

Clearness.Trust. Safety.

IND EX[®]
e.V.

Intercontinental Association of
Experts for INDustrial EXplosion
and Fire Safety e.V.

We are IND EX[®].



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56 HOM - Dr. Dirk Oberhagemann

57 HOM - Wolfgang Schubert

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59 HOM - Ron Sinclair

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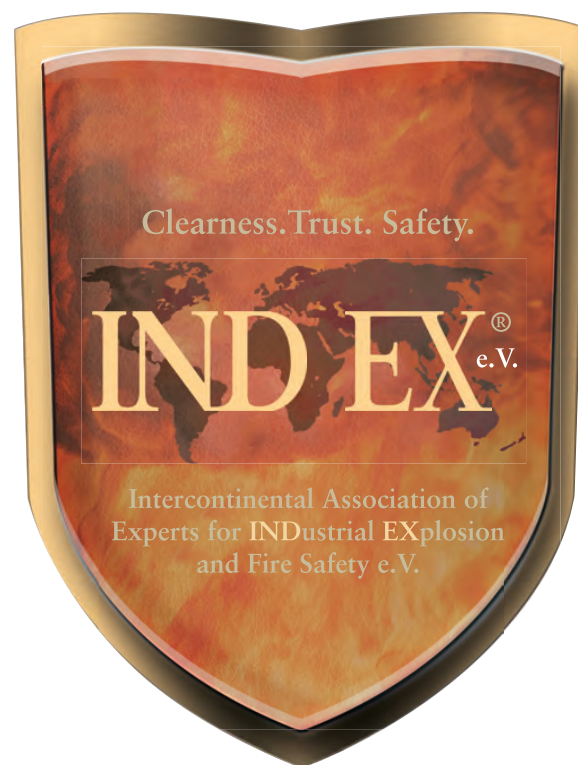
60 ACM - bulkmedia division c/o BSB+P Communication Group

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We are IND EX®.

The organisation IND EX® (Intercontinental Association of Experts for INDUSTRIAL EXPLOSION Protection e.V.) was established 2009 in Frankfurt am Main, Germany. IND EX® consisting today of 55 members and continuous growths since its inception. IND EX® retains and works with top experts in explosion and fire safety from all over the world. Members come from different professional backgrounds such as plant engineers, safety consultants, equipment manufacturers, service providers and universities.

Explosions as well as fires can occur in several different production processes where the combination of an ignition source, oxygen, dust and/or gas are presented.

The consequences of explosions or fires can be catastrophic:

- ✓ extensive cost,
- ✓ production downtime,
- ✓ loss of market share,
- ✓ loss of facilities and equipment,
- ✓ and most importantly, loss of life.

To prevent such occurrences, IND EX® has assembled this team of specialists to address the safety needs of industries at risk of explosions and fires. To achieve this goal, IND EX® has laid out a set of commitments to achieve its objectives.

Commitments

- ✓ Assimilation and interpretation of the existing sets of international guidelines to gain an overarching understanding of explosion and fire safety related regulations. Every employer has technical and practical challenges to interpret explosion and fire safety regulations.
- ✓ Support research in explosion and fire safety that will lead to the production of new and innovative technologies aimed at reducing the risk of explosion and fires.
- ✓ Organize periodical congress and symposia to facilitate knowledge transfer in explosion and fire safety.
- ✓ IND EX® has become the name for expertise, experience, and knowledge in the field of explosion and fire safety.

For further information please visit
<https://ind-ex.info>



IND EX® Organizational Chart



The main persons of IND EX® are the members. The IND EX® members meet in an annual Members Meeting to discuss current topics, activities and research projects. This way, IND EX® makes sure that the research objectives regarding explosion safety are achieved.

President Richard Siwek and the vice president Dr.-Ing. Johannes Lottermann are the members of the Board of Directors. They execute plans and measures, decided in the Members Meeting.

The Scientific and Technical Committee consists of members from various institutions. The task of the committee is to define the research fields and activities. Furthermore, the committee validates and verifies new research projects, and oversees the IND EX® research and development budget.

The treasurer is responsible for the membership contributions and is elected regularly.

The IND EX® Back Office supports the association, their activities and takes care of the members.

Full Members



Associated Members



Honorary Members

Dr. Dirk Oberhagemann Wolfgang Schubert Chris Cloney Ron Sinclair

Accompanying Members



Richard Siwek, M.Sc.

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Richard was born on June 5, 1950 in St. Fons, France. He was President and CEO of FireEx Consultant GmbH since 1999 and CTO of the company since 2016. In 2019, he was nominated as President of IND EX® e.V.



Richard was appointed honorary member of IND EX® e.V. shortly after its foundation in 2009 and since then he participated in many IND EX® activities such as seminars and symposia in Glasgow, Mumbai, Shanghai, Radenci, Nuremberg, Krakow, Barcelona, Dortmund, Basel. Besides the classical work in his function, he is mostly involved in the development of computer-aided programmes such as EXTOOLS®, training modules and other tools and supports the activities of the Scientific and Technical Committee of IND EX® e.V. together with the Vice President.

Vice President

Dr.-Ing. Johannes Lottermann

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Dr. Johannes Lottermann studied safety engineering at the University of Wuppertal before he worked for the renowned German mining safety consulting company DMT GmbH & Co. KG. At DMT Johannes led the Department of Technical Fire and Explosion Safety.



In 2010 he joined REMBE® to work in industrial explosion safety. With his consulting background and a PhD in Integral Fire and Explosion Protection Concepts he is now REMBE®'s Director Explosion Safety, delivering the complete package of consulting, engineering, products and service. His main focuses at Explosion Safety are complex applications such as spray dryers, particle board plants and non-regulated installations in the grey zone of explosion safety standards. Dr. Johannes Lottermann is also a proactive member in numerous committees and international associations such as the VDI, VDSI, VGB and NFPA. He has made a significant contribution to EXTOOLS®.

Dr. Kees van Wingerden

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Kees van Wingerden holds a PhD from the University of Bergen, Norway and an MSc from Delft University of Technology, Netherlands. He has 45 years of experience related to gas and dust explosions. Work performed comprises R&D, consultancy work, project and company management and sales. He has also been involved in numerous accident investigations.

**Prof. Ulrich Krause**

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Originally an engineer in fluid mechanics and thermodynamics, Ulrich Krause has performed research in the field of dust explosions since 1990.

**P. Eng. Hugues Châteauneuf**

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As a dust expert, Mr. Châteauneuf has been performing Dust Hazard Analyses and engineering mandates in explosion protection for over 20 years. He offers relevant expertise in industrial ventilation, finding causes behind safety issues, thus allowing to prioritize actions.



Dr. Georg Suter

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Dr. Georg Suter studied chemistry at the Federal Institute of Technology (ETH) in Zurich and has a PhD in Physical Chemistry. He then worked in the Safety Testing Lab of Sandoz and became Corporate Safety Officer for Clariant. For the last 20 years, he was Senior Consultant for Swissi and TÜV SÜD.



Marius Bloching, M.Sc.

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Marius Bloching studied safety engineering at the University of Wuppertal. After his scientific work in fire and explosion protection for process equipment at the chair „Methods of Safety Engineering / Accident Research“, he dealt with the topic of geometry dependency of explosion venting devices as the first master student of IND EX®.



Ursula Aich

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Ursula Aich studied chemical engineering at the University of Karlsruhe and, after working in industry, worked in the occupational health and safety administration in Hessen, where she was also responsible for the support of accident systems since 1982. Within the occupational safety administration, she was head of an occupational safety department within the Darmstadt regional council until her retirement in July 2020.



Nalini Krishnan

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Nalini started her move into being associated with REMBE® back in early 2018 and has a full time assignment with Mascot Systems Private Limited. „Proud to be associated with IND EX®“.



Niklas Kitzhoefer

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Niklas Kitzhoefer started his professional full-time career at REMBE® China Ltd. as a Business Development Manager for China. He is an IECEX Certified Person of Competence in the field of dust explosions and equipment used in hazardous areas as well as zoning classification.



Stefano Cavallin

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Stefano Cavallin graduated in Chemical Engineering from the Polytechnic of Turin (Italy) and, after some years of work in chemical industries, has been involved in industrial explosion protection for more than 20 years and his main activity is explosion risk assessment in industrial processes.



Univ.-Prof. Dr.-Ing. Uli Barth

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As an IND EX® Ambassador for the Germany-Austria-Switzerland (D-A-CH) regions Univ. Prof. Dr.-Ing. Uli Barth will help to promote and advance safety standards, methodologies, and incident investigation practices.





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B·A·D Group – The right way to handle Health and Safety

With some 5000 experts in Germany and across Europe, the B·A·D Group provides support in numerous areas of prevention to 280,000 firms with 4.5 million employees. With that – together with the European TeamPrevent affiliates – B·A·D GmbH is one of the largest providers in the area of occupational safety and company health care.

The B·A·D Group provides advice and support to customers of all sizes in a wide array of sectors in many different countries (Germany, Italy, Slovakia, Czech Republic). The depth of services ranges from individual projects right to complex outsourcing measures. The portfolio has been steadily established with a holistic approach in mind for the health and safety of the employees of business enterprises.

The services offered by B·A·D range from fire and explosion safety, right to the management of hazardous substances, hygiene and site inspections. B·A·D experts provide advice and support to their customers for all aspects of occupational safety, to protect employees and business enterprises against loss, personal harm and economic hardship.

As a leading provider, we are your reliable partner in:

Medicine:

- ✓ Occupational medicine
- ✓ Travel medicine
- ✓ Traffic medicine
- ✓ Expert opinion

Technology:

- ✓ Occupational safety
- ✓ Risk assessment
- ✓ Fire safety
- ✓ Explosion safety
- ✓ Management of hazardous materials
- ✓ Testingt
- ✓ Noise and vibration assessment
- ✓ Construction site health and safety coordinator
- ✓ PreSys 2.0 (integrated online occupational safety system)

Health Management:

- ✓ Employee Assistance Program (EAP)
- ✓ Skills development
- ✓ In-house operational rehabilitation management (BEM)
- ✓ Risk assessment of psychological stress
- ✓ Organisational consulting - Healthy company
- ✓ Management consultation – healthy company
- ✓ Health promotion
- ✓ Digital health services

The services in the field of explosion protection include, among others

- ✓ Comprehensive advice and training in matters of explosion protection
- ✓ Risk assessment explosion protection; Creation of the explosion protection documents
- ✓ Initial testing and recurring tests of work equipment and systems in potentially explosive areas
- ✓ Creation of safety concepts, expert opinions, reports and the performance of consulting services on matters of explosion protection

Fagus GreCon

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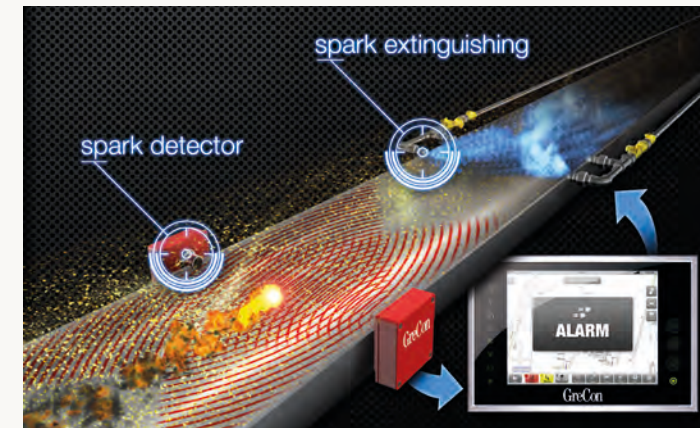
Extinguish Before Ignition

Filters may burn or even explode because of ignition sources within exhaust ducts. GreCon Spark Extinguishing Systems are designed to prevent this. They detect small sparks within the ducts and extinguish them in a split second. Spark sensors detect the infrared radiation of glowing particles.

Immediately, a dense water mist spray which extinguishes passing sparks is created in a specified distance downstream from the spark sensors. The production process can continue without interruption during the whole procedure. Spark extinguishing systems are amongst the most efficient fire protection systems as a result of their highly-developed technique and their reliability. The use of these systems for various applications is even prescribed by the employer's liability insurance associations and by national factory inspectorates. A GreCon spark detection and extinguishment system is suitable for almost any position of the production process to ensure fire protection or monitoring functions by means of special sensors. IR detectors monitor conveyors and can if necessary activate high-speed water extinguishing devices within a few milliseconds. The spreading of ignition energy can be effectively prevented. A diversion or shut-off of the product flow is an option and is used whenever extinguishment with water is impossible.

GreCon spark detection and extinguishment systems substantially contribute to an elimination of varied ignition sources. As preventive fire protection for filter systems and silos in numerous production plants, they have been part of the standard equipment in the area of safety technology for decades to protect mechanical or pneumatic conveying systems. Spark detection and extinguishment systems can detect and eliminate ignition sources before fires or explosions occur.

In many different industries where bulk materials are processed, fires and dust explosions occur again and again worldwide with far reaching consequences. Interruptions of the production process that are caused this way lead to substantial follow up costs, quite apart from the direct damage to persons and property. With GreCon spark detection and extinguishment systems, the risks of fire can be prevented by a special technique: detection, as quick as a flash, and automatic extinguishment of the ignition energy before fire can arise.



- ✓ Events recorded exactly to the millisecond
- ✓ Risk management of your production process
- ✓ Remote Control Monitor and Safety Information System option available
- ✓ Eliminates ignition sources
- ✓ Fire and explosion prevention
- ✓ Avoid property, equipment and personal damage
- ✓ Maintain greatest production availability
- ✓ Discount for fire protection risk insurance possible

Depending on the events, that are recorded exactly to the millisecond, adequate measures are automatically and specifically activated via a 4-fold graduated alarm system. These measures can be mostly carried out without interrupting the production process. Action is taken ad hoc to minimize damage and the resulting downtime without unnecessarily disturbing the production process.

Furthermore, filters or silos can be monitored for fire arising during standstill periods or self-ignition by suitable GreCon technology. In such cases, extinguishment is activated even before the operator or the fire brigade notices the arising fire.

The relevant events are available without exception via the alarm memory of the GreCon control console, even at a later time. This information can be easily transferred for analysis to a PC and processed there by standard office software. Simple data analyses are possible directly on the touch display.

Statistics are automatically available via a long-time report of all alarms and troubles that is generated in the GreCon control console. These statistics reflect – graphically processed – the condition of the production plant. One can see at a glance whether and where a danger potential is developing. An impending accident

can thus be prevented.

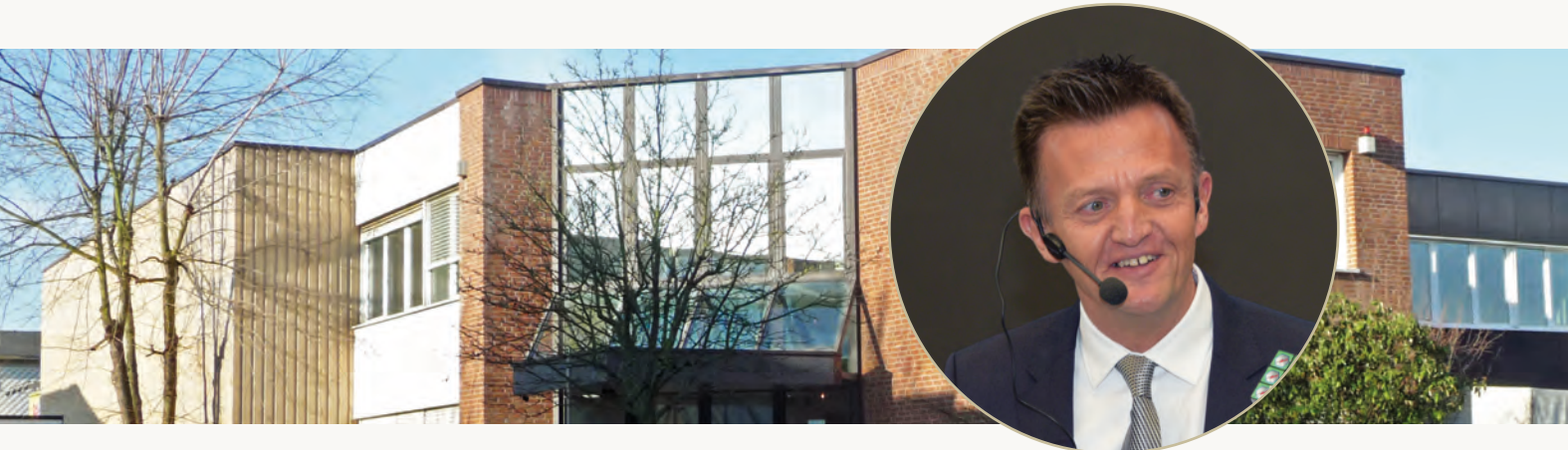
In times of worldwide competition, modern production plants become more and more efficient. Besides new factories, a continuous improvement and increase in productivity are therefore demanded from already existing and often obsolete production lines.

Nevertheless, production safety must not suffer from this. Above all, it is necessary to nip the creation of fires and explosions in the bud. Unprotected facilities for comminution, drying, cooling and pressing are especially at risk with their pneumatic or mechanical conveying or extraction systems. Furthermore, there is a high danger potential for unprotected filters, silos or bins in these factories.

GreCon is the leading manufacturer of preventive fire protection systems worldwide. The protection of production facilities against fire ensures an uninterrupted production and avoids personal and property damage.



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IEP Technologies and Newson Gale - Together We Save Lives ...

IEP Technologies and Newson Gale, members of the HOERBIGER Safety Solution Group, are the worldwide leading providers of explosion protection systems and services and for over 60 years have provided protection solutions that prevent, suppress, isolate and vent combustible dust or vapor explosions in process industries.

Our protection experts provide sales and technical support through offices in the U.S., Germany, Switzerland, U.K., France, Turkey, China, Brazil and Singapore, designing and servicing systems with an experienced team of application engineers, regional sales managers and field engineers.

What Sets Us Apart ...

Unsurpassed Verification and Approvals

IEP Technologies has conducted thousands of full-scale explosion tests to better understand the science behind flame propagation and verify our protection solutions. Our products are third party (FM and ATEX) approved and we are the only provider in the industry with design calculation tools that are ATEX approved. From design to service, you can have confidence in the solution IEP Technologies provides.

Combustion Research Center

Our state of the art facility is fully-equipped and dedicated to the ongoing study of explosions and the constant advancement of explosion protection science. Understanding the explosibility of your product is the first step in developing your protection solution.

Single Source Responsibility

Whether the application calls for a static grounding system for explosion prevention, an integrated explosion detection and suppression system, a venting device, a custom isolation system, or any combination, Newson Gale and IEP Technologies can meet your challenge with a turn-key solution from system design to 24-hour service.

Explosion Protection Professionals

The IEP Technologies and Newson Gale protection team, including our sales representatives, field and application engineers and service technicians, have a unique skill to support you. Each understands not just our product range, but they also understand your process and how our solutions can help protect it.

Worldwide Service

IEP Technologies recruits, trains and retains professionals who make up the finest network of Authorized IEP Technologies Service Centers. They provide fast response resulting in a minimum of disruption to your operations. These service centers are backed by IEP Technologies with over 50 strategically located factory technicians who provide on-site technical support to our customers.

Precise Protection for Every Application

We have more worldwide experience protecting a wider range of facilities against explosions than any other company. With well over 15,000 systems installed, we have developed a unique process to ensure the highest level of protection for your facility.

Our comprehensive process includes:

Material Testing

The Combustion Research Center, using recognized test methods such as those published by ASTM, U.S. DOT, UN and others, can conduct testing to determine the combustion properties of your process material including dusts, liquids and gases. Understanding the characteristics of your material is the first step in designing a suitable protection solution.

Site Visit

The industry's most experienced Explosion Protection specialists review your pre-defined hazard to gather data which will assure an IEP Technologies system that meets the needs of your specific application.

Training

On-site training programs are available for the proper operation and understanding of your explosion protection system.

System Design

IEP Technologies engineers, using a proprietary Computer Modeled System Design, develop a protection solution to meet your individual application needs. We provide key support and documentation at this stage to ensure you understand the overall design. Together with an on-site design and pre-installation meeting, our engineers will review the system performance when employing the recommended solution.

Installation, Commissioning and Maintenance

Proper installation and commission of your explosion protection systems will set the stage for the ongoing successful protection of your process and facility. Newson Gale and IEP Technologies supports you from the installation and commissioning stages through to ongoing maintenance and any emergency service/spare parts needs you may have.



Safety is for life.™

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Safety is for life - Our mission: your safety

REMBE® is a safety specialist in explosion safety and pressure relief. It provides customers in all industries with safety systems for their plants and equipment. All products are made in Germany and meet the requirements of national and international regulations. REMBE® customers include market leaders in numerous sectors, such as the oil and gas, food, wood, chemical, pharmaceutical and petrochemical industries. REMBE® takes a comprehensive approach, primarily developing and making its own products while also providing the relevant consultancy, engineering and service.

The independent family enterprise, founded in 1973, employs a global workforce of around 180. REMBE® has its headquarters in Brilon, in the hills of the Sauerland region (Germany), and runs eight subsidiaries to support its worldwide customers right where they are. Thanks to its short lines of communication, the company can respond quickly and find customised solutions for all applications, ranging from standard products to special high-tech designs. Its most important proprietary products and processes include the KUB® reverse acting buckling pin rupture disc and flameless venting technology - REMBE® has active worldwide engagements on various professional bodies and is also involved in planning and setting up international standards and regulations.

Operational safety is an important responsibility. In fact, it's a mission to which we've dedicated ourselves wholeheartedly for over 40 years now. Throughout the world our experts have a single aim – to provide the best possible protection for your systems and processes. You'll benefit from our decades of experience which ensures that you always receive an honest analysis and products of the highest quality. Working diligently and responsibly, our attention is fully focused on the customised optimisation of your routines, manufacturing processes and products.

A decision for REMBE® means opting for perfect safety. As an independent medium-sized German company, we supply products made in Germany – a further bonus for your safety. Moreover, you will always have the support of our experts in matters of process safety and explosion safety technology – 24/7, all the year round. It's our promise!

Consulting. Engineering. Products. Service.

It's a route with four stages:

Consulting

We don't just work at our desks. We also work on your premises.

Each production facility is different and has different requirements. This is why our experts have a close look at your entire plant with you to determine what's genuinely reasonable and what will be the best solution for you. It's your perfect investment in safety. Solutions off-the-peg? Not from REMBE®. Once we've looked at all the relevant documents, we will identify all the existing space for improvement and create a profitable safety policy for you that is perfectly geared to suit your company.

Engineering

We don't just make recommendations. We give you the best solution.

From the paper to production: you will have a safety system that is perfectly tailored to suit your processes and operational requirements. Whether it's explosion safety or pressure relief, our engineering ensures that you get the best solution at all times – made in Germany.

Products

Our products are not just excellent. They are certified.

Good is never good enough for us. And so we keep putting ourselves on the test bench. The result is safety products licensed under globally recognised and industry-specific

standards and regulations. Moreover, we are the first company worldwide to offer SIL-equivalent parameters for mechanical (flameless) explosion venting products and the relevant signallers. This high quality standard makes perfect economic sense for you. Our extensive product range ensures that you always receive the most cost-effective and reliable solution for your needs. We take responsibility for the big picture. With us you get everything from a single source, thus ensuring good profitability and legal security.

Service

Downtime costs money. Our service never stands still – throughout the world.

From start-up to regular maintenance – we ensure that your production runs smoothly and without disruptions. All the products we supply can be identified by their batch and serial numbers for many decades, allowing exact reproduction. If you're ever in a dreadful hurry, why not use our Rush Order Service? We can guarantee that you're given the highest priority and that your product is made straight away. Depending on the destination, we'll deliver within less than 24 hours. This also applies to spares and custom designs. REMBE® speaks your language. Our global network of offices and our many international experts can guarantee that we always understand you and your needs. Just give us a ring.

Quality – the key to your safety

Our products are manufactured according to the latest, up-to-date international standards for management systems, pressure equipment and explosion safety devices. As well as prioritising quality and reliability, we attach major importance to eco-friendly technologies, manufacturing processes and compliance with standards. High-quality materials from controlled sources ensure that our products have exceptionally long lifetimes.



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No matter what happens - nothing happens

RICO Sicherheitstechnik AG, based in Herisau Switzerland, is a global active owner-managed and independent company, specialized in various components for explosion isolation, such as isolation valves, slide valves and also 100% gastight butterfly valves for high demanding HVAC systems. The Swiss expert supports with almost 30 years' experience renowned customers in a variety of industrial sectors worldwide - providing expertise, service and top-class products from the development, the production to the distribution.

With a global sales network of partners, RICO offers local support in order to maintain the known high-quality and best support for its customers. In addition, a global network of service partners ensures that service technicians meet any special customer wishes on-site. Moreover, training engineers and operators of customers in product maintenance is also part of the expert's portfolio.

The online tool RICO Service App (<https://service.rico.ch/>) facilitates furthermore monitoring maintenance intervals as well as retracing conducted maintenance work.

VENTEX®

RICO is specialized in, and sets the standards for, mechanical isolation valves. The VENTEX® valves are the answer for explosion protection of systems, in which combustible dusts, gases or hybrid mixtures are processed. The valves are in accordance to EN 15089 and provided in active as well as passive versions. The functionality of the passive valves is based on a sealing of the valve triggered by the pressure wave of the explosion. The pressure wave pushes the valve poppet within the valve to a seal and therefore prevents propagation of flame and pressure. Should the explosion isolation be triggered off, an unlocking device secures a quick restart, as the opening of the valve only requires very little effort.

The active VENTEX® valves are installed with a fitted pressure and/or flame sensor for the protected system. In case of an explosion, a signal alerts the system controller, which activates a gas generator. In this way, a perfect seal is formed within milliseconds.

All VENTEX® valves can be applied in combination with explosion containment, suppression and relief systems and are available in various executions, also special executions like CIP for pharmaceutical applications.

Slide Valves

The RICO slide valves RSV and REDEX® Slide are the fastest slide valves available. RSV is applied by means of a gas generator and successfully prevents the spread of explosions (flame and pressure) in pipelines. The slide valve is especially designed for applications in which the pipelines do not tolerate any obstacles nor any loss of pressure. RSV is available in various versions and is therefore suitable in pharmaceutical industry as well as all other dust and gas processing systems.

The isolation slide valve REDEX® Slide is especially designed for applications with a low explosion pressure, and is combined with explosion relief and suppression systems. The protected systems are fitted with pressure and/or flame sensors, which detect an explosion immediately and transmit a signal. By means of this signal, a gas generator is activated and the slide valve closes through the generated pressure – preventing a spread of flames and pressure waves. Due to the extremely fast closing time, a very short installation distance is enabled. The slide valve can be opened and closed pneumatically during normal operation.

REDEX® Flap

The REDEX® Flap is a passive explosion flap valve in accordance with the standard EN 16447 and can be combined with explosion relief systems. The flap valve enables optimal protection by means of a mechanical locking device, is single acting and prevents propagation of explosions opposite the flow direction. Without an air flow the flap valve is closed, but not locked. In this state, the functional safety is monitored via a switch. During normal operation the REDEX® Flap is in an open position, which allows the medium to flow around it. In case of an explosion, the pressure wave pushes the flap valve into a closed and locked position. In this way, flame propagation and spread of the pressure wave are prevented.

Certified Safety

RICO Sicherheitstechnik AG is certified in accordance with ISO 9001:2015 and the ATEX guidelines 2014/34/EU. RICO finds, due to its extensive experience, innovation and flexibility, the right product of any application and offers customized systems for any needed requirement. Each product is type-approved as well as individually tested before delivery. This principle ensures for almost 30 years now the highest quality for maximum safety standards.



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Taste the Flavor! Tasty flavors for every food

"I have but the simplest taste, I am always satisfied with the best."
Oscar Wilde

Since 1910 our family owned company has held an established position in the world of flavor manufacturers. During this time by means of innovative technology and creative ideas, Silesia has continually developed products of the highest quality, lending their distinctive taste to an ever increasing range of foods.

With headquarters in Neuss, Chicago and Singapore, Silesia is a globally operating business maintaining close contact to its customers wherever they may be. Silesia has never lost sight of its philosophy of maintaining a company with a flat structure and short decision making paths. To ensure fair dealing with each other as a permanent feature, we comply with all legal regulations that are applicable for our enterprise and, furthermore, we impose upon ourselves to follow ethical guidelines according to the ETI-Base-Code.

We believe that companies are responsible for achieving good environmental practice and operating in a sustainable manner and therefore have a clear commitment to think and act in the interest of future generations, balancing people, planet and business. Silesia's flavor portfolio encompasses liquid, powder and granulated formulations in a whole host of different flavor directions and categories. From fruity, flowery & sweet or brown through to meat, poultry and fish as well as herbal, spicy, vegetable and cheese notes - our portfolio offers them all.

Our innovative, premium flavors turn all kinds of food and drink into a culinary delight. From a stone-oven note for your pizza to a specific creamy note to round off your milkshake, our product portfolio can offer the perfect solution for every application:

- ✓ Confectionery & Bakery
- ✓ Dairy Products
- ✓ Beverages
- ✓ Culinary Products

The production of first-class flavors for the food industry and the safety of our employees requires a high level of hygiene and protection. That is why Silesia stands apart from many other companies represented here with regard to explosion protection. We are not researchers, service providers or manufacturers in this field, but users and operators. Flammable liquids and powders are used as flavoring components and carriers in our products, so we have to take into account the possibility of creating hazardous explosive atmospheres.

Our goal is to avoid the formation of explosive

atmospheres outside of our machinery, containers and canisters, and to minimize their extent. Therefore, primary explosion protection plays a very important role in our facilities. Another important part of our precautionary measures is secondary explosion protection. In areas where the formation of dangerous explosive atmospheres can't be avoided, suitable measures to avoid ignition sources are applied. We are also occasionally dependent on tertiary explosion protection when necessary.

As a member of IND EX® we keep up to date with safety standards in explosion protection. With our measures and the practical implementation at our various production sites around the world, we gain know-how that helps to establish international guidelines for explosion protection.

1910

Founded in Düsseldorf as a producer of essences for liqueurs and later on as a specialist for sweet flavors

1942

Relocation of the company headquarters to Chemnitz under the new management of Gerhard Hanke

1949

Silesia returns to Düsseldorf

1966

New production and office facilities built in Neuss, Germany

1995

Starting to build up a network of subsidiaries in Europe and worldwide

1998

Production facilities for powder flavors in Kalkar, Lower Rhine

2005

Opening of the production facility in Shanghai

2011

Expansion of powder production in Kalkar, new production line for extruded flavors

2015

Opening of the new Customer Service Center in Neuss, Germany
Establishing the Silesia Clemens Hanke Foundation

2017

Expansion with new production, R&D, QM, application, marketing and sales facilities in Singapore.

2018

Modernization of Silesia Flavors Inc. USA in Chicago

2019

New production plant Pinghu, China





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Axel Sommer
CSO CMO



Alexander Heuberger
CEO

PROTEGO® - Excellence in Safety and Environment

Since 1954, PROTEGO® has built and provided safety devices and tank equipment, now with the help of more than 600 employees worldwide. We are the technology leader within our area of expertise. We provide global services for our customers which include research and development, application-specific engineering, overall protection system design and safety awareness training. Our customers know they can rely on our research capabilities, engineering expertise and high quality products for the up and downstream oil and gas, petroleum, chemical, pharmaceutical, and bio-energy industries.

Research & Development

PROTEGO® operates the world's largest research center for the experimental study of flame arresters. We have been testing all types of flame arresters for over 60 years. Our test facility has the necessary test gases and equipment, as well as experienced technical staff for the safe conducting of both explosion and fire tests. Customers benefit from our experience and expertise. PROTEGO® has successfully tested and received independent third party approvals in conformity with both European and international standards for all devices we sell. We support our customers by developing and optimizing devices for protection against overpressure and vacuum, deflagrations, detonations, and fire.

State of the Art Flow Test Facility

Our products stand for quality and safety. The world's largest flow test facility of its kind, it is also an indispensable tool for internal research and development to enable correct scientific measurement of flow and meet specific customer requirements. All PROTEGO® valves and flame arresters are flow tested to assure safe operation in service.

Engineering Service

We assist our customers with detailed tank modelling and safety analyses beyond the sphere of PROTEGO® device application.

Our areas of expertise include:

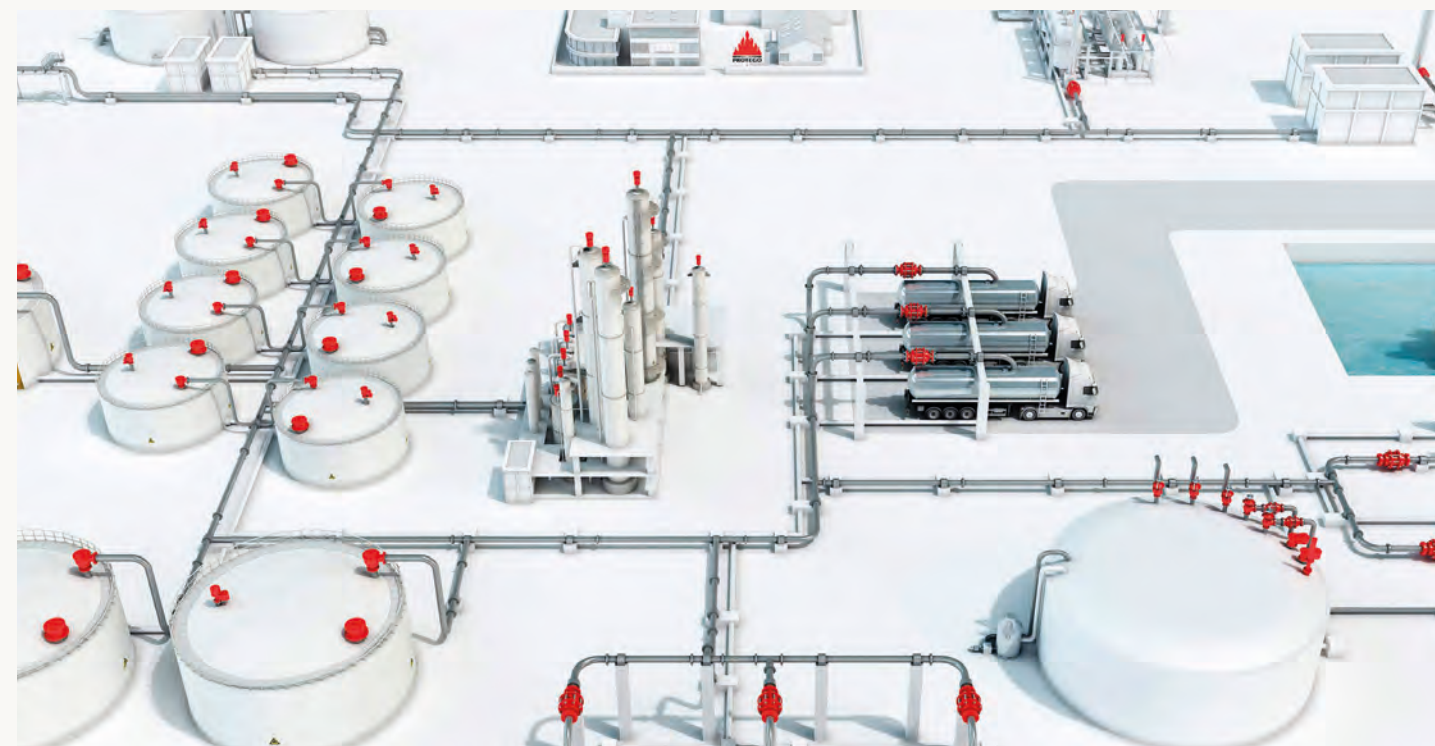
- ✓ Tank protection against ordinary and intense weather conditions
- ✓ Definition of tank and piping insulation strategies
- ✓ Prevention of vapor collapse in tanks
- ✓ Safe and cost-effective product loss minimization

PROTEGO® Academy - Skilled and Competent through Advanced Training

The PROTEGO® Academy organizes special training courses which provide our customers the ability to improve their skills and expert knowledge of Protective Systems in hazardous areas. So as a manufacturer of Protective Systems, we contribute to preventative plant safety strategies and play a key role in customer awareness training.

PROTEGO® Authorized Repair Centre (PARC)

We have built a network of PROTEGO® authorized service partners over the last several years who can assist with and manage maintenance procedures on site. The PARCs, being certified service partners, meet the requirements of the PROTEGO® Works Standard in the fields of human resources, organization, workshop equipment, machinery, and quality and environmental management.



AREGUS Services

Ingenieurbüro Eckart Hillenkamp

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AREGUS Services founded in 2011 is a highly-qualified consulting company. The main topics are fire and explosion protection, occupational safety, machine safety, process safety, environmental protection and energy management. Our customers are well-known companies in the fields of chemicals, food industry, energy industry, explosives industry, logistics and plant manufacturers.



The importance of explosion protection in the industry is undisputed. This is also shown by the fact that Germany alone has more than 800,000 systems exposed to explosion hazards which are requiring monitoring. This is significantly more than the 650,000 elevators you will find everywhere. The key to success for successful prevention is a comprehensive know-how in the field of explosion protection. AREGUS Services can help both parties with qualified advice and training. On the one hand, the operators of explosion-proof systems that have to comply with their extensive operator obligations and, on the other hand, the manufacturers of ATEX products that want to offer their customers safe and customized products. The founder of AREGUS Services, Eckart Hillenkamp, has about 30 years of experience in the field of explosion protection at mostly American chemical manufacturers. Therefore, especially in the person of Eckart Hillenkamp, AREGUS Services not only has the technical know-how for explosion protection, but also the didactic skills to present this knowledge in a target group-oriented manner. As an officially certified trainer who has participated on a technically high sophisticated training program on methodology and didactics, he also has the highest degree in the field of didactics, which can be obtained except a university teaching degree in Germany. So for him it is on the one hand possible to present highly complex content to the various target groups of the company in their respective language in a sustainable and brain-oriented manner, and, on the other hand, to involve all groups of the company in a specialist consultation. This makes explosion protection easy and understandable for everyone involved.

Some exemplary services are:

- ✓ Comprehensive explosion protection consulting
- ✓ Risk assessment in explosion protection
- ✓ Creation of required explosion protection documents
- ✓ Support in zoning of explosion protection areas
- ✓ Support for ignition source analysis the
- ✓ development of safe ATEX products

Conducting training:

- ✓ Explosion protection, ATEX training and experimental lectures on explosion protection and electrostatics
- ✓ Leadership responsibility and liability risks in explosion protection
- ✓ Explosion protection at the interface to the machine safety directive
- ✓ Tailor-made in-house seminars



BILFINGER

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Bilfinger GreyLogix foodtec GmbH is the specialist for the food and beverage industry within the Bilfinger Group. We plan, construct, optimize and service Process Technology Systems for manufacturing foods.



One core competence of Bilfinger GreyLogix foodtec is spray drying and corresponding safety technology for applications in the food industry.

We are a reliable partner for the construction, optimization and maintenance of spray-drying systems and oversee the entire life cycle of your system. With years of experience, we ensure that your systems are always at the cutting edge of technology and comply with all statutory regulations. In addition to constructing your new plants, we have made a name for ourselves in the dairy industry by modernizing existing plants.

We use the latest technology and our experience in the field of process automation to optimize your spray-dryer equipment in many different application areas, including the following:

- ✓ Process Security
- ✓ Fail-safe Reliability
- ✓ Data Collection Transparency
- ✓ Energy Efficiency
- ✓ Secured Supply of Spare Parts
- ✓ Detection of Errors



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BS&B Safety Systems - Safety is our middle name

Since its inception in 1931, BS&B Safety Systems has become a world leader in explosion protection and prevention systems, with robust sales and distribution networks serving every continent, worldwide.

BS&B began paving the way in explosion protection technology as the original designer of the rupture disk (bursting disk). Since then the company's portfolio of protection and prevention solutions has expanded significantly. Over eighty years on, now as a fully-fledged international organisation, BS&B operates from locations in North America (USA, Mexico and Canada), in EMEA (Ireland, Netherlands, Germany, UK, Russia, UAE), South America (Brazil), APAC (Singapore, Malaysia, Japan, China, India).

Among others, its product range includes

- ✓ Chemical Suppression & Isolation Systems
- ✓ mechanical isolation
- ✓ Flame-free™ vents
- ✓ explosion vents
- ✓ spark detection and extinguishing

BS&B products and facilities operate in line with all national and international standards and codes. BS&B's diverse explosion protection solutions have been applied in all industries where combustible dust and gas are present.

BS&B's dedicated service includes

- ✓ The Design and Manufacture of Explosion Prevention & Protection Technology.
- ✓ Supporting and driving the development of codes and standards.
- ✓ Providing engineering advice and services to owners, operators, equipment manufacturers and engineering consultants and Contractors.
- ✓ Providing field service network support to customers.
- ✓ Process risk assessment in-line with best engineering practices
- ✓ Providing periodic inspection to comply with codes and standards as necessary.

Among the main industries are:

- ✓ plastics
- ✓ chemical
- ✓ pharmaceutical
- ✓ grain processing
- ✓ wood processing
- ✓ agrofuels
- ✓ recycling
- ✓ animal feed

Because the BS&B team is committed to exemplary customer service, there is a focus on recommending appropriate and holistic explosion protection solutions for their clients' needs. To deliver the best service to clients, BS&B are well experienced in offering hybrid technical solutions to manage the deflagration process safety risk.



BSP - Consulting GmbH
Buehl Spray Powder Consulting

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Expert in drying technology

Thomas Bühl is managing director of the BSP-Consulting GmbH. He was born in 1967 and works after studying as dairy engineer for more than 23 years in the drying technology.



With his long experiences in project management, engineering, calculations, installation supervision, commissioning and troubleshooting, he is an expert for spray driers and spray-belt-systems (Filtermat). For more than 6 years he works as consultant for the explosion protection of spray drying plants in the dairy, food and industrial sector (from feed preparing systems up to the powder transport systems).

BSP-Consulting GmbH is founded in 2010 and offers a range of services and engineering in drying technologies:

- ✓ lectures and training courses in spray and spray-belt-systems (filtermat), drying technology, atomization, process engineering and plant engineering
- ✓ Measurement of process parameter in running processes
- ✓ creation of process engineering drawings (PID)
- ✓ development and optimization of spray drying-, spray-belt- and auxiliary systems
- ✓ preparation of emulsions for many standards and special products of the dairy and food sector
- ✓ troubleshooter in spray and spray-belt-systems
- ✓ design and calculation of drying units
- ✓ Project management and commissioning
- ✓ support in projects and negotiations
- ✓ selection of suitable suppliers
- ✓ supervision of installation
- ✓ start-up of drying units
- ✓ creating control concepts and descriptions
- ✓ preparation and carry out experiments incl. product development
- ✓ preparation of expert reports of drying equipment and procedures
- ✓ safety consideration of drying plants
- ✓ creation of explosion protection documents
- ✓ survey of existing plants



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Billions of people come into contact with Bühler technologies to cover their basic needs for food and mobility every day. For this, we develop the best process solutions along complete value chains. Two billion people each day enjoy foods produced on Bühler equipment; and one billion people travel in vehicles manufactured with parts produced with our machinery. Having this global relevance, we are in a unique position to turn today's global challenges into sustainable and good business.

Bühler has three business pillars: Grains & Food solutions ensure safe and healthy food and feed. Consumer Foods solutions create culinary delights. Advanced Materials contributes to the production of energy-efficient vehicles and buildings.



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Providing electrical and non-electrical product certification according to ATEX Directive 2014/34/EU for gas and dust hazardous environment. ExNB works in accordance with the general requirements for bodies operating certification of persons (ISO/IEC 17024:2012) and operates its ExAM personnel competency system covering the standards EN/IEC 60079-0/-14/-17/-19 and EN/ISO 80079-36/-37.

- ✓ specialized in electrical and non-electrical explosion protection according to ATEX Directive 2014/34/EU
- ✓ approved personnel competence certification body according to ATEX and ISO/IEC 17024

Ex Product Assessment and Certification

Electrical and non-electrical product assessment and certification according to Annex III, VIII and IX (Modules „A“, „B“ & „G“) of the 2014/34/EU ATEX Directive for equipment intended to be used in potentially explosive atmospheres.

Manufacturing Site and Repair Workshop Audit

Quality audit for production sites in accordance with ANNEX IV (Module „D“) of the 2014/34/EU ATEX Directive for Ex product manufacturers. Quality system audit and certification for ex equipment repair and overhaul workshops in accordance with EN 60079-19 and cooperation in compliance assessment after repair.

Personnel Competence Assessment and Certification

By the European Council approved Ex-personnel competency assessment and certification body (audited as of the requirements from ISO/IEC 17024:2012)

CERTIFIED EQUIPMENT and COMPETENT PERSONNEL in all cases

In case of installing and operating in potentially explosive atmosphere, all equipment (electrical and non-electrical) must be free from any sources of ignition. The integrity and protection concept of installed Ex equipment must be regularly inspected, serviced and maintained (and properly documented) during whole lifecycle. Ex equipment manufacturing sites must be audited (even in case of successful ISO9001 audit) by ATEX Notified Body. To practice one's technical education in hazardous environment Ex personnel competency has to be proven to comply with latest standards.





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<https://www.donaldson.com>

For over 100 years, Donaldson have helped solve some of the world's most complex filtration challenges. We are driven to provide solutions to our customers; motivated to do our best work; and committed to doing the right thing in business and community.



As a global leader in the filtration industry, we pride ourselves on our innovative technologies and solutions, backed by a talented and dedicated team of employees.

Leveraging our extensive experience combined with our wide breadth of product offerings, we can help with combustible dust management and control strategy, by proposing dust collection solutions for your processes. Our solutions focus on helping you manage your combustible dust and the attendant risks in your process.

To assist process owners in the selection of filtration technologies, in the proper management of combustible dust and in the compliance with the ATEX directives, we need complete and accurate information on all potentially combustible contaminants and the fire and/or explosion mitigation plan(s) that you as a process owner intend to pursue. Once your risk mitigation plan is prepared, we can help review it and integrate our Donaldson equipment into your dust management strategy.

For More info: <https://www.donaldson.com/combustible-dust>



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Because so much is at stake ...™

Fike® Corporation, is a globally recognized supplier of precision-engineered products for Fortune 500 companies and businesses. Fike® manufactures and sells a comprehensive range of pressure relief devices and explosion protection systems such as bursting discs, explosion vents, flameless venting devices.



The variety of explosion suppression, isolation and detection and protection equipment and services we offer, enables us to protect a complete process or a single pressure relief valve, and allows our customers to create cost effective protection systems which are tailored to their precise needs. With over 70 years' in the business, Fike®'s testing capabilities comprise of the expertise, experience and equipment required to validate that our solutions do precisely what we say they do. Fike® maintains a comprehensive, 3000 sq. ft. combustion and research testing facility at its corporate headquarters in Blue Springs, MO as well as a unique, state-of-the-art 26,000 sq. ft. remote explosion testing facility nearby. Every day our Combustion Testing Laboratory tests our clients' process materials from all over the world, and our Remote Testing Facility validates the effectiveness of customer-supplied or Fike®-productinstalled equipment against explosions.

Each of Fike®'s testing facilities serve unique functions in product development, validation and certification for both Fike®'s and our clients' needs. Fike® tests are conducted under real-world conditions in compliance with ASME, ASTM, NFPA, and CEN standards. By comparison, other manufacturers generally rely on data based solely on computer models and simulations. In addition to a wide range of standardised explosion tests, Fike® conducts specialised explosion application and equipment tests, specifically designed for the customer's unique industrial environment.

These include:

- ✓ Design and performance validation of customer-supplied equipment.
- ✓ Determining explosibility, flammability and ignitability parameters at unique non-standard conditions.
- ✓ Validation of Fike® products when applied to customer-specific operating conditions outside established performance limits.
- ✓ Active participation in the development and validation of international testing standards (ASTM, EN).
- ✓ Offer consultancy and detailed test reports to help prepare customer equipment for certification.



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Let's talk about your explosion protection.

We are your experts for holistic solutions including industrial fire protection from a single source - worldwide. FireEx supports with comprehensive and cost effective concepts for protecting human life, assets and environment.

We are specialized in international advisory activities concerning risk assessment with our software FERA, evaluation and dimensioning of explosion prevention and protection measures, preparation of explosion protection documents, incident investigations and determination of Safety Characteristics as well as seminars such as the well-known Practical Days in Austria, Explosion Protection Days in Switzerland or inhouse.

Our consultants can refer on decades of experience and are members in many European standardization committees (TC305), VDI and ISSA. They are also authors of numerous publications in various technical magazines and lecturers at international symposia or for BG RCI. FireEx Consultant GmbH has contributed to many IND EX® activities for years.



František Krejčí

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František Krejčí was born in Zlin Czechoslovakia on 3rd July 1942. He was apprenticed to an electrician in Hodonin. Beginning a skilled electrician, he was employed in Prumyslove stavby Zlin (PSG) a civil engineering company. He entered an study at a Technical college for electricians in Brno specialized for producing and distribution of electric energy.

Later he was nominated as an electrical supervisor for a projects in Egypt, Iraq and Ethiopia. He continued in PSG – International Zlin as a technician, later as an technical manager in PSG – INTE, which executed electrical installations (power, telecommunications, signalisations and controls), mainly in industrial plants and power stations. He left the PSG Group and founded the company INTE in 1998. INTE is a small design, installation and service company specialized for a fire detection and suppression in technology plants, now also on explosion protections.

He holds a licence as an Electrical Inspector and an authorization to design and supervise electrical and telecommunication projects.

František Krejčí is also member of the Czech Fire Alarm Association, Technical Committee for Fire Alarm Standards in the Czech Republic and a member of the EUSAS Society.





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GvW Graf von Westphalen is a German commercial law firm with a focus on legal advice for medium-sized companies. With our locations in Berlin, Düsseldorf, Frankfurt a. M., Hamburg, Munich and Stuttgart and our 180 lawyers, we are among the largest independent law firms in Germany. We also support companies worldwide - with our offices in Istanbul, Shanghai and Brussels and as a member of several recognized global networks.

We advise in all areas of commercial law: production, purchasing, sales and logistics as well as corporate matters - we support you along your value chain. For us, excellent legal expertise and industry knowledge are inseparable. We think and act from the perspective of your company, interdisciplinary with our practice and focus groups consisting of experts from different areas.

Our client base traditionally consists of many mechanical and plant engineering companies, including some from the specialist areas of explosion and fire protection. We are therefore familiar with the specifics of your industry and would be happy to advise and represent you as an IND EX® company.



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Herding® Safety Technology

Preventive and construction-related safety measures are required for handling combustible dusts in the deposited and whirled-up states.



Herding® Filtersystems with Herding® Sinter-Plate Filters are safely adapted to each specific application based on our many years of practice-related development work and our participation in VDI, VDMA, GDV committees responsible for drawing up directives and standards. The safety-relevant properties of dusts are determined jointly with certified institutes.

Training courses and workshops for owner-users round off the filter technology offering:

- ✓ In-house and out of house training courses as well as workshops on the subject of ATEX
- ✓ Definition of zones and their areas of propagation
- ✓ Analysis of ignition sources and ignition hazards
- ✓ Safety-related assessment of plants

If an explosive dust atmosphere exists in the raw gas compartment of the Herding® Filtersystem depending on the operating mode of the cleaning system, the Herding® Sinter-Plate Filter acts as a DustExZoneBarrier and, therefore, no explosive dust atmosphere exists on the clean gas side.

The analysis of ignition sources and ignition hazards must consider the origin of the ignition sources, as there are:

- ✓ Ignition sources on the unit itself
- ✓ Ignition sources entering from the outside
- ✓ Ignition sources from the dust

If ignition sources exist in spite of preventive measures, the Herding® Filtersystem must be equipped with explosion protection devices.



Hobré total analyzer solutions

Hobré is a leader in the design, manufacture and maintenance of on-line analyzers, sample systems and complete turnkey analyzer systems.



Spray drying

Spray drying is a widely used technique for producing a dry powder from a liquid or slurry. Spray drying can be used for a wide range of products and is a preferred method for powdered products in the food, beverages, feed as well as the pharmaceutical industry. The safety but also efficiency of spray drying has become increasingly important for manufacturers, due to increasing demand, energy prices and environmental requirements. Manufacturers therefore face the challenge to improve efficiency, while keeping their operations continues, cost effective and most importantly safe!

Safety improvements

A product for example that is often spray dried is milk powder. Although the production of milk powder seems like a harmless production process, the opposite is true. Spray drying to produce powdered milk is a potentially hazardous process that must constantly be monitored to avoid major safety issues. CO detection is the only pre-warning protection method available to monitor spray dryers for any signs of thermal degradation (smolders) before they become potential hazards resulting in a fire or explosion. Hobré offers the high-end BICOSYS and HICOSYS ADVANCED analyzers to support you in your endeavors of safety improvements.

Efficiency improvement

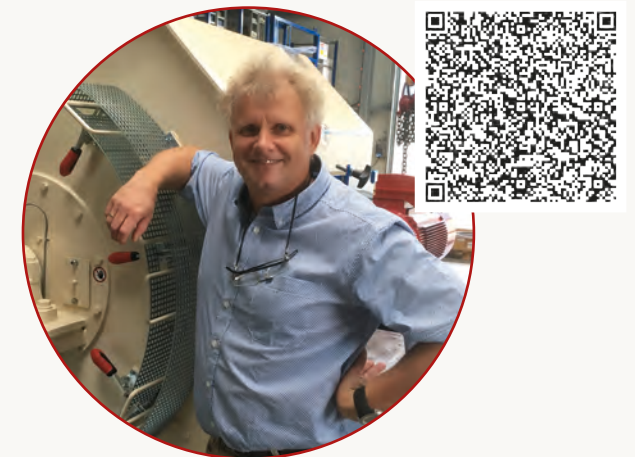
Humidity is one of the most important parameters which can be used in maximizing the efficiency of spray drying operations, resulting in productivity gains up to 12%. Measurement of absolute humidity at elevated temperatures and high dust loads – in an accurate and reliable way – has always been a challenge for end-users. With our proprietary sampling probes, our analyzers are capable of measurement at the most challenging locations such as the tower exhaust, even before filtration by the cyclones and/or bag filters. Hobré offers the state-of-the art HICOSYS ADVANCED and HICOSYS AQUA analyzers to support you in your endeavors of efficiency improvement.

Karsten Frese

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Looking for the most reliable solution

Since 2004 I'm working for machine building industry. I improved my skills especially in screening and milling of grain, different organic and inorganic materials.



Our main products are different kinds of hammermills and everything around the milling unit. Hammermills for example are natural ignition sources. Inside the milling unit ATEX zone 20 is required. Due to this status, all the time explosion protection is an important theme to explain to my customers.

Interesting point, that many of the customers know about this subject but they think that they are not affected or they think that, historical preservations protect the factory. Therefore, it's very important for me to be updated in latest rules and regulations to give my customers best support and find the most reliable application for them.



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Safe extraction and separation of explosive dust

Course of action at Keller Lufttechnik to adhere to the explosion protection guidelines



ATEX Guideline 2014/34/EU, the German regulation concerning industrial health and safety, totally applies to Keller Lufttechnik, as a fabricator of systems containing potentially explosive zones. Requirements for systems and protective devices for explosive zones are specified in this regulation, for example, which ATEX system category can be used in a particular explosion-prone zone. Keller Lufttechnik generates a hazard analysis for dust collection systems in which pre-existing explosive conditions and zones are reported. Based on the information provided, appropriate protective measures will be designed.

Common solutions such as avoiding ignition sources or grounding can provide the basics, as well as installing ATEX approved systems. When the basic measures prove to be inadequate, additional structural solutions can be applied, such as pressure-proof construction with pressure relief, and isolation of connected components.

Additional information

Is my dust explosive? What types of measures can be taken? Answers and a quick solution can be located on our special website <https://keller-lufttechnik.de/explosionsschutz>.



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 https://luebbbers.org

Custom solutions for industrial processes

We are leading supplier of custom designed industrial processes and manufacturer of specialize in evaporation and spray drying technologies for industrial plants.



Lübbers is a family-owned company for the design and manufacturing of hygienic stainless steel equipment with locations in Germany and the Netherlands. We specialize in evaporation and spray drying technologies for industrial plants in the food, pharmaceutical and chemical processing sectors with a particular focus on the dairy industry.

Lübbers industrial process solutions focus on quality, flexibility and customer's choice. We have developed an excellent name for approaching each customer's needs individually. Leading international companies worldwide have come to rely on Lübbers as a strong, long-term partner in their continual growth and improvement.

Delivery Scope

- ✓ Evaporation
- ✓ Spray Drying
- ✓ Cleaning in Place (CIP)
- ✓ Heat Recovery SystemsHeat Recovery Systems
- ✓ Industrial Safety Equipment

Our range of equipment comprises of modern, cost-effective and energy efficient evaporation and spray drying plants or their individual components, which allow the processing of a multitude of raw materials and products.

We provide a full spectrum of equipment and services, enabling our clients to produce at the highest quality while complying with the strict health, hygiene and safety rules. Our customers can decide whether to conduct installation by themselves, or whether to have a fully operational plant handed over to them by Lübbers. Besides, we provide engineering packages, process optimization, and comprehensive technical support.

Markus Eckert

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I'm working as a machine building engineer since 1997. Main application is milling of grain as well as organic and inorganic materials. All the time explosion protection is an important theme.



I advise clients during the planning phase regarding the implementation of the required explosion protection measures in accordance with the valid guidelines, national laws and specific customer needs.

In 2000 we performed a lot of basic explosion test series with a complete grinding system, followed by several individual test series with different hammer mills and feeding systems.

The aim was to test the shock pressure resistance, the flameproofness and the use of various types of pressure relief devices under practical conditions.

To participate in this workshop is very important for me in order to get updated and to improve my skill in order to be able to support the customers with the newest information and to find the best solutions for their specific applications.



Nova Protection Systems Pty. Ltd.
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Nova Protection is an Australian company established in 1992. We work exclusively in the specialist field of Industrial Explosion Protection.

We provide consulting expertise, and the design, supply, commissioning and service of explosion protection systems.

Our services and products include:

- ✓ Explosion Indices testing of combustible dusts.
- ✓ Hazardous Area Classification.
- ✓ Risk Assessment
- ✓ Dust Hazard Awareness Training
- ✓ Standards, interpretation and guidance
- ✓ Explosion Venting equipment including "Flameless Internal Venting" solutions
- ✓ Explosion Isolation equipment – both passive and active systems
- ✓ Explosion Suppression systems
- ✓ Equipment specific designs for process machinery – bucket elevators, mills etc.

Nova's experience is first hand, having carried out local full scale, research and development. This and our affiliations with top international companies provides a formidable basis, to address the needs of our customers.

Nova was the first Australian company to join IND EX® and this insures that our engineers are up to date with advances in technology and standards.



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Pro Tectum-Prüftec GmbH specializes in the implementation of organizational and technical requirements in the field of explosion protection. In addition to the preparation of safety studies, the analysis and inspection of the measures implemented are at the center of our work.



Dr.-Ing. Frank Hamelmann was born on 14th January 1968 in Bielefeld (Germany). After his safety engineering studies in Wuppertal (Germany) he graduated with a postdoctorate degree. Since then he has been engaged in the subject of explosion protection. Alongside material properties, the requirements for technical equipment and Systems are at the heart of his work. ProTectum-Prüftec GmbH, his engineering Company was established in 1999. Its headquarters are based in Germany near Osnabrück with a recent addition of a US office in Charlotte, North Carolina. Our team of experts works on tasks relating to technical safety in the fields of water law, operational safety, environmental safety and explosion protection.

Services provided:

- ✓ Complete CE documentation, declarations of conformity, analysis of harmonized Standards for plants in hazardous atmospheres
- ✓ Structural explosion protection for machinery and Systems
- ✓ Explosion protection engineering design concepts for machinery and Systems
- ✓ Definition of inspections and inspection qualifications
- ✓ Performance of recurring inspections
- ✓ Expert Statements
- ✓ Liaison with official authorities
- ✓ Risk scenarios and safety studies
- ✓ Assessment of „domino effects“ and chain reactions
- ✓ Safety and commitment for your business

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We can test your plant components and materials.

Are you using materials or material combinations (dusts, gases and solids), for which you are missing the key explosion properties? Have you developed new applications or procedures, which are not considered in current rule codes?



Benefit from more than 45 years of experience in the field of global explosion safety! If necessary, it is also possible to conduct external approvals through nominated bodies which can be organized.

The following services are offered: Execution of explosion tests (component strengths), Proof of the functional safety of components under explosion conditions, Fire tests, Arc discharges, Pressure tests.

Industrial processes and procedures are becoming increasingly complex, and are not absolutely predictable, despite modern simulation methods. Therefore, in many cases, the examination of the processes must be performed under actual conditions, in order to guarantee safe processes. The REMBE® Research + Technology Center provides the option to safely conduct the examination of such processes. With pressure-resistant equipment from 250 litres to 15 m³, it is possible to carry out exothermic reactions, explosions or pressure tests in a safe manner. Component tests with regard to the compressive strength according to EN 4126, or for explosion-proof devices according to EN 14460, can be conducted on the amply spaced testing grounds. Research and development for and with the manufacturers of such assemblies is well within the field of expertise through many decades of testing experience. With very strong connections to globally recognized testing organizations, such as TÜV, Dekra EXAM, GEXCON and others, you'll be provided with the corresponding certificates from the respective bodies after a successful examination.

Your media and applications will be examined while considering the following standards: EN 14460 Explosion resistant devices, EN 14797 Devices for the explosion venting, EN 14373 Explosion suppression systems, EN 15089 Explosion isolation systems, EN 16009 Devices for the flameless explosion venting, EN 16020 Explosion chimneys.

Since 1999, the REMBE® Research + Technology Center employees have been actively engaged in national (VDI) and international standardization bodies (CEN TC305 WG3), thereby supporting the standardization with practical aspects. The test requirements of the standards are constantly critically questioned regarding their feasibility and their economic viability.



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SiccaDania is a global engineering company providing process technology to the dairy, food, starch and protein market. SiccaDania has an own innovation center in Denmark for developing and testing her process solutions.



Siccadania has unique knowhow in the field of liquid and dry processing and can offer complete process lines for the following technologies:

- ✓ Membrane filtration
- ✓ Pasteurization
- ✓ Fluid mixing and Liquid Feed blending
- ✓ Evaporation
- ✓ Freeze drying
- ✓ Spray drying
- ✓ Flash drying
- ✓ Bag filtration

SiccaDania has proven competence in the engineering of complete process lines and is a global leader in starch processing. SiccaDania has her own work shop for the production of equipment and is pleased to provide complete installation services for new plants and dedicated aftermarket solutions.

SiccaDania has her head office in Copenhagen and own offices around the world:

- ✓ Denmark, Copenhagen and Silkeborg
- ✓ France
- ✓ Poland
- ✓ Germany
- ✓ The Netherlands
- ✓ Singapore
- ✓ China and Hong Kong
- ✓ Brazil
- ✓ New Zealand



Steinar H.Sunde AS

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Steinar H. Sunde AS supplies the oil and gas, chemical, pharmaceutical, petrochemical, food and wood industry with high quality products and services.



With engineering and distributing Explosion Protection Solutions since 2003, we serve the Norwegian industry which handle solids and create dust from metal or organic materials. Steinar H. Sunde AS has delivered Explosion Protection Equipment to major customers in Norway who deal with production of Ferromanganese, Sewage Treatment, Wood Processing, Food Production and Plasterboard Production.

Meet with Steinar H. Sunde's Engineers when they participate with mini-exhibitions of Explosion Protection Equipment on different seminars.

SISTAG

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As a future-oriented family business with Swiss roots, we have been setting standards on the national and international valve market since 1964 – with skillful engineering and the highest level of manufacturing expertise. Our product brand Wey is worldwide recognized and internationally protected.



In the industry, Wey valves stand for Swiss quality and precision, both with regard to the product and the support we offer. This reputation of the Wey products is based on exceptional functionality and process safety, ease of maintenance and long service life. Our Wey products perform in a broad range of industries & applications. Whether mining, water treatment, food & beverage, chemical or petrochemical industry, biomass, cement or waste handling – whenever fluids, powder or slurries need to be controlled, companies rely on Wey valves. Wey products comply with the highest standards of technology. With countless years of experience developing innovative designs we have become recognized for unique solutions to complex valve problems. For this reason we provide our customers from start to finish with satisfaction and a sense of security. This has always been the case. And this will also always be our rule for the future.

Explosion Safety: High Speed Isolation Valve – a universal way to protect!

In order to protect personnel and process plants, an explosion must be isolated at an early stage. The Wey high speed valve HSI was specially developed for use in pipelines at risk of dust explosions. It can be installed between pipelines connecting silos, mills, dryers, filters and more where combustible dusts or gases are processed or stored. In case of an explosion the valve closes in up to 23 milliseconds and prevents the further spreading of the explosion. The „SpeedWey“ HSI is based on a through gate valve design and therefore offers a fully open and unrestricted bore passage.



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Since 1988 we are an established OEM and direct supplier for renowned international operating machine and plant manufacturers as well as plant operators for standard and special solutions.



Through our acquired knowledge in the process flows of plants and machines, we are able to implement adapted fire detection and extinguishing systems and to ensure a safe fire protection for people and equipment.

Our focus is mainly on:

- ✓ Fire suppression systems for powder coating plants
- ✓ Automatic extinguishing systems for automatic painting systems
- ✓ Automatic extinguishing systems for filters and dedusting systems in the metal working and processing industry
- ✓ Automatic extinguishing systems for other machines, such as Test benches, printing machines and special machines

We not only offer the design of the fire protection system, but also supply, install and provide the service for the respective fire protection system worldwide.

Clearly, we score with our developed products which are partly also ATEX certified for EX areas, as well as the competence of our specialists in planning, design and manufacturing. The network of trained and authorized partners as well as our own service staff ensures on-site customer satisfaction.

SWISSRTEC

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Technology has an Address: swissRTec AG provides engineering, process equipment and plants to the international recycling industry. Based in Kreuzlingen, Switzerland but active worldwide, swissRTec is an industry leader for shredding, composite material recycling and recovery solutions.



swissRTec plants and equipment provide solutions for a variety of industries. Wherever there is a need to separate and recover high yield and quality raw material from a composite waste stream, swissRTec has the answer. From the pre shredding and separation of metals from waste electrical and electronic equipment (WEEE) and copper from printed circuit boards (PCB) to recovering copper hair wires from Auto Shredder Residue (ASR), swissRTec has the technology, expertise, and track record to provide a highly profitable solution that meets your financial and operational goals.

Through the swissRTec approach valuable metal and other raw materials can be recovered and utilized in the production of new goods and materials. With its state-of-the-art technology swissRTec has set a milestone in the field of composite material recycling. swissRTec has a cooperation with the Japanese company Kubota Environmental Services who produce the Kubota Vertical Shredder. This offers a robust pre-shredding step suitable for a variety of different material streams.



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Thorwesten Vent GmbH is a company active in the field of explosion protection for grinding and storage of solid fuels (coal, pet coke, alternative fuels, etc), mainly for the cement, lime and coal gasification industry.



Over the years, we have been establishing excellent business relationships with globally operating engineering companies and have been providing explosion protection for coal mill plants, as well as pulverized fuel silos and engineering for 3rd party fabrication and erection of silos.

Explosion Protection for fuel grinding systems

We supply re-closing, re-usable explosion vents, which, if properly positioned, will effectively divert pressure shocks and flame jets from the duct into the atmosphere. The plant is protected against accelerated deflagration propagation in the mill-to-separator duct section. The re-closing feature helps limit the damage in case of a subsequent fire in the bag house, which, if the vents remained open, would be supported by ingress of atmospheric air with its O₂.

Explosion Vents for coal plant dust collectors

Contrary to the use of rupture panels, which do not re-close and whose activation pressure cannot be adjusted, our company offers re-closing, re-usable explosion vents. In addition, we offer a new concept, which comprises a baghouse with enhanced pressure shock resistance, reducing the need for explosion vent area.

Explosion doors for pulverized fuel silos

We supply re-closing, re-usable explosion vents for pressure shock resistant silos. Due to the very high efficacy of our explosion doors often less units will be needed than with doors of conventional design. We follow DIN EN 14491 and NFPA 68 standards.

Silo engineering for local manufacturing + hardware supply

We supply both the engineering for local 3rd party realisation, as well as complete supply of silos for the storage of pulverized fuels, e.g. for coal dust, lignite dust and petroleum coke dust. Our pressure shock resistant silos come with a flat silo roof. Due to this design, no extra silo platform is needed, as the platform is formed by the roof surface. We select the materials of construction (profiles and plates) with respect to the availability in the country in which the silo is built, be it Europe, the Americas or Asia.



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We depend on you to challenge us for perfection in dedusting

At TRM Filter we are committed to perform Perfection in Dedusting. Strong customer relations and a focused result-driven team are the back bone to harvest from our competence and innovation for you.

To deliver on our commitment we nurture our three critical sources to perfection. We honor our customer relations. We started our business as a filter cartridge manufacturer in 1982 and later grew into the filter systems' approach with the support and stimulus of the people who built Slovenia's emerging top-tier pharmaceutical and chemical operations. With their challenges we built our team. We owe our competence to the fast paced evolution of themes with them. From challenging spatial requirements, ease of use and maintenance to the ATEX and containment requirements.

From our traditional involvement with filter cartridges and filter materials, as well as our exposure to filter systems' life cycle performance we felt the potential for new performance levels in dedusting filter systems. The steady and loyal exchange of views and observations between our customers and our team crystallized the goals to our innovation.

We developed an all new and proprietary advanced cleaning mechanism for a smooth and effective cleaning of filter cartridges from moist and sticky dusts. We pioneered the Rotatronic, smart filter cleaning technology to maximize filter cartridge life time and – more importantly – render cartridge performance foreseeable.

As competence never resides on a company's server landscape but in the actions and mind-set of the people at work, we were blessed for being an organically growing company, managing core value generation in design, engineering, assembly and validation in a concentrated team. All of us at TRM Filter are empowered to strive for perfection.



Schweiz

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For over 30 years TÜV SÜD Process Safety has been providing high quality services in the areas of major accidents, risk analysis, thermal process safety, explosion and fire prevention and protection, electrostatic risk prevention and product safety for the process industry.



We offer our expertise and experience to all our customers, which are mainly from the pharmaceutical, chemical, food, agricultural, metal and wood processing and building material manufacturing sectors, as well we also work with logistic companies, property insurers, research and government agencies.

Our work is neutral and objective; our specialists develop customized safety concepts for you, our client, focusing on optimized cost-benefit solutions and incorporating state-of-the-art know-how. We take into account not only the statutory regulations but also the client's operational and business requirements.

Our specialists have extensive experience in the various functions of an industrial enterprise, therefore, when working as external consultants together with an ISO 9001:2015 certified quality management system the result is an flawless service, both technically and administratively.

Our ISO 17025:2005 accredited laboratory at hand, provides a unique combination on the determination and assessment of desired and undesired reactive potentials, safety characteristics, flammable and electrostatic properties and characteristic data according to the applicable testing standards. The solutions, simulations and recommendations provided stand on solid ground in terms of data reliability.

We work closely with various research institutions and trade associations, as well, our consultants actively exchange experiences within the several international safety organizations, normalization and expert working parties in which they are present as members.

In an everyday more complex industrial environment, we look forward developing concepts with you and implementing measures that will increase the safety level of your processes and facilities in an efficient, long-lasting and reliable way. Let's play together a decisive role in loss prevention.

Dr. Dirk Oberhagemann

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From 1985 - 1988, Dr. Dirk Oberhagemann worked as scientific employee in the working group „Physical - chemical process engineering/safety technology“ of the University of Dortmund.



The main aspect of the work was the preventive explosion protection. This work was concluded in 1988 when he obtained his PhD for his work on autoignition temperatures of mixtures. The organisation of research projects was continued in 1988 at the DLR in Bonn and at the German Federal Ministry for Research and Technology.

From 1989 to 1994 he was responsible for the management of the research programme „Safety research and technology“ on behalf of the BMFT at the VDI in Düsseldorf. Since 2006 he is working for vfdb the German Fire Protection association. He is responsible for the organisation and coordination of different research projects.

In this regards he has been the coordinator of a project called “Risks associated with major public events – Planning, assessment, Evacuation and rescue concepts”.

Since end of 2016 he is the general secretary of vfdb.

Wolfgang Schubert

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Sachverständiger für Elektrostatik. Öffentlich bestellter und vereidigter Sachverständiger für Druckverfahren, Druckmaschinen, Be- und Verdruckbarkeit und Verpackungsdruck.



Wolfgang Schubert wurde 1952 in Leipzig geboren. Er ist gelernter Buchdrucker und studierte Polygraphie in Leipzig. Nach verschiedenen Führungspositionen in der Druckindustrie und im Vertrieb von Bogen- und Hybriddruckmaschinen machte er sich 1997 selbständig und ist seither auch im Fachbereich Elektrostatik tätig. Neben einer Reihe von Fachartikeln ist er Mitautor von zwei Fachbüchern zur Elektrostatik. Er ist der Autor der Enzyklopädie der statischen Elektrizität, die im November 2022 erschienen ist.

Seit Mai 2016 ist er von der Industrie- und Handelskammer Leipzig als Sachverständiger für die Fachgebiete Druckverfahren und Druckmaschinen, Bedruckbarkeit und Verpackungsdruck öffentlich bestellt und vereidigt. Darüber hinaus ist er europaweit als unabhängiger Sachverständiger und Ausbilder auf dem Gebiet der Elektrostatik tätig. 2022 hat er den International Best Researcher Award für Elektrostatik von der ISSN in Tamil Nadu, Indien erhalten.

Seit 2019 ist er Vorsitzender der ELSTATIK-Stiftung, die von Günter und Sylvia Lüttgens 1999 gegründet wurde. Diese Stiftung fördert die Forschung und Lehre im Bereich der Elektrostatik und der elektrischen Energieeffizienz an Universitäten und Hochschulen.

Chris Cloney

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Connecting the Combustible Dust Community

myDustExplosionResearch.com is a student lead website devoted to reducing the global impact of dust explosion hazards by providing online resources to combustible dust handling industries, regulators, service and equipment providers, and researchers.



Chris is a PhD student at Dalhousie University in Nova Scotia, Canada. He uses computer modeling to study flame propagation in hybrid mixtures of combustible dust and flammable gas, and has a passion for science communication. This passion has driven him to create an online resource for dust explosion prevention, protection, and hazard awareness.

The goal of myDustExplosionResearch.com is to reduce the global impact of combustible dust hazards by connecting the dust explosion community. It is an inclusive space where researchers, equipment and service providers, regulators, and industry can connect.

Chris is committed to providing interesting and useful content to the dust explosion community and to increase the awareness of combustible dust hazards. Visit the website to find reports on combustible dust incidents, collections of expert opinions on industrial and research topics, and join the weekly email newsletter to receive the latest dust explosion news and other educational material.

Ron Sinclair

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The Expert with such an exclusive Expertise in Explosion Protection

Baseefa is one of the best known Notified Bodies in Europe for the ATEX Directive and is the world leader in issuing internationally recognised certificates within the IECEx Certification Schemes for people, service facilities and products related to hazardous areas.



Ron Sinclair has worked in this field since 1975 and led the formation of the current company in 2001 as a continuation of the work previously done within the UK Health and Safety Executive when it decided to stop certification activities to avoid conflicts of interest.

He is chair of both the UK national committee and the European Cenelec committee for standardisation of electrical equipment in hazardous areas. He and other members of the Baseefa staff play an active part in the creation of standards at the international IEC level. Having completed the maximum six years as chair of the IECEx Test and Assessment Group (ExTAG), Ron is currently chair of the IECEx Committee looking after the Service Facility Certification Scheme (ExSFC), as well as being a vice-chair of the European ATEX Notified Bodies Group (ExNB). He was awarded an MBE (Member of the Order of the British Empire) in 2011 for services to certification and standardisation.

In addition to the full range of certification available through both the ATEX and IECEx Schemes, Baseefa provides training, consultancy and inspection services to assist users of equipment in hazardous areas. Ron has contributed special lectures for IND EX® Events and continues to promote IND EX® activities.



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**bulkmedia offers information on the web
and with printed magazines**

SILO WORLD - Das Schüttgutmagazin is the leading
printed information magazine in German-language for
bulk material handling industries.

This highly reputed magazine provides practising specialists with cross-sector information about the latest trends,
developments and solutions in bulk handling technology as well as mechanical and process engineering problems
related to production, processing and the transport of all kinds of granular materials, ranging from coarse to powdery.

Silo World covers all aspects of the entire world of bulk materials handling. Main topics include conveying, transport,
storage and transshipment, as well as processing, conditioning, dosing and characterisation of mineral and organic
materials. Important further topics are process automation, energy reduction, measurement and control technology and
quality assurance.

All these topics are offered on the internet with <https://schuettgutmagazin.de>.



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The Powder / Bulk Portal

Home of the powder / bulk community.



Covers all fields of mechanical engineering in which powder and bulk materials have to be handled and processed.

The portal features:

- ✓ The worldwide used eDirectory search engine - <https://bulk-online.com/Cat/1.htm>
- ✓ Daily News from the Industry - <http://forum.bulk-online.com/forumdisplay.php?99-News-from-Industry>
- ✓ A large number of Specialized Forums - <http://forum.bulk-online.com/IND EX.php>
- ✓ The new Who is Who in powder + bulk solids handling and processing - <http://who.bulk-online.com>
- ✓ The BULK Blog - <https://bulk-online.com/Co/online-services-dr-wohlbier-200055.htm?go=http://blog.bulk-online.com>
- ✓ The BULK Videos - <https://bulk-online.com/Co/online-services-dr-wohlbier-200055.htm?go=http://media.bulk-online.com>
- ✓ many other services - <https://bulk-online.com/Co/200055.htm>



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Gerd Kielburger on the right with Michael Ziesemer (ZVEI's President and Vice President of the Supervisory Board of the Endress+Hauser group)

**Your cross-media partner for the global
chemical and process industries**

PROCESS presents the latest economic and application-oriented technology information to the chemical and pharmaceutical market as well as to all other process industries.

Additionally to the specialist German-language journal PROCESS and the industry magazine PharmaTEC, further international journals are published – PROCESS Worldwide and PROCESS CHINA. The range is supplemented by digital platforms in English, German and Chinese language – each subdivided into specific technical subjects. Special topic newsletters, white papers and webinars complete the range. With its German-language and international specialist titles, digital platforms, digital issues, newsletters, data-bases, events and additional services, PROCESS provides a cross-media and internationally joined source of information – whether you need wide reach or relevant business leads. Take advantage of the communication channels of PROCESS for your multi-channel marketing.

Yearly Events

<https://schuettgut-forum.de>, <https://smart-process-manufacturing.de>, <https://energy-excellence-forum.de>

Target Groups

Engineers and technicians, specialists and managers in the chemical & pharmaceutical industry, in biotechnology, bulk solids, petrochemicals/refining, the oil and gas industry, energy and the water & wastewater sector.

The media performance of PROCESS is leading in German speaking markets and global distribution:

- ✓ Every year 747,273 print editions of PROCESS, PharmaTEC and the associated special editions reach our readers.
- ✓ At present time 15,128 registered users have established their own user account on <https://process.de> in order to benefit from its advantages.
- ✓ Every year 1,791,050 users visit the web-site <https://process.de> and access 3,949,300 web-pages.
- ✓ Over 700 white papers and webinars are available at <https://process.de> for our users to download.
- ✓ In recent years we have generated 11,000 leads for our clients solely through white papers and webinars.

notes

Become an Insider.

With your membership, you become an insider of a top-class group. You are active by improving worldwide safety standards in explosion protection. IND EX® offers you the possibility of full or associated membership.

Types of membership

	full	associated
Codetermination in selection and implementation of research projects	✓	
Access to complete research reports	✓	
Presentation of your products during the IND EX® Safety Congress	✓	
Access to our complete database per member-login at ind-ex.info	✓	
Having your organisation named in relevant IND EX® publications	✓	
Submission of possible research topics	✓	
Profile page at ind-ex.info linked to your homepage	✓	✓
Strengthening the international reputation of your organisation	✓	✓
Direct access to an international network of experts	✓	✓
Free update for EXTTOOLS® <i>pro</i>	✓	✓
Free participation and free performance at IND EX® Safety Congress	✓	✓ *

* after 3 years of membership.

IND EX® membership: application

full

€

5000

5 votes

associated

€

400*

1 vote

800

1 vote

2000

2 votes

3000

3 votes

4000

4 votes

* for private individuals only

IND EX®

Clearness.Trust. Safety.

Intercontinental Association of Experts for INDUSTRIAL EXplosion and Fire Safety e.V.

name

organisation

industry

VAT ID

street

post code | city

country

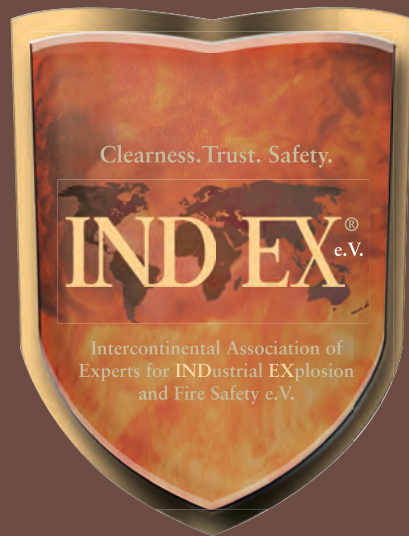
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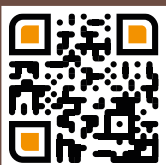
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