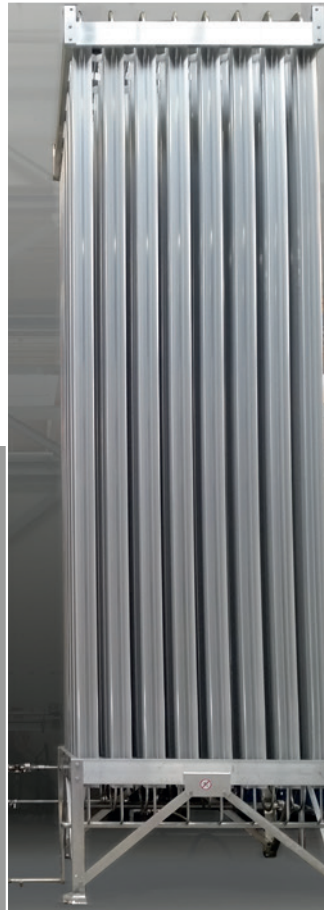
- With highly-pressurised gas directly
- Electrical tank-heaters

### Refilling:

- With road tanker and integrated high-pressure pump
- Separate high-pressure pump

HIGH AMOUNTS OF  
CO<sub>2</sub> -GAS DIRECTLY  
FROM THE TANK



CO<sub>2</sub> low-pressure tank

Vaporiser

#### Technical characteristics:

##### Operating data-tank:

- Operation pressure: 22 - 23 bar
- CO<sub>2</sub>-temperature: -16/+15° C
- Max. pressure: 25 bar

##### Insulation:

- Vacuum insulation

##### Pressure control:

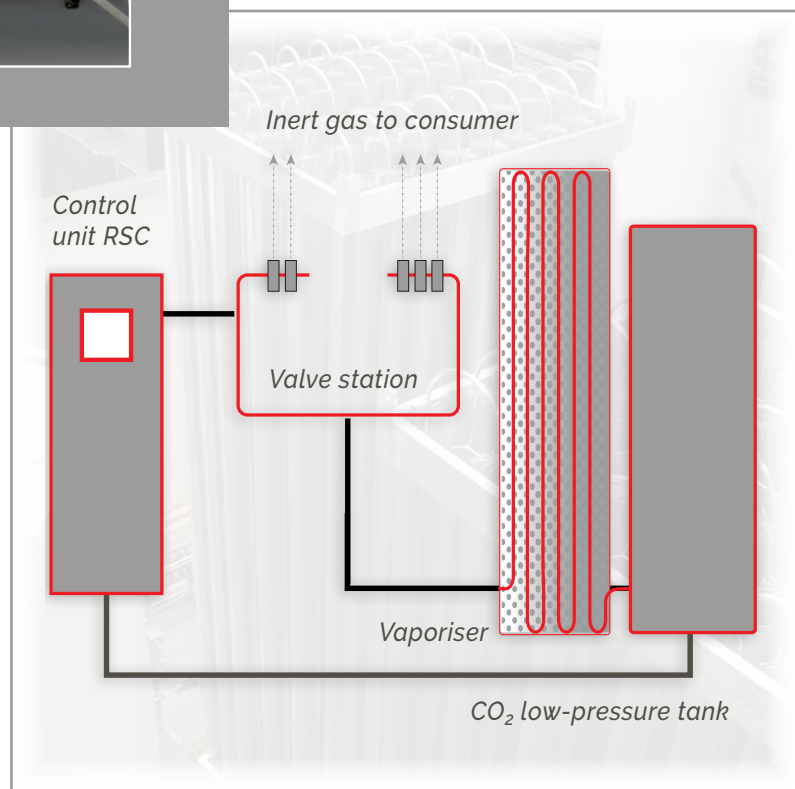
- Pressure build-up heater
- Cooling by refrigeration unit

##### Gas generation:

- Liquid CO<sub>2</sub> storage in vertical tanks
- Gas generation with ambient air vaporiser
- At lower ambient temperatures <+5°C heated with integrated electrical heater

##### Refilling:

- With road tanker and integrated pressure pump





Valve station

N<sub>2</sub> high pressure bottles

#### Technical characteristics:

##### Operating data N<sub>2</sub> bottles:

- Very compact packs
- Operating-pressure 200–300 bar
- N<sub>2</sub> packs with 8–12 bottles

##### N<sub>2</sub>-Storage:

- N<sub>2</sub> packs on rental basis or directly-owned

##### Pressure control:

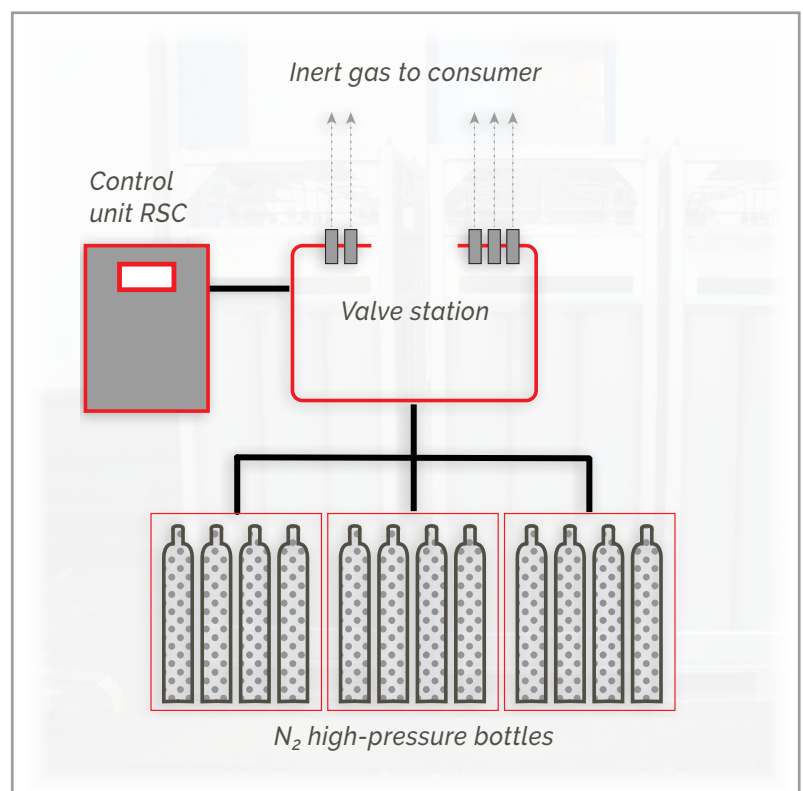
- No direct pressure control necessary

##### Gas generation:

- N<sub>2</sub> gas directly available in N<sub>2</sub> bottles

##### Refilling:

- By a local gas supplier



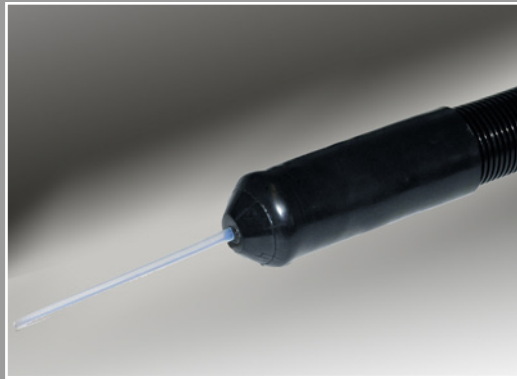
N<sub>2</sub> GAS AVAILABLE  
DIRECTLY FROM THE  
PACKS







Gas analyser cabinet



Sample line RSL



Gas analyser RGA CGM-5

#### Technical characteristics:

- Measurement systems, monitoring and control units for different gases (e.g. O<sub>2</sub>, CO, CH<sub>4</sub>, etc.)
- Extractive gas sample systems with sample probes and sample lines
- Measurement of process safety-related parameters
- Flexible sample lines
  - lengths
  - power
  - heated and non heated version
- ATEX certified equipment for explosive areas

#### Service:

- Full Services
  - Project engineering
  - Manufacture
  - Commissioning and
  - Training

robecco reliably undertakes the measurement of safety-related parameters during the operation of explosive processes. Oxygen, CO and CH<sub>4</sub> measurements are indispensable for operating inert gas systems. The use of safety-related parameters is essential for applying preventive explosion control. Taking action requires information on the limiting Oxygen concentration and the CO/CH<sub>4</sub> concentration of air-dust mixtures. Measuring and control systems have to fulfil certain requirements (ATEX Directive).



Sample probe RSP-1

SYSTEM FOR  
MEASUREMENT AND  
MONITORING



robecco secure center is a central fully-automatic control system, which guarantees the inert atmosphere during chemical and physical processes. Sensors and actuators are connected to the system which prevents effectively dangerous process situations. robecco secure center controls and regulates the following components:

- Gas Analyser Systems
- Temperature Sensors
- Inerting Systems
- Valves and Flaps

FULLY AUTOMATIC  
INERTING



**Technical characteristics:**

- Fully-automatic monitoring and control system
- Visualisation of the complete inerting process
- Fully adaptable at operator CCR
- User friendly operation
- Service and Maintenance monitoring
- Remote maintenance available
- Failure indication in plain text messages
- Trend view and data memory
- Self-sufficient system functions without upper PLC control
- Exact CO<sub>2</sub>- or N<sub>2</sub>- dosing regarding effectiveness and environment
- Monitoring of CO<sub>2</sub>- or N<sub>2</sub>- storage guarantee the procurement and stock
- Monitoring of system-relevant functionalities of the inerting system, gas analyser systems and temperature sensors
- Automatic determination of maintenance intervals of single components independent of operation duration or malfunctions

**Service:**

- Full Services
  - Project engineering
  - Manufacture
  - Commissioning and
  - Training

Visualisation and Human-Machine Interface

Innovative

# **MONITORING, CONTROL & INERTING-SYSTEMS**

for

# **PREVENTIVE EXPLOSION PROTECTION**

made in germany. 

according to the standards:

European Inerting guideline CEN 15281

German Inerting Guideline VDI 2262/2

German VDE regulations

German TRBS 2152 part 2

ATEX Regulations 2014/34/EU

Gas Analyser Directive IEC60079-29

European low-voltage regulation 2014/35/EU

European Machine Regulation 2006/42/EG

European Pressure Equipment Directive PED 2014/68/EC

# robecco generates

QUALITY | SAFETY | PRODUCTIVITY

**TURNKEY  
SYSTEMS**

—

**MADE IN  
GERMANY**