

KRŠKO NUCLEAR POWER PLANT

TECHNICAL SPECIFICATION

ENGINEERING SERVICES

Nuklearna Elektrarna Krško	
MASTER DOCUMENT	
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SAFETY-RELATED

Lea Lokajner Gudek

Prepared by/Date



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Robert Rostohar

Reviewed by/Date



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QA ROMEO BISČAN

Reviewed by/Date



3. 11. 2015

Janko Cerjak

Approved by/Date



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1.0 Background and Description of the Problem

The description and the reasons for the order of individual services are defined in Attachment 1 to this Technical Specification (see Item 1). The description shall clearly state the purpose and grounds for placing an order.

2.0 Scope of Service

The detailed scope of the service per this Technical Specification (TS) is defined in Attachment 1 (see Item 2). The description of work to be performed per the scope of the service shall be defined in detail in an itemised way.

3.0 Safety Classification of Contracted Work

Safety classification of the service is defined in the Attachment 1 (see Item 3) to this TS and may be as follows:

- Safety Related (SR), or
- Augmented Quality (AQ), or
- Non Safety Related (NSR).

4.0 Project Input Data

The project input data shall be prepared, reviewed and verified in compliance with the Engineering procedure set requirement (ESP-2.604, ESP-2.605). The collection of the input data can be left to Contractor, if defined so in Attachment 1 (see Item 4) to this TS. NEK is responsible for the review and verification of the service work in compliance with responsibilities prescribed in ESP procedures.

5.0 Design Control Program

For SR work, the overall controls of engineering services shall be performed in accordance with approved Contractor's QA Manual which complies to 10CFR50 Appendix B, QS 610 and QS 600 if applicable, as well as applicable NEK programs and procedures.

For AQ work, the overall controls of engineering services shall be performed in accordance with Contractor's QA Program, which complies with ISO 9001 or a comparable standard, and relevant requirements of NEK QS 610 and NEK QS 600 if applicable.

For NSR work, the overall controls of engineering services may be defined in Attachment 1 (Item 5) to this TS.

The procedures applicable to the scope of service described herein are defined in Attachment 1 (see Item 5) to this TS.

6.0 Codes, Standards and Criteria for the Project

Specific codes, standards, and plant design criteria for engineering services which the Contractor is expected to perform in accordance with NEK licensing and design criteria are defined in the Attachment 1 (see Item 6) to this TS.

7.0 Affected Systems

The services per this TS can be performed on all NEK systems. The system identification list is defined in the Attachment 1 (see Item 7) to this TS.

8.0 Identification of Affected Equipment

The services per this TS shall be performed on the equipment as defined in the Attachment 1 (see Item 7) to this TS.

9.0 Review and/or Verification of the Work

The Contractor is required to perform verification or review of the completed steps of the service in accordance with applicable reference procedure (ESP-2.607 or ESP-2.606) as defined in the Attachment 1 (see Item 5) to this TS. The Contractor shall submit verifier/reviewer qualification records and copy of all reference documents used in calculations as an appendix to the calculation or design input documents.

NEK personnel shall review, verify and approve the completed steps of service of the Contractor in compliance with the NEK's QA Plan, affected systems and requirements of associated procedures.

10.0 Schedule Requirements

Schedule requirements for particular services are defined in the Attachment 1 (see Item 8) to this TS.

11.0 Status Reporting Requirements

The Contractor shall provide periodic written status reports for the work being performed as defined in Attachment 1 (see Item 8) to this TS.

The Contractor shall report on the completed work in monthly and quarterly reports covering:

- detailed summary of completed work together with all the technical and other details;
- overall status of completed work regarding schedule requirements as determined in the service contract;
- potential proposals, recommendations and partial conclusions on service implementation.

12.0 Responsibilities of NEK

Responsibilities of the NEK are as follows:

- Provide the overall project coordination;
- Provide reviewed and verified input data needed for the service implementation;
- Ensure access to and the use of applicable NEK's programs and procedures (NEK QA Plan, Engineering Programs and procedures, administrative procedures);
- Provide other available and applicable technical documentation in connection with the service implementation (drawings, USAR, TS);
- Provide organisation, management and control over the service implementation;
- Grant unescorted access authorisations to Contractors and provide training/indoctrination for safe work in the technological part of the plant;
- Control the status of service implementation as the basis for payment in relation to the requirements drawn up in the Contract or purchase order.

13.0 Changes of the Scope of Service

The Contractor shall identify any scope changes that could cause an impact of a Contractor's cost or schedule of the project by the issuance of a Contractor Change of Work Scope Request. The Contractor shall not proceed with a change in the scope of the Work until written approval has been authorized by NEK. Unauthorized Work will not be reimbursed by NEK.

14.0 Responsibilities of Contractor

Responsibilities of the Contractor are as follows:

- Ensure the availability of sufficient expert and qualified personnel for the timely and quality implementation of the scope of services in compliance with the requirements of this TS;
- Deliver evidence or certificates of qualification for the personnel involved in the execution of the service (upon submitting the bid);
- Grant administrative authorisations to personnel in compliance with the Ionizing Radiation Protection and Nuclear Safety Act (ZVISJV);
- Ensure conformity with legislation, standards and regulations required for the service implementation;
- Provide monthly and quarterly status reports on the completed work according to schedule requirements;
- Prepare and deliver generated documentation (i.e. analyses, drawings, project documentation, etc.) and QA records which are required by this TS, the Contract and/or purchase order.

15.0 Records and Documents

All the final and interim documents in connection with the service implementation shall be in conformity with the format defined in the NEK procedures (analyses, drawings, project documentation, etc.).

All the final documents in connection with the service implementation shall be delivered to NEK in the prescribed format in time. They are property of NEK and can be modified depending on potential changes.

The Contractor shall provide NEK all original records generated during the project and these shall become NEK property.

16.0 Organizational Contact

The Contractor shall coordinate all technical and schedule matters with the assigned NEK Project Manager/Responsible Engineer. Commercial terms and matters are to be addressed with NEK Purchasing Department representative.

For SR work only, notification pursuant to 10CFR21 shall be submitted to NEK ING.POD Superintendent.

Contact persons are named in Attachment 1 (see Item 9) to this TS and/or in the purchase order specifying:

- Name and surname;
- Job position or entrusted task/assignment;
- Phone/fax/mobile phone;
- e-mail.

17.0 Contractor Technical Approach to Work

In his Bid, the Contractor shall prepare Technical Approach to Work which shall describe the expected method of executing the service and shall indicate whether the scope of the service is understood and whether the expected goals can be achieved.

The Contractor shall appoint responsible persons and state their roles in the tasks to be executed (e.g. Project Manager, peer review, etc.). As part of corresponding bidding documentation, NEK may request that potential contractors provide special references or work experience and may, during bid evaluation, also decide on their suitability.

18.0 Access to Contractor Facility and Documents

The Contractor will provide NEK representatives with access to the Contractor's and/or to the Authorized Subtier Contractor's facility (-ies) and documents for the purpose of review, verification, auditing, witnessing and control.

19.0 Subcontracted Work

The Contractor shall not subcontract any portion of the Work without the written approval of the NEK PM or RE. The Contractor shall impose and ensure that all Subcontractors meet the requirements of this TS.

20.0 QA Requirements

SR work shall be performed in accordance with Contractor's QA Program, which complies to 10CFR50 Appendix B, NEK QS 610 and NEK QS 600 requirements if applicable, and which

had been previously evaluated and accepted by NEK. Reporting of defects and noncompliance in accordance with 10CFR21 requirements, shall be implemented by the Contractor.

AQ work shall be performed in accordance with Contractor's QA Program, which complies with ISO 9001 or a comparable standard, and relevant requirements of NEK QS 610 and NEK QS 600 if applicable. Contractor's QA Program shall be previously evaluated and accepted by NEK. Reporting of defects and noncompliance in accordance with Contractor's QA Program and relevant requirements of NEK QS 610, shall be implemented by the Contractor.

QA/QC activities will be performed in accordance with specific Quality Plan/Control Plan, contractor's internal technical and quality control procedures, which must be approved by NEK beforehand; and under surveillance of NEK and contractor's qualified QA/QC personnel.

Quality requirements for Non Safety Related Work shall be defined in Attachment 1 (Items 3 and 5) to this TS.

The Contractor shall retain full responsibility to perform QA function in all project phases and activities and his responsibility for QA implementation can not be transferred to others or reduced in any way.

21.0 NEK Proprietary Data

NEK has proprietary interest in all of the drawings, specifications, documents, information or know-how which may be furnished pursuant contract execution and in any know-how, improvement, discovery or invention which may be made, developed, or conceived in the performance of the work hereunder or which may arise or result therefrom (hereinafter collectively referred to as the "Information"). All such information shall be considered as proprietary to NEK. The right to use such information shall be transmitted to the Contractor only for its own use, shall be entirely restricted to the performance of the service and subject to the confidentiality provision.

22.0 Attachments

Attachments to this TS shall be listed in numerical order. ESD Design Changes Department administration office assigns Identification number for Attachment 1 (LL-xxx) and stores completed and approved forms.

1. Attachment LL-XXX
2.

Attachment		26-08	Service	Hazardous Gases Monitoring Systems and Services
Item	Table of Contents			
1.	Background and Description of the Problem		Due to the future NEK Hazardous Gases Monitoring Systems modification, all the necessary services should be provided as described in Section 2 and supply the equipment as specified at attached Equipment Supply List. The reason for modification is NEK's commitment to fulfil corresponding regulations regarding Hazardous Gases Monitoring and the other point is unification and upgrade obsolesced equipment. The Hazardous Gases Monitoring System is designed to monitor potentially hazardous gases in designated areas to prevent the formation of hazardous atmospheres and to ensure occupational safety. Monitoring of refrigerant gases is provided to detect potential leakages from cooling systems and to limit the release of greenhouse gases into the environment. Hazardous Gases Monitoring Equipment should be as the same manufacturer Dräger as existing systems for full compatibility and reliability. For this reason, fourteen (14) new detection systems should be provided.	
2.	Scope of Service		1. SERVICES AND DOCUMENTATION a) Set of documentation including: • Technical documentation, including all corresponding manuals and data sheets • Bill of material (System No./Equipment/Part No./Serial No./Qty) • Wiring diagrams for I/O modules, per Item 4. Project Input Data • Training documentation • Factory Acceptance Test (FAT) procedure • FAT report, including calibration and configuration sheets • Site Acceptance Test (SAT) procedure • Commissioning Reports, system by system b) Factory Acceptance Test (FAT) • Training for maintenance and operators • Systems configurations, per Item 4. Project Input Data ○ REGARD 3000 plus controller's menu should be set to Slovenian language • All systems wired btw. control unit and sensors and powered • FAT organization, • FAT execution with NEK participants c) Work at NEK site: • Configuration finalization, calibration and Commissioning • SAT execution under NEK plan and authorization	

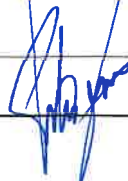
- d) Export packing, handling and packing list
- e) Franco transportation to NEK, insurance and handling

NEK address: Nuklearna Elektrarna Krško
 Vrbina 12
 8270 Krško
 Slovenija

2. EQUIPMENT SUPPLY

- a) The scope of supply are fourteen (14) independent detection systems. For the following (14) new detection system's configurations, see attached Equipment Supply List.

1. **CO and CO₂ detection system in room DG1**
Reference drawing: (MECL-DGB-01)
2. **CO and CO₂ detection system in room DG2**
Reference drawing: (MECL-DGB-01)
3. **CO and CO₂ detection system in room DG3**
Reference drawing: (MECL-BB1-01)
4. **R-134a refrigerant leak and CO and CO₂ detection systems at OSC**
Reference drawing: (MECL-OSC-04)
5. **CO and CO₂ detection system in FP DSL room ESW**
Reference drawing: (MECL-ESW-01)
6. **O₂ and CO₂ detection system in TSC**
Reference drawing: (MECL-BB1-03)
7. **O₂ and CO and CO₂ detection system in the P3 room OSC**
Reference drawing: (MECL-OSC-01)
8. **O₂ and CO and CO₂ detection system in the Z10 room OSC**
Reference drawing: (MECL-OSC-01)
9. **O₂ and CO and CO₂ detection system in the Z03 room OSC**
Reference drawing: (MECL-OSC-01)
10. **O₂ and H₂ detection system in the chemical laboratories CB100**
Reference drawing: (MECL-CB-01)
11. **O₂ detection system in the basement of the building PB**
Reference drawings: (MECL-PB-01 & MECL-PB-02)
12. **R-134a refrigerant leak detection system in CCB**
Reference drawings: (MECL-CCB-01 & MECL-CCB-02)
13. **R-134a refrigerant leak detection system in BB1**
Reference drawing: (MECL-BB1-02)
14. **R-134a refrigerant leak detection system in the P36 room OSC**
Reference drawing: (MECL-OSC-03)

		b) Spare Parts for 10-years maintenance, per manufacturer proposal		
3.	Safety Classification	NON SAFETY RELATED (NSR)		
4.	Project Input Data	- Hazardous Gases Monitoring Elaborate (Supplemental documentation) - DMP 1083-VA-L Hazardous Gases Monitoring System – partial drawings (Supplemental documentation)		
5.	Design Control Program	The works shall be performed on the basis of the Contractor's quality program, which complies with the requirements of the ISO 9001 standard or a comparable standard. Technical personnel should be adequately qualified to manipulate with the Dräger equipment at FAT and SAT.		
6.	Codes, Standards and Criteria	- Regulation on the Protection of Workers from Risks Arising from Exposure to Chemical Substances at Work (Official Gazette of the Republic of Slovenia, No. 72/21) - EU Regulation No. 573/2024 of the European Parliament and of the Council of 7 February 2024 on fluorinated greenhouse gases, amending Directive (EU) 2019/1937 and repealing Regulation (EU) No. 517/2014		
7.	Affected Systems and Equipment	VA – Ventilating and Air Conditioning – Secondary Plant System		
8.	Schedule Requirement	a) Documentation: T0 + 2 months b) FAT completion: T0 + 3 months c) Equipment delivery to NEK: up to two weeks after FAT d) SAT completion, partially system by system starts in year 2027, dates will be subsequently confirmed by NEK T0: Contracts concluded date		
9.	Contact Persons	NEK:	Milan Moškon milan.moskon@nek.si T: 00386 7 4802 647	
10.			Signature:	Date:
	Prepared by:	Milan Moškon		13.8.2026
	QA:(for AQ & SR)	N/A		
	Approved by:	Peter Jan		13/08/2026

EQUIPMENT SUPPLY LIST

1. CO and CO₂ detection system in room DG1

Equipment Description	Model	Qty
Gas detection control panel with I/O modules Up to 8 analog inputs (4–20 mA / HART) for gas detectors 8 programmable relay outputs for alarm and fault signaling 10" LCD touchscreen display Modbus RTU / Modbus TCP and Ethernet communication Software configurable alarm thresholds, delays and relay logic Integrated audible and visual alarm indication Power supply range 115–230 VAC	Dräger REGARD 3000 Plus Display Unit Base Unit 8Ch Input Module 8Ch Relay Module	1 kit
Carbon monoxide gas detector Electrochemical sensor for continuous CO monitoring Measuring range 0–300 ppm 4–20 mA output Response time T90 < 30 s Protection class min. IP66/IP67	Dräger Polytron 8100 EC CO 8344421+6809605	2 kits
Carbon dioxide gas detector Infrared CO ₂ transmitter for continuous gas monitoring Measuring range 0–5000 ppm Backlit LCD display with status LEDs 3-wire 4–20 mA output with HART communication Response time T90 < 10 s Protection class min. IP66/IP67	Dräger Polytron 8720 IR CO ₂ 8344727 + CO ₂ calibration	2 kits

2. CO and CO₂ detection system in room DG2

Equipment Description	Model	Qty
Gas detection control panel with I/O modules Up to 8 analog inputs (4–20 mA / HART) for gas detectors 8 programmable relay outputs for alarm and fault signaling 10" LCD touchscreen display Modbus RTU / Modbus TCP and Ethernet communication Software configurable alarm thresholds, delays and relay logic Integrated audible and visual alarm indication Power supply range 115–230 VAC	Dräger REGARD 3000 Plus Display Unit Base Unit 8Ch Input Module 8Ch Relay Module	1 kit
Carbon monoxide gas detector Electrochemical sensor for continuous CO monitoring Measuring range 0–300 ppm 4–20 mA output Response time T90 < 30 s Protection class min. IP66/IP67	Dräger Polytron 8100 EC CO 8344421+6809605	2 kits
Carbon dioxide gas detector Infrared CO ₂ transmitter for continuous gas monitoring Measuring range 0–5000 ppm Backlit LCD display with status LEDs 3-wire 4–20 mA output with HART communication Response time T90 < 10 s Protection class min. IP66/IP67	Dräger Polytron 8720 IR CO ₂ 8344727 + CO ₂ calibration	2 kits

EQUIPMENT SUPPLY LIST

3. CO and CO₂ detection system in room DG3

Equipment Description	Model	Qty
Gas detection control panel with I/O modules Up to 8 analog inputs (4–20 mA / HART) for gas detectors 8 programmable relay outputs for alarm and fault signaling 10" LCD touchscreen display Modbus RTU / Modbus TCP and Ethernet communication Software configurable alarm thresholds, delays and relay logic Integrated audible and visual alarm indication Power supply range 115–230 VAC	Dräger REGARD 3000 Plus Display Unit Base Unit 8Ch Input Module 8Ch Relay Module	1 kit
Carbon monoxide gas detector Electrochemical sensor for continuous CO monitoring Measuring range 0–300 ppm 4–20 mA output Response time T90 < 30 s Protection class min. IP66/IP67	Dräger Polytron 8100 EC CO 8344421+6809605	2 kits
Carbon dioxide gas detector Infrared CO ₂ transmitter for continuous gas monitoring Measuring range 0–5000 ppm Backlit LCD display with status LEDs 3-wire 4–20 mA output with HART communication Response time T90 < 10 s Protection class min. IP66/IP67	Dräger Polytron 8720 IR CO ₂ 8344727 + CO ₂ calibration	2 kits

4. R-134a refrigerant leak and CO and CO₂ detection systems at OSC

Equipment Description	Model	Qty
Gas detection control panel with I/O modules Up to 8 analog inputs (4–20 mA / HART) for gas detectors 8 programmable relay outputs for alarm and fault signaling 10" LCD touchscreen display Modbus RTU / Modbus TCP and Ethernet communication Software configurable alarm thresholds, delays and relay logic Integrated audible and visual alarm indication Power supply range 115–230 VAC	Dräger REGARD 3000 Plus Display Unit Base Unit 8Ch Input Module 8Ch Relay Module	1 kit
Carbon monoxide gas detector Electrochemical sensor for continuous CO monitoring Measuring range 0–300 ppm 4–20 mA output Response time T90 < 30 s Protection class min. IP66/IP67	Dräger Polytron 8100 EC CO 8344421+6809605	1 kit
Carbon dioxide gas detector Infrared CO ₂ transmitter for continuous gas monitoring Measuring range 0–5000 ppm Backlit LCD display with status LEDs 3-wire 4–20 mA output with HART communication Response time T90 < 10 s Protection class min. IP66/IP67	Dräger Polytron 8720 IR CO ₂ 8344727 + CO ₂ calibration	1 kit
Refrigerant gas detector Infrared sensor for R134a leak detection Measuring range 0–5000 ppm 4–20 mA output Fast response time	Dräger Polytron 8700 IR 334 e 8344619	1 kit

EQUIPMENT SUPPLY LIST

Protection class min. IP66/IP67

5. CO and CO₂ detection system in FP DSL room ESW

Equipment Description	Model	Qty
Gas detection control panel with I/O modules Up to 8 analog inputs (4–20 mA / HART) for gas detectors 8 programmable relay outputs for alarm and fault signaling 10" LCD touchscreen display Modbus RTU / Modbus TCP and Ethernet communication Software configurable alarm thresholds, delays and relay logic Integrated audible and visual alarm indication Power supply range 115–230 VAC	Dräger REGARD 3000 Plus Display Unit Base Unit 8Ch Input Module 8Ch Relay Module	1 kit
Carbon monoxide gas detector Electrochemical sensor for continuous CO monitoring Measuring range 0–300 ppm 4–20 mA output Response time T90 < 30 s Protection class min. IP66/IP67	Dräger Polytron 8100 EC CO 8344421+6809605	1 kit
Carbon dioxide gas detector Infrared CO ₂ transmitter for continuous gas monitoring Measuring range 0–5000 ppm Backlit LCD display with status LEDs 3-wire 4–20 mA output with HART communication Response time T90 < 10 s Protection class min. IP66/IP67	Dräger Polytron 8720 IR CO ₂ 8344727 + CO ₂ calibration	1 kit

6. O₂ and CO₂ detection system in TSC

Equipment Description	Model	Qty
Gas detection control panel with I/O modules Up to 8 analog inputs (4–20 mA / HART) for gas detectors 8 programmable relay outputs for alarm and fault signaling 10" LCD touchscreen display Modbus RTU / Modbus TCP and Ethernet communication Software configurable alarm thresholds, delays and relay logic Integrated audible and visual alarm indication Power supply range 115–230 VAC	Dräger REGARD 3000 Plus Display Unit Base Unit 8Ch Input Module 8Ch Relay Module	1 kit
Oxygen gas detector Electrochemical sensor for oxygen deficiency monitoring Measuring range 0–25 vol.% 4–20 mA output Response time T90 < 15 s Protection class min. IP66/IP67	Dräger Polytron 8100 EC O ₂ - 8344421+6809630	1 kit
Carbon dioxide gas detector Infrared CO ₂ transmitter for continuous gas monitoring Measuring range 0–5000 ppm Backlit LCD display with status LEDs 3-wire 4–20 mA output with HART communication Response time T90 < 10 s Protection class min. IP66/IP67	Dräger Polytron 8720 IR CO ₂ 8344727 + CO ₂ calibration	1 kit

EQUIPMENT SUPPLY LIST

7. O₂ and CO and CO₂ detection system in the P3 room OSC

Equipment Description	Model	Qty
Gas detection control panel with I/O modules Up to 8 analog inputs (4–20 mA / HART) for gas detectors 8 programmable relay outputs for alarm and fault signaling 10" LCD touchscreen display Modbus RTU / Modbus TCP and Ethernet communication Software configurable alarm thresholds, delays and relay logic Integrated audible and visual alarm indication Power supply range 115–230 VAC	Dräger REGARD 3000 Plus Display Unit Base Unit 8Ch Input Module 8Ch Relay Module	1 kit
Oxygen gas detector Electrochemical sensor for oxygen deficiency monitoring Measuring range 0–25 vol.% 4–20 mA output Response time T90 < 15 s Protection class min. IP66/IP67	Dräger Polytron 8100 EC O ₂ - 8344421+6809630	1 kit
Carbon monoxide gas detector Electrochemical sensor for continuous CO monitoring Measuring range 0–300 ppm 4–20 mA output Response time T90 < 30 s Protection class min. IP66/IP67	Dräger Polytron 8100 EC CO 8344421+6809605	1 kit
Carbon dioxide gas detector Infrared CO ₂ transmitter for continuous gas monitoring Measuring range 0–5000 ppm Backlit LCD display with status LEDs 3-wire 4–20 mA output with HART communication Response time T90 < 10 s Protection class min. IP66/IP67	Dräger Polytron 8720 IR CO ₂ 8344727 + CO ₂ calibration	1 kit

EQUIPMENT SUPPLY LIST

8. O₂ and CO and CO₂ detection system in the Z10 room OSC

Equipment Description	Model	Qty
Gas detection control panel with I/O modules Up to 8 analog inputs (4–20 mA / HART) for gas detectors 8 programmable relay outputs for alarm and fault signaling 10" LCD touchscreen display Modbus RTU / Modbus TCP and Ethernet communication Software configurable alarm thresholds, delays and relay logic Integrated audible and visual alarm indication Power supply range 115–230 VAC	Dräger REGARD 3000 Plus Display Unit Base Unit 8Ch Input Module 8Ch Relay Module	1 kit
Gas detection expansion control panel Additional control unit for system expansion Up to 8 analog inputs (4–20 mA / HART) for gas detectors 4 / 8 programmable relay outputs for alarm and fault signaling Modbus RTU / Modbus TCP and Ethernet communication Software configurable alarm thresholds, delays and relay logic Without display unit Power supply range 115–230 VAC	Dräger REGARD 3000 Plus -rail/inside cabinet mounting- Docking Station Lid Unit (without display) 8Ch Input Module 8Ch Relay Module	1 kit
Oxygen gas detector Electrochemical sensor for oxygen deficiency monitoring Measuring range 0–25 vol.% 4–20 mA output Response time T ₉₀ < 15 s Protection class min. IP66/IP67	Dräger Polytron 8100 EC O ₂ - 8344421+6809630	3 kits
Carbon monoxide gas detector Electrochemical sensor for continuous CO monitoring Measuring range 0–300 ppm 4–20 mA output Response time T ₉₀ < 30 s Protection class min. IP66/IP67	Dräger Polytron 8100 EC CO 8344421+6809605	3 kits
Carbon dioxide gas detector Infrared CO ₂ transmitter for continuous gas monitoring Measuring range 0–5000 ppm Backlit LCD display with status LEDs 3-wire 4–20 mA output with HART communication Response time T ₉₀ < 10 s Protection class min. IP66/IP67	Dräger Polytron 8720 IR CO ₂ 8344727 + CO ₂ calibration	3 kits

EQUIPMENT SUPPLY LIST

9. O₂ and CO and CO₂ detection system in the Z03 room OSC

Equipment Description	Model	Qty
Gas detection control panel with I/O modules Up to 8 analog inputs (4–20 mA / HART) for gas detectors 8 programmable relay outputs for alarm and fault signaling 10" LCD touchscreen display Modbus RTU / Modbus TCP and Ethernet communication Software configurable alarm thresholds, delays and relay logic Integrated audible and visual alarm indication Power supply range 115–230 VAC	Dräger REGARD 3000 Plus Display Unit Base Unit 8Ch Input Module 8Ch Relay Module	1 kit
Oxygen gas detector Electrochemical sensor for oxygen deficiency monitoring Measuring range 0–25 vol.% 4–20 mA output Response time T90 < 15 s Protection class min. IP66/IP67	Dräger Polytron 8100 EC O ₂ - 8344421+6809630	1 kit
Carbon monoxide gas detector Electrochemical sensor for continuous CO monitoring Measuring range 0–300 ppm 4–20 mA output Response time T90 < 30 s Protection class min. IP66/IP67	Dräger Polytron 8100 EC CO 8344421+6809605	1 kit
Carbon dioxide gas detector Infrared CO ₂ transmitter for continuous gas monitoring Measuring range 0–5000 ppm Backlit LCD display with status LEDs 3-wire 4–20 mA output with HART communication Response time T90 < 10 s Protection class min. IP66/IP67	Dräger Polytron 8720 IR CO ₂ 8344727 + CO ₂ calibration	1 kit

10. O₂ and H₂ detection system in the chemical laboratories

Equipment Description	Model	Qty
Gas detection control panel with I/O modules Up to 8 analog inputs (4–20 mA / HART) for gas detectors 8 programmable relay outputs for alarm and fault signaling 10" LCD touchscreen display Modbus RTU / Modbus TCP and Ethernet communication Software configurable alarm thresholds, delays and relay logic Integrated audible and visual alarm indication Power supply range 115–230 VAC	Dräger REGARD 3000 Plus Display Unit Base Unit 8Ch Input Module 8Ch Relay Module	1 kit
Oxygen gas detector Electrochemical sensor for oxygen deficiency monitoring Measuring range 0–25 vol.% 4–20 mA output Response time T90 < 15 s Protection class min. IP66/IP67	Dräger Polytron 8100 EC O ₂ - 8344421+6809630	5 kits
Hydrogen gas detector Catalytic sensor for hydrogen leak detection Measuring range 0–100 %LEL 4–20 mA output Fast response time Protection class min. IP66/IP67	Dräger Polytron 8200 CAT H ₂ 8344457 + 6814150	1 kit

EQUIPMENT SUPPLY LIST

ATEX certified

11. O₂ detection system in the basement of the building PB

Equipment Description	Model	Qty
Gas detection control panel with I/O modules Up to 8 analog inputs (4–20 mA / HART) for gas detectors 8 programmable relay outputs for alarm and fault signaling 10" LCD touchscreen display Modbus RTU / Modbus TCP and Ethernet communication Software configurable alarm thresholds, delays and relay logic Integrated audible and visual alarm indication Power supply range 115–230 VAC	Dräger REGARD 3000 Plus Display Unit Base Unit 8Ch Input Module 8Ch Relay Module	1 kit
Oxygen gas detector Electrochemical sensor for oxygen deficiency monitoring Measuring range 0–25 vol. % 4–20 mA output Response time T90 < 15 s Protection class min. IP66/IP67	Dräger Polytron 8100 EC O ₂ - 8344421+6809630	4 kits

12. R-134a refrigerant leak detection system in CCB

Equipment Description	Model	Qty
Gas detection control panel with I/O modules Up to 8 analog inputs (4–20 mA / HART) for gas detectors 8 programmable relay outputs for alarm and fault signaling 10" LCD touchscreen display Modbus RTU / Modbus TCP and Ethernet communication Software configurable alarm thresholds, delays and relay logic Integrated audible and visual alarm indication Power supply range 115–230 VAC	Dräger REGARD 3000 Plus Display Unit Base Unit 8Ch Input Module 8Ch Relay Module	1 kit
Refrigerant gas detector Infrared sensor for R134a leak detection Measuring range 0–5000 ppm 4–20 mA output Fast response time Protection class min. IP66/IP67	Dräger Polytron 8700 IR 334 e 8344619	4 kits

13. R-134a refrigerant leak detection system in BB1

Equipment Description	Model	Qty
Gas detection control panel with I/O modules Up to 8 analog inputs (4–20 mA / HART) for gas detectors 8 programmable relay outputs for alarm and fault signaling 10" LCD touchscreen display Modbus RTU / Modbus TCP and Ethernet communication Software configurable alarm thresholds, delays and relay logic Integrated audible and visual alarm indication Power supply range 115–230 VAC	Dräger REGARD 3000 Plus Display Unit Base Unit 8Ch Input Module 8Ch Relay Module	1 kit
Refrigerant gas detector Infrared sensor for R134a leak detection Measuring range 0–5000 ppm 4–20 mA output Fast response time	Dräger Polytron 8700 IR 334 e 8344619	1 kit

EQUIPMENT SUPPLY LIST

Protection class min. IP66/IP67		
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14. R-134a refrigerant leak detection system in the P36 room OSC

Equipment Description	Model	Qty
Gas detection control panel with I/O modules Up to 8 analog inputs (4–20 mA / HART) for gas detectors 8 programmable relay outputs for alarm and fault signaling 10" LCD touchscreen display Modbus RTU / Modbus TCP and Ethernet communication Software configurable alarm thresholds, delays and relay logic Integrated audible and visual alarm indication Power supply range 115–230 VAC	Dräger REGARD 3000 Plus Display Unit Base Unit 8Ch Input Module 8Ch Relay Module	1 kit
Refrigerant gas detector Infrared sensor for R134a leak detection Measuring range 0–5000 ppm 4–20 mA output Fast response time Protection class min. IP66/IP67	Dräger Polytron 8700 IR 334 e 8344619	1 kit