

CBRN Solafact: Unrivaled Safety Solutions for a Complex World

In today's fast-paced and unpredictable global environment, the need for advanced safety measures has never been more critical. Organizations worldwide face escalating risks from chemical, biological, radiological, and nuclear (CBRN) threats, as well as industrial hazards that can endanger lives, disrupt operations, and damage the environment.

At CBRN Solafact, we recognize that safeguarding lives, assets, and ecosystems is not just a responsibility - it is an imperative.

Our cutting-edge detectors and monitoring systems represent the pinnacle of safety technology. By integrating world-class advancements in detection science, CBRN Solafact delivers unmatched precision and reliability in identifying chemical agents, industrial toxic gases, hazardous substances, and radioactive contamination. Engineered to meet and exceed international standards, our products are designed to provide organizations with the confidence and peace of mind they need to operate securely in even the most challenging environments.

Transforming Safety in the Oil Industry

CBRN Solafact is at the forefront of safety innovation within the oil and gas sector, a high-stakes industry where operational hazards are both significant and unforgiving. From toxic gas leaks to externally caused explosive risks are challenges faced by this sector demands proactive and comprehensive safety solutions.

Our suite of products is meticulously designed to address these critical safety challenges, ensuring seamless integration into complex industrial workflows. Organized into **THREE** specialized categories, our solutions empower organizations to safeguard their personnel, infrastructure, and operations with unparalleled efficiency and effectiveness.

Robotic Solutions: Intelligent Safety in Motion

In the dynamic and hazardous environments of modern industry, safety and efficiency are paramount. Addressing the critical need for operational intelligence in dangerous zones, CBRN Solafact has introduced cutting-edge robotic technologies that mitigate risks while delivering unparalleled precision in reconnaissance and hazard mitigation.

Explosion-Proof Reconnaissance Robot: Solafact 9400

The **Solafact 9400** is purpose-built for environments where explosive risks are a constant concern. It stands as a robust solution for reconnaissance in chemical contamination zones.



Key Features and Advantages:

- **Explosion-Proof Design:** Engineered with an Ex db ib II B T5 Gb explosion-proof rating, this robot is ideally suited for volatile areas like oil refineries and hazardous material warehouses.
- **Advanced Detection and Sampling:** Capable of detecting over 300 toxic gases, including nerve agents like sarin and VX, the Solafact 9400 provides real-time data for rapid intervention. Its gas sampling system ensures high accuracy with a capacity of $\geq 2000\text{mL}$ at speeds of $\geq 5\text{L/min}$.
- **Versatile Mobility:** With a crawler-type chassis, the robot can navigate slopes up to 45° , cross water depths of $\geq 300\text{mm}$, and overcome obstacles $\geq 300\text{mm}$, making it adaptable to a wide range of terrains.
- **360° Environmental Awareness:** Equipped with panoramic cameras featuring infrared night vision, the Solafact 9400 ensures comprehensive monitoring even in low-light conditions.
- **Mechanical Arm Capability:** The 6-degree-of-freedom mechanical arm facilitates complex tasks, including precise sampling of liquids and solids, and can handle objects weighing $\geq 3\text{kg}$.

While its explosion-proof features and advanced capabilities make it indispensable for high-risk operations, its weight of $\leq 500\text{kg}$ and slower maximum speed of 10 km/h limit its agility in confined or rapidly evolving scenarios.

Nuclear, Biological, and Chemical Reconnaissance Robot: Solafact 9200

Designed with the unique challenges of nuclear and chemical pollution detection in mind, the **Solafact 9200** excels in environments requiring radiation monitoring and decontamination. Its robust construction and advanced sensing technology make it an essential tool for military, industrial, and emergency response teams.



Key Features and Advantages:

- **Radiation Resistance:** With the ability to withstand radiation levels $\geq 1000\text{Gy/h}$, the Solafact 9200 is highly effective in nuclear facilities and post-disaster scenarios.
- **Exceptional Sampling Flexibility:** Equipped to handle gas, liquid, and solid samples, the robot features tools like a 1L gas sampling bag and a 300g solid sample holder.
- **Enhanced Mobility:** Its crawler chassis supports complex terrain navigation, including slopes up to 38° and water crossings of 300mm .
- **Integrated Decontamination System:** A 100L liquid decontamination tank enables large-scale cleanup in contaminated areas.
- **Wired and Wireless Operation:** The robot offers a wireless range of 3km , ensuring flexibility in various operational scenarios.

While its lightweight and compact design enhances mobility and access to tight spaces, the Solafact 9200 is not explosion-proof, making it less suitable for environments with high ignition risks.

Comparison and Applications:

- The **Solafact 9200** is ideal for environments requiring high radiation resistance, such as nuclear power plants or military operations involving chemical agents.
- The **Solafact 9400**, with its explosion-proof capabilities and extensive toxic gas detection range, is tailored for high-risk industrial applications and areas with explosive hazards.

Passive Fourier Infrared Remote Sensing: Precision Detection Across Environments

CBRN Solafact's advanced infrared remote sensing systems revolutionize hazard detection by offering unparalleled precision and versatility. Whether monitoring confined indoor spaces or vast outdoor areas, these systems deliver real-time insights that empower teams to act swiftly and decisively. Three distinct models cater to varied operational needs:

Indoor Environmental Monitoring: **Solafact 5300**

The **Solafact 5300** is engineered for controlled environments where precision and sensitivity are critical. Its compact, active Fourier Transform Infrared (FTIR) system provides exceptional detection capabilities, making it indispensable for industries prioritizing air quality and safety compliance.



Key Features:

- **Detection Technology:** Utilizes a through-beam light source for precise measurements, achieving ppb-level sensitivity (0.1–10 ppm).
- **Rapid Response:** Provides initial results in less than 3 seconds and complete qualitative and quantitative analysis within 30 seconds.
- **Compact Design:** A lightweight configuration with a host weighing only 25 kg, complemented by a 10 kg light source and a 5 kg control box, ensuring easy deployment.
- **Effective Range:** Monitors up to 100 meters, ideal for indoor settings such as shopping malls, industrial plants, and airports.
- **Applications:** Designed for real-time, continuous air quality monitoring with customizable features tailored to user requirements.

Limitations: The requirement for an external light source and its limited range compared to outdoor models make it less suited for expansive environments.

Outdoor Long-Range Monitoring: Solafact 5400

The **Solafact 5400** sets a new standard for large-scale, outdoor monitoring with its passive FTIR system. This model is perfect for detecting airborne threats across vast areas, ensuring comprehensive coverage and rapid situational awareness.



Key Features:

- **Passive Detection:** Operates without an external light source, leveraging natural infrared emissions for precise monitoring even in low-visibility conditions.
- **Extended Range:** Detects gases up to 5 kilometers, making it ideal for industrial zones, security events, and emergency response scenarios.
- **Advanced Scanning:** Offers 360° horizontal rotation and $\pm 60^\circ$ pitch scanning for a complete view of the monitored area.
- **Dynamic Analysis:** Real-time tracking of gas diffusion patterns with visual outputs facilitates quicker decision-making during critical incidents.
- **Rugged Design:** Explosion-proof (Ex db IIBT4 Gb) with vibration resistance for deployment on vehicles, ships, or UAVs.

Limitations: Its heavier build (host: 28 kg; gimbal: 22 kg) makes it less portable and unsuitable for confined spaces.

Rugged and Dynamic Environments: Solafact 5500

The **Solafact 5500** is purpose-built for demanding environments, such as the oil and gas industry, where extreme weather, rugged terrain and operational challenges are commonplace.



Key Features:

- **Enhanced Vertical Coverage:** Provides 360° horizontal and $\pm 90^\circ$ pitch scanning, surpassing the vertical range of the 5400.
- **Broad Sensitivity Range:** Detects gases from ppm levels to percentages, accommodating both trace and bulk gas detection.
- **Durability:** Designed for harsh conditions, with operational temperatures ranging from -20°C to 55°C and storage up to 65°C . Military-grade components, including a shock-absorbing bracket and off-axis telescope, ensure stable performance.
- **Extended Life:** Detector life exceeds 12,000 hours, supporting long-term reliability.

Limitations: Slightly heavier (host: 30 kg; bracket: 10 kg) and with a lower maximum detection range than the 5400.

Choosing a Passive Fourier Infrared Remote Sensing Solution:

- **Solafact 5300** is ideal for small, controlled indoor spaces requiring precise, rapid monitoring.
- **Solafact 5400** excels in expansive outdoor environments with its long-range and advanced imaging capabilities.
- **Solafact 5500** is the go-to choice for rugged and dynamic applications, providing robust performance in extreme conditions.

Handheld Chemical Toxic Agent Detectors: **Portable Protection at Your Fingertips**

In high-stakes scenarios requiring mobility and on-the-spot detection, CBRN Solafact's handheld devices deliver an optimal combination of portability, precision, and advanced technology. Designed for swift deployment, these tools empower teams to identify and respond to hazards in real-time, safeguarding both personnel and operations.

Chemical Production Site Monitoring: Solafact 800

The **Solafact 800** is a cutting-edge handheld detector tailored for chemical production facilities and other environments requiring precise monitoring of toxic agents and hazardous substances. Leveraging world-class time-of-flight ion mobility spectrometry, this device ensures operational safety and integrity.



Key Features:

- **Advanced Detection Technology:** Incorporates time-of-flight ion mobility spectrometry, array multi-sensing fusion, and optional scintillator-based radioactive detection for comprehensive hazard identification.
- **High Sensitivity:** Achieves detection levels as low as 0.1mg/m³ for sarin, ensuring precise identification of trace chemical agents and toxic gases.
- **Rapid Response Time:** Provides results in as little as 2–15 seconds, allowing teams to act swiftly during critical operations.
- **Robust Interference Resistance:** Effectively differentiates hazards from typical environmental interferences such as smoke, exhaust, and grass fumes.

- **Upgradeable Substance Library:** Users can expand the detection capabilities to meet evolving operational needs.
- **Versatility:** Suitable for military anti-terrorism, emergency response, environmental monitoring, nuclear power inspections, and industrial safety.

Applications:

- Inspection and monitoring of chemical production sites for leaks or defects.
- Security checks in public spaces.
- Emergency response to toxic material leaks.
- Field detection of chemical warfare agents in military scenarios.

Specifications:

- **Size and Weight:** Compact and lightweight with a total weight of $\leq 5.5\text{kg}$, making it easy to carry and operate.
- **Temperature Range:** Operates effectively between -40°C and $+55^{\circ}\text{C}$, ensuring reliability in extreme environments.
- **Power Supply:** Supports both 24V DC and 220V AC power sources for enhanced flexibility.

Portable Toxic Substances Detector: Solafact 810

The **Solafact 810** takes handheld detection to the next level, combining international advancements in ion mobility spectrum and Raman spectroscopy with intelligent algorithms. This portable device excels in identifying toxic and harmful substances across diverse operational conditions.



Key Features:

- **Comprehensive Detection Range:** Capable of detecting chemical warfare agents, industrial toxic gases, and hazardous chemicals in solid, liquid, and gaseous forms.
- **Exceptional Sensitivity:** Gas detection sensitivity reaches as low as $0.1\text{mg}/\text{m}^3$ for sarin and $10\text{mg}/\text{m}^3$ for ammonia, with a rapid response time of ≤ 5 seconds for solids/liquids and ≤ 10 seconds for gases.
- **Durable and Reliable:** Designed to withstand harsh environments, meeting anti-vibration standards (GJB150.18A-2009) and salt-fog resistance standards (GJB150.11A-2009).
- **Wide Operating Range:** Functions in temperatures from -40°C to $+55^{\circ}\text{C}$, with storage capabilities extending from -43°C to $+70^{\circ}\text{C}$.
- **Radiation Monitoring:** Optional gamma-ray detection module with dose rate and cumulative dose reporting enhances operational safety in radiation-prone environments.

Applications:

- Emergency response and real-time monitoring of toxic leaks.
- Security operations in ports, railways, and border patrols.
- Monitoring and detection in petrochemical and fire protection scenarios.
- Field operations in military and anti-terrorism missions.

Specifications:

- **Compact Design:** Dimensions of $\leq 280\text{mm} \times 190\text{mm} \times 135\text{mm}$ ensure portability and ease of use.
- **Lightweight:** Weighs only $\leq 5.5\text{kg}$ for convenient field deployment.
- **User-Friendly Interface:** Simplifies operation with a human-computer interaction design for clear data visualization.

Choosing the Right Device:

- The **Solafact 800** is ideal for static monitoring in controlled environments like chemical production facilities and nuclear inspections.
- The **Solafact 810** excels in dynamic, field-based scenarios, offering a versatile solution for emergency responders and military personnel.

Why Choose CBRN Solafact?

CBRN Solafact is more than a safety equipment provider; we are a trusted partner committed to advancing safety standards across industries. Our solutions offer:

- **Innovation:** Leveraging cutting-edge technology to stay ahead of emerging threats and challenges.
- **Reliability:** Delivering consistent and accurate performance in even the harshest conditions.
- **Comprehensiveness:** Addressing a wide range of safety needs, from confined industrial spaces to expansive outdoor operations.
- **Proven Excellence:** Trusted by leading organizations worldwide for critical safety applications.

Take the First Step Toward Uncompromised Safety

Safety is not optional; it is the foundation of operational success. CBRN Solafact's advanced detection systems empower organizations to act confidently, decisively, and effectively in the face of diverse safety challenges. Equip your workforce with the tools they need to safeguard their lives, their environment, and your operations.

Contact us today to learn how CBRN Solafact can elevate your safety standards and redefine your approach to risk management.

CBRN Solafact – World-Class Technology for World-Class Safety