



THE STRONGEST LINK.

STAHL

YOUR HAZARDOUS AREAS: OUR FIELD OF EXPERTISE

360° explosion protection from a single source

YOUR 360° REQUIREMENTS: OUR APPLIED EXPERTISE

Safety knows no compromise – especially when it comes to protecting your employees, systems and the environment. That's why we are dedicated to providing you with all-encompassing excellence.

We create explosion protection concepts, analyse existing ones and identify potential for optimisation.

As part of our practical work, we also develop customised solutions and implement them seamlessly into your systems.

And, of course, the training and certification of specialised personnel is also part of our commitment as experts in explosion protection.



LIFECYCLE CONSULTANCY BY APPLIED EXPERTISE

With a holistic view of your environment, we develop strategies to fulfil, reduce or even completely eliminate explosion protection requirements. With our independent consulting philosophy, we find the best solution for your needs.

We offer guidance throughout the entire lifecycle, supporting you in implementing cutting-edge explosion protection measures and solutions.



APPLICATIONS BY APPLIED EXPERTISE

Together with you, we create tailor-made concepts through an iterative process. Our comprehensive understanding of explosion protection ensures innovative and flexible solutions for you.

Our specialists will work together with you during the implementation phase.



ACADEMY OF APPLIED EXPERTISE

We live in a world of constant progress. We are the innovation driver and provide you with the latest technologies and trends in the form of:

- Seminars
- Blended learning
- Qualifications
- Certifications



YOUR INDUSTRY: OUR EXPLOSION PROTECTION SOLUTIONS

As a leading supplier of automation technology for hazardous areas, R. STAHL has been providing state-of-the-art components and complete solutions for over 50 years, perfectly adapted to the different operating conditions of the various industries. With its customary high level of reliability and quality "Made in Germany",

R. STAHL ensures your safety when it comes to explosion protection. Be it the integration into modern Ethernet networks, the integration of diagnosis information in plant asset management systems, wireless communication, or the development of visualisation concepts – we are ready to meet any challenge head-on!



LNG APPLICATIONS

Along the entire value chain: from natural gas extraction all the way to supplying the product to gas networks. International ship approvals enable our products and systems to be installed on board LNG tankers and FPSO ships.



HYDROGEN

R. STAHL is your partner for explosion protection along the entire H₂ value chain – from production to application.



OIL AND GAS INDUSTRY

Robustness, state-of-the-art technology and low operating costs are the major features of our automation products – perfect for the world of the digitised oilfield.



FINE AND SPECIAL CHEMICALS

R. STAHL's multi-usage products are ideally suited for the modern modular automation concepts of the Industrial Internet of Things.



LIFE SCIENCES

Our products and solutions meet the hygiene directives according to GMP. The implementation of requirements to FDA 21 CFR Part 11 completes our service portfolio.



BASIC AND PETROCHEMISTRY

The large number of diagnosis functions integrated in R. STAHL's products can be used for predictive maintenance and ensure smooth operation.



MECHANICAL ENGINEERING

We use our internationally certified components to come up with individual solutions tailored to meet the machine's requirements; including integration via MTP.



FOOD AND BEVERAGE INDUSTRY

Certificates for dust and gas explosion hazards as well as compliance with EHEDG make R. STAHL's products ideal for installation in this industry.

YOUR ENERGY OF THE FUTURE: OUR FUTURE-PROOF PROTECTION

Hydrogen (H₂) energy may be clean and powerful, but it's not without hazards. H₂ requires a very low level of energy to ignite – in fact, only a tenth of the energy that gasoline needs. It burns extremely hot, with a flame that's invisible to the human eye. R. STAHL has the technologies that prevent

hydrogen from becoming a hazard, the certifications to install them around the globe, and the know-how to customise any solution to your precise requirements, whatever they may look like. So go ahead and make the world green. We'll be there to support you and make it safe.

WHY THE GREEN LINK?

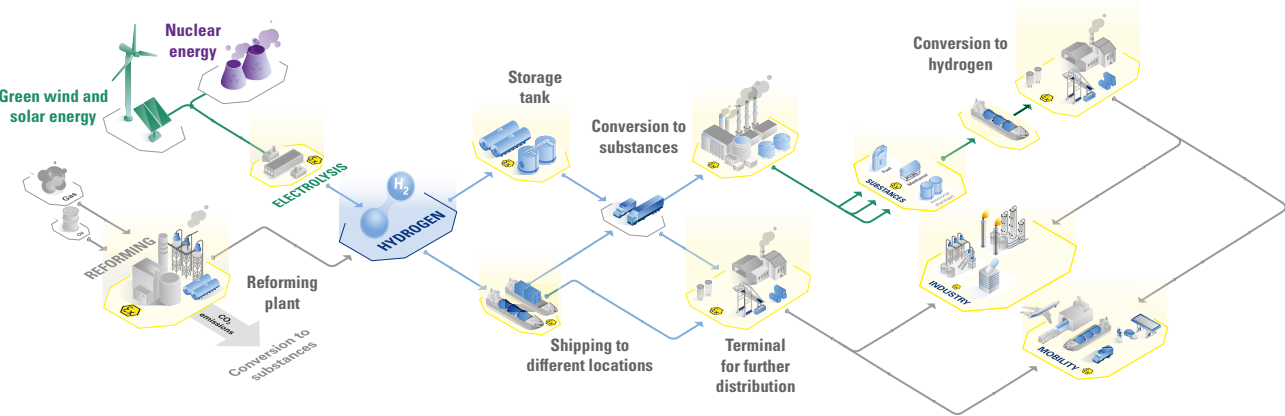
- R. STAHL has decades of experience in providing explosion protection for hydrogen-based industries, and a broad range of related products and services.
- We can design and build any system you require from scratch to meet your precise requirements without compromising on safety – and we can revise any existing safety architecture in the same way.



YOUR HYDROGEN VISION: OUR MISSION

If you would like to know more about how to make your future with hydrogen green, efficient and safe, just get in touch with us. Our experts look forward to sharing their

knowledge with you. They can show you what sets our technologies apart from others and give you the confidence to venture into a greener tomorrow today.



YOUR JOURNEY TO SUSTAINABILITY: OUR PROTECTION ALONG THE WAY

LNG can help the world bridge the gap between the traditional energy economy and the coming age of renewables. But in order to do so, it must be protected along its entire way from production to consumption. Thanks to our decades of experience in this field, we

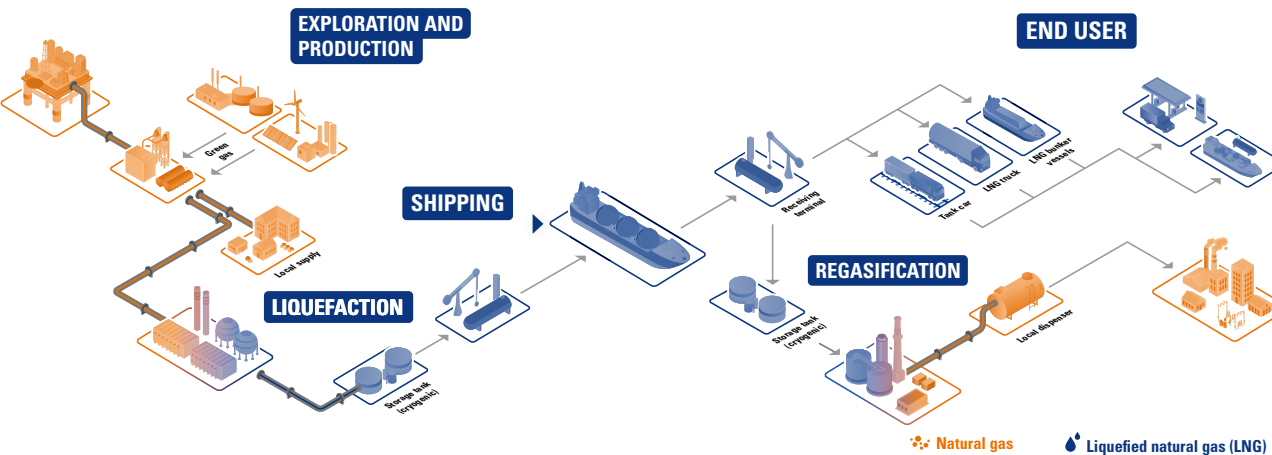
can perfectly tailor our solutions to meet your requirements in terms of size, weight, properties and materials. This makes us your one-stop shop when it comes to explosion protection in LNG.



SOLUTIONS FOR THE LNG VALUE CHAIN

LNG contains highly flammable methane, ethane, propane and nitrogen. Due to repeated energy input along the

entire value chain, there are hazardous areas in every step which require applications for explosion protection.



HMIS AND MOBILE SOLUTIONS



New, modular indoor operator stations ORCA and tablet PCs for mobile solutions



SHARK operator station for outdoor applications



ORCA panel-mount units 12", 15" and 22"



5G smartphones, smartwatches

R. STAHL's human-machine interfaces (HMIs) and HMI solutions are almost fully internationally certified for hazardous areas Zone 1, 2, 21, 22 and some also for Class I, Division 2 / Class II, Division 1, 2 / Class III. In addition to our HMIs, our portfolio also includes application-specific, mobile solutions such as tablets, smartphones and smartwatches.

- 12", 15" and 22" HMIs
- All HMI technologies: thin clients, panel PCs, KVM systems, operator panels
- REMOTE HMI firmware for thin clients and tablet PCs
- HMI device platforms for GMP areas/clean rooms, harsh ambient conditions and on board ships
- Peripherals such as barcode scanners and RFID readers
- Application-specific, individual solutions with mobile devices

CAMERA AND CCTV SOLUTIONS



Full HD AFZ camera



Compact camera



PTZ camera with dynamic masking



Thermal imaging camera with radiometry function

We are your one-stop supplier for explosion-protected CCTV systems. Because an effective surveillance system needs more than just cameras. Only complete solutions perfectly matched to suit individual requirements can guarantee reliable surveillance and a maximum of security.

- Camera portfolio comprising premium compact, AFZ, PTZ, and thermal imaging cameras as state-of-the-art IP versions
- Full HD, ONVIF S, WDR, DEFOG, PoE and video analysis functions
- Configuration options with redundant client/server structures, switches, etc. for a customised CCTV system (also adaptable to fit in with existing video surveillance solutions)
- Can be operated in temperatures from -40 °C to +75 °C

AUTOMATION AND INDUSTRIAL ETHERNET



Remote I/O IS1+



Wi-Fi access point



Ex i isolators



Ethernet-APL field switch

Intrinsic safety is worldwide the most frequently used type of protection in system automation in hazardous areas. The complete range of interface solutions from R. STAHL includes:

- INTRINSPAK safety barriers
- ISpac isolators with galvanic separation
- IS1+ Remote I/O – the system most used worldwide in Zone 1, 2, Division 1, 2
- Ethernet-APL field switches
- ISbus fieldbus products
- Industrial Ethernet components
- Grounding monitoring systems

All our solutions come with international certificates and are largely certified for functional safety, hydrogen applications and shipbuilding.

INSTALLING AND SWITCHING



Terminal boxes made from stainless steel



Local control boxes



Plugs and sockets



miniCON plug connector

We offer custom-made terminal boxes and terminal box combinations as well as standard products with short delivery times. R. STAHL's innovative plugs, sockets and plug connectors can be used to conduct, connect and distribute electrical energy in hazardous areas:

- Junction boxes
- Terminal boxes made from glass fibre reinforced polyester resin or stainless steel
- Local control boxes
- Thermostats, temperature sensors and limiters
- Control equipment for panel mounting
- Components, cable glands and enclosures
- Plugs and sockets

Our products are certified for worldwide installation techniques. Numerous components are applicable for extended, wide temperature ranges from -60 °C to +60 °C.

SYSTEMS AND SOLUTIONS



SYSTEM SOLUTIONS FOR LNG TANKERS

The IS1+ Remote I/O has been the leading automation solution on board LNG carriers and offshore installations for over 20 years. The system can handle up to 128 analogue or 256 digital signals per station. It is Zone 1-certified with ATEX, IECEx and many other approvals for the shipbuilding industries. Customised solutions are our standard – e.g. as a compact field cabinet solution with space-saving double doors in various sizes, featuring an ideal mounting system for the specific EMC requirements on board ships.

- Additional Ex i operating and display elements integrated in the front doors and operated via IS1+
- High availability via system redundancy with primary and redundant IS1+ CPU and power modules
- Ruggedised design for the harshest conditions on board, suitable for ambient temperatures from -40 °C to +75 °C



GMP-COMPLIANT VISUALISATION

Operator stations are the window to the process. The ORCA operator stations from R. STAHL are designed for clean rooms and GMP areas. Bright displays clearly visualise the process and on demand the MES, too. They can be operated via keyboard or touchscreen. Thin clients are now standard, for which we offer our REMOTE HMI firmware – specially developed to meet the requirements of the processing industry.

Highlights of the system include:

- Innovative modular workstations for universal use in pharmaceutical production
- High level of cybersecurity due to closed system
- Systems are very easy to parameterise and compatible with all DCS and MES



REVOLUTIONARY Ex d CABINETS

The new EXpressure cabinets are equipped with grids in the walls through which pressure flows in the event of an explosion. As a machine, system and plant manufacturer or as a user of processing systems, you will benefit from the various advantages of this technology:

- Cost-saving by fast engineering
- Lighter, smaller footprint, compact
- Can be flexibly retrofitted
- Future-proof concept



CENTRAL BATTERY SYSTEMS

Central battery units are used for emergency lighting.

The main functions are:

- Supplying the safety lighting
- Changing automatically to emergency battery lighting in the event of AC emergency lighting network failure
- Automatic monitoring
- Documenting and storing in an electronic test book

R. STAHL is your trusted partner for designing and producing complex emergency lighting systems.



EX P SYSTEM SOLUTIONS WITH PRESSURISED ENCLOSURE

Safety is paramount in environments with potential hazards. This system ensures the efficient integration of industrial components in hazardous areas, making it well-suited for LNG and hydrogen applications. It provides a cost-effective solution for global machine control systems with just three key components:

- Ex p controller: manages the pressurisation process, ensuring compliance with safety standards with integrated temperature monitoring and regulation features
- Ex p pressure monitors: continuously monitor internal pressure to maintain safety
- Ex p purge valves: facilitate the purging process, ensuring a safe internal environment

R. STAHL enables safe operation in hazardous environments by supporting a wide array of enclosure sizes ranging from 10 litres up to large-scale enclosures of 4,000 litres.



MACHINE CONTROL SYSTEMS

Machine control systems fulfil various and complex requirements, especially in the following sectors:

- LNG
- Hydrogen
- Oil and gas
- Pharmaceutical and chemical industry
- Mechanical engineering

In addition to delivering the desired functionality, they need to be durable, low-maintenance and suitable for worldwide use. R. STAHL also ensures constructive explosion protection.

CONTROLLING AND DISTRIBUTING



Ex e control boxes that can be individually equipped

The system solutions from R. STAHL enable the safe distribution and control of electrical energy in hazardous areas. Reliable energy distribution increases system availability and the safety of both systems and personnel.

- We offer:
- Control and distribution boxes
 - Lighting and heating circuit distribution boards
 - Load and motor switches
 - Motor protection circuit breakers
 - DOL motor starters, star delta starters, soft starters
 - Safety switches
 - Battery boxes

They can be operated in temperatures from -60 °C to +60 °C. Global certificates for all major markets are available, e.g. ATEX, IECEx, NEC®, etc.



Safety switch



Standard motor starters



Motor protection circuit breakers

LIGHTING AND SIGNALLING



LED linear luminaire

LEDs for a bright outlook in hazardous areas with solutions from R. STAHL: long-lasting, efficient and innovative. R. STAHL supplies explosion-proof lighting for almost any application:

- Linear luminaires
- Tubular light fittings
- Emergency luminaires
- Floodlights
- Pendant light fittings
- Wall- and ceiling-mounted bulkhead light fittings
- Hand lamps
- Signalling devices: visual, audible, visual and audible combinations

Our extensive expertise is supplemented by light calculation, light-technical measurements and commissioning of lighting systems in hazardous areas.



LED tubular light fitting



LED emergency light fitting



Signalling device

APPLICATIONS



Complex UPS module with batteries

Thanks to its many years of experience and broad portfolio, R. STAHL can offer even complex system solutions for automation, power distribution and machine control. Of course, explosion-protected and long-lasting.

- Our solutions include:
- Uninterrupted power supplies (UPS)
 - Frequency converter drives
 - Loading arm controls
 - Machine control systems

R. STAHL provides the combination of all types of protection and explosion protection technologies with robust enclosure designs. The material is designed for harsh environments and can be operated from -60 °C to +70 °C. Engineering, manufacturing and commissioning make R. STAHL your one-stop shop supplier.



UPS



Frequency converter drive



Solar panel

CONTAINER SYSTEMS



Explosion-protected rooms and system solutions in containers for stationary, mobile or temporary applications

Turnkey developed and suitable for worldwide use: R. STAHL Electromach utilises a modular approach that combines major advantages for the control and distribution of stationary, mobile or temporary applications for offshore and onshore environments.

- Our range of solutions:
- Transportable ventilated container (TVD)
 - Remote instrument building (RIB)
 - Local equipment room (LER)
 - HVAC solutions
 - Analyser housing
 - Field auxiliary room (FAR)



Operator cabin



Local equipment room



HVAC systems

YOUR NEXT-LEVEL SAFETY: OUR DIGITAL TWINS

INTEROPERABLE DATA MODELS FOR YOUR EXPLOSION PROTECTION NEEDS

Experience the future of digital product data

Scanning the QR tag will provide you with direct access to the R. STAHL Digital Twin platform. Benefit from important applications for your day-to-day work in industrial plants:

- Automated information on firmware updates
- Remote access to Asset Administration Shells (AAS)
- Automated creation of pre-filled return slips
- Digital maintenance manuals
- Access to all documents and certificates
- Display of successor products



r-stahl.com/digitaltwin

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