Excellence in Safety and Environment
Global Safety Solutions

PROTEGO®, A BRAND THAT HAS SET STANDARDS, SINCE 1954.

Braunschweiger Flammentfilter GmbH is an international company manufacturing valves and flame arresters and employing more than 400 people at several locations worldwide. Under the PROTEGO® trademark known worldwide and registered, we manufacture and distribute safety devices and valves as well as apparatus and equipment for the process engineering, petroleum, chemical and pharmaceutical industries, and for the bioenergy sector too. The biggest global players are among the customers we serve. PROTEGO® is proud to be both global market leader and leader in technology in our specialist field. Our customers trust in the high development and quality standards which we set for our products and services.

PROTEGO® (Latin) means “I protect”.

WHERE WE ARE BASED:
BRAUNSCHWEIG & THE WORLD OVER

Henry the Lion, Wolf Duke of the Middle Ages, shaped history and the symbol of the City of Braunschweig (Brunswick). The Wolf coat of arms - a lion - has been the landmark of the city ever since the Duke had a lion monument erected in rich-in-tradition Burgplatz square in the city center of Braunschweig (Brunswick) in 1166. Made of bronze, the predator symbolizes power, energy and safety. The ‘castle lion’ even today functions as a popular feature for all kinds of services and products from the region of Braunschweig, while being a sign of the population’s dynamics.

For over half a decade, PROTEGO® - headquartered in the Lion City of Braunschweig - has been standing for safety and environmental protection worldwide.

Management (from left):
Dipl.-Ing. Hans-Dieter Frühlich (Coo),
Dipl.-Wolkow Joachim Wolf (Cfo)
Dr.-Ing. Michael Davies (CEO)
1929 The world's first detonation arrester, developed by Robert Leinemann, is patented.

1954 Robert Leinemann establishes Braunschweiger Flammenfilter.

1955 The first tank filling and venting valve in the world with a flame arrester for endurance burning.

1963 Hubert Leinemann (son of Robert Leinemann) joins the business.

1964 Market launch of a liquid-loaded diaphragm valve, in versions that are proof against explosion, endurance burning and frost respectively; a device that is unique in the world and has special approval for use with hazardous products. Development of the first liquid detonation arrester, patented throughout the world.

1965 Commissioning of a new flow test rig, built in accordance with the State of the Art.

1967 Approval of hydrogen deflagration and detonation arresters. Hubert Leinemann takes over the management following his father's death.


1977 Establishment of the company's own testing centre for the testing of deflagration, detonation and endurance burning arresters up to DN 300 / 12".

1978 Deflagration arresters with temperature monitoring for explosive off-gas from thermal oxidisers.

1982 Hydraulic flame arresters for off-gas vent lines – approved for all explosion groups.

1993 Enhancement of the effectiveness of detonation arresters through the pre-ignition effect and the patented shock-wave guide tube (SWGTE).

1997 Low pressure Safety valves: enhanced performance through specially designed full-lift valve pallets with the lowest possible leaking rate.

1999 Series type approval of flame arresters under national and international standards - CEN, USCG, FM. Certification of the environmental management system under DIN EN 14001.

2000 Manufacturer with the most approvals for flame arresters worldwide.

2001 Complete series approval of flame arresters of all explosion groups at elevated operating pressures and temperatures.

2002 First static endurance burning flame arrester worldwide for explosion group IIIb hydrocarbons.

2003 Development of particularly easy-to-maintain detonation arresters. Expansion of the test rig into the biggest deflagration and detonation flame arrester test centre in the world.

2004 Development of highly corrosion-resistant and non-sticking PTFE flame traps. Manufacture of pressure equipment under the PED. Development of detonation flame arresters for chemically unstable substances.

2005 First static endurance burning flame arrester worldwide for ethanol and fuels containing ethanol.

2006 First endurance burning flame arrester worldwide for hydrogen.

2008 First in-line detonation flame arrester worldwide tested with carbon disulphide.

2010 Development of a pipeline venting valve with integrated liquid separator for high gas flowrates BE/SRL.

2012 Worldwide largest in-line detonation flame arrester (DN 1000 / 40") approved for explosion group IIA.

2013 Worldwide largest in-line deflagration flame arrester approved for explosion group IIA for DN 1000 / 40" piping.
Strong together

PROTEGO® World Team

Providing first-class performance

- Dedicated to solutions
- High-quality standard
- Consultative
- Environmentally compatible

PROTEGO® is a world market leader operating with a large global network of subsidiaries and representations. The PROTEGO® Team includes 12 distribution and after-sales service companies as well as 120 representations in all continents.

Our Vision & Mission

Thinking sustainably - taken by enthusiasm


PROTEGO® Mission: A profitable, independent, international family business that, while developing and manufacturing safety valves and equipment, is the top-notch competence source for technology, quality, availability, services, engineering, and consultancy. Our fields of activities are explosion protection as well as environmental conservation through retaining and relieving pressure in the exploration, processing and storage of flammable liquids and gases.
Explosion Protection

Safety Everywhere

PROTEGO® PRODUCTS PREVENT DISASTERS

PROTEGO® flame arresters are used wherever gases or vapors are explosive and liquids are flammable. They need to be suitable for the particular application and approved pursuant to the law of the country or state to render explosion protection in all relevant risk scenarios.

PROTEGO® experts and engineers have been trained to consider engineering tasks from a process safety perspective. Standard and tailor-made solutions are proposed in conformity with current codes of practice and most recent findings.

TYPICAL APPLICATIONS
- Tank farms and fuelling systems
- Gas recovery in gasoline stations
- Incinerators
- Chemical and pharmaceutical process plants
- Offshore applications (e.g. FPSOx)
- Cryogenic tanks (e.g. LNG, LIN, LOx)
- Landfill gas and biogas-plants
- Sewage plants

UNIQUE APPLICATIONS
- Hospitals: nitrous oxide gas supply
- Explosion-proof bottom drains at heliports
- Whiskey cask storage
- Production of wheat distilled liquor
- Aircraft fuelling systems

SPECIAL APPLICATIONS
- Vacuum sterilization of foods
- Water manufacture in the IT industry
- Ventilation of backfilled mine workings
- Vitamin production (biotin)
- Production of toothpaste
Some 60 years ago, PROTEGO® began to develop customized valves and vessels designed to protect plants and equipment against explosions, as well as breather valves that meet most stringent requirements regarding performance, keeping pressure constant, and seal-tight functions.

That process entailed not only the original Braunschweiger FLAMEFILTER® flame arresters, but also numerous other innovations which resulted in many patents. It is through close cooperation with scientific institutes and authorities that new technical challenges have been met again and again to satisfy and environmental protection needs.

PROTEGO® offers a vast range of flame arresters, valves and tank accessories that have been tailored to what the market requires. The products have been brought into play by industrial users in varied applications.

FLAME ARRESTERS

PROTEGO® flame arresters reliably protect plants and equipment designed to produce, store, transport and handle combustible gases and flammable liquids of all hazard classes, against endurace burning, deflagration and detonation.

VALVES

The unique PROTEGO® valve technology minimizes product losses and reduces emissions. For isolated cases and dedicated applications, PROTEGO® offers a range of pressure and vacuum relief valves with and without incorporated PROTEGO® flame arrester unit.

TANK ACCESSORIES

For safe and reliable operation of plants and installations, both tanks and containers are typically equipped with floating suction units as well as floating roof drainage systems and gauging and sampling devices.

SPECIAL SOLUTIONS

We are specialists, not only specializing in what we have already developed, but also in developing the dedicated solutions you may require. Do you need valves and equipment for extreme or highly specific applications? Then let’s partner up.
The FLAMEFILTER®
THE CORE ITEM OF ANY FLAME ARRESTERS WE PRODUCE

The FLAMEFILTER® is the central part of any PROTEGO® flame arrester built. The stainless steel strip coils, in a simplified approach, function as a heat exchanger element absorbing heat from the deflagration or detonation flame. The flame is extinguished, thus preventing an explosion in the plant to be protected.

PROTEGO® flame arresters whose basic concept was devised in the late 1950's by Robert Lehmann, the founder of our company, is a special design of flame arresters which, in simplified terms, adopt the physical principle of flame-quenching gaps. Selecting the proper gap length and gap width as a function of the flashback velocity of explosive mixtures while keeping the flow resistance at a minimum (pressure drop) represents the secret of best-possible operation. In the past sixty years, PROTEGO® flame arresters have been continuously improved, with patents for varied designs taken out worldwide.

Depending on their mode of application, PROTEGO® flame arresters - as deflagration or detonation flame arresters in piping and as endurance burning flame arresters on tanks - are used in a multi-tier arrangement in combination with other components such as the 'shock absorber' or the patented 'shock-wave guide tube with pre-ignition effect'.
Typicals off the Daily Grind

FLAME ARRESTERS TO PROTECT AIRCRAFT TANKS

In the aircraft industry, varied requirements by far exceed the usual safety-related conditions. For example, the function of the flame arrester needs to be ensured to be longer than an aircraft’s service life (some 140,000 hours flying time). Also, the maximum weight needs to be limited. We are currently developing devices that meet the high quality and function requirements for many aircraft types.

Where others surrender

WE ARE GETTING ENTHUSIASTIC

Whatever complex and extreme your application, we will find a solution for you. We are specialists, not only specializing in what we have already developed, but also in developing the dedicated solutions you may require. Tailored valves and devices are our day-to-day business. We will see to that, you can be sure:

- Venting of pipelines
- Internal safety valve
- Super-heated PROTEGO® valves and devices
- Applications for acetylene
- Applications for ethylene oxide
- Applications for alcohols
- Applications for polymers (e.g. acrylates and styrene)

BREAKING NEW GROUND FOR YOU
WILL BE OUR PLEASURE!

SAFETY IN NUCLEAR ENGINEERING

Utmost care and highest quality are standard requirements where the safety of nuclear equipment is concerned. In this field too, the valves and devices we make are put to use, given their unparalleled safety and durability.

7-TON VALVE IN ACRYLIC ACID PLANT

Specified detonation arresters are placed into the off-gas stream upstream of the thermal post-combustion plant. Because of a polymerizing constituent in the off-gas stream, maintenance requirements for the device are extremely demanding. Such valves, also representing a challenge regarding logistics, are unraveled on a global scale.
In the Company’s worldwide largest Research & Development Center

**WE DEVELOP - HIGHLY COMMITTED AND SUCCESSFULLY**

In developing our products we closely cooperate with users, technical institutes and notified bodies. To this end, the PROTEGO® Research & Development Center - worldwide the largest of its kind - does not only serve to improve and upgrade our products; it is also available for general research projects and tailor-made dedicated development work. The potential offered includes investigations and testing with nominal sizes up to DN 1000 / 40" as well as higher pressures, temperatures and oxygen enrichment.

National and international notified bodies satisfying themselves periodically of the high standard seek our support too.
We’ve got what you need

AROUND THE CLOCK AND THE GLOBE

PROTEGO® safety valves serve to preclude damage or loss. Requirements need to be defined as early as the planning stage so that a suitable unit is specified. Following delivery and placing into service, the function must be ensured at all times. The extensive PROTEGO® line calls for advance activities, assistance with commissioning, and qualified maintenance so that many years of operation without problems will be achieved.

Competence is Top Priority

WHAT CAN YOU EXPECT FROM US? THE FULL RANGE

PARC’S PROTEGO® Authorized Repair Centers (PARCs) assist with maintenance 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, as well as quality and environmental management.

SPARE PARTS SERVICE All our centers hold in stock genuine spare parts for you. Genuine parts and periodical maintenance, geared to the particular field service conditions, guarantee trouble-free operation.

CONSULTANCY Experenced PROTEGO® experts are available to assist with the varied and subtly differentiated application issues. They have been trained to consider engineering tasks from a process safety perspective.

MAINTENANCE We can place at your disposal our field staff for installation and maintenance which have been adequately trained and prepared for their tasks at the manufacturer’s; alternatively, you may just resort to our authorized workshops.
Skilled and Competent through Advanced Training

Our Contribution to Plant Safety

The PROTEGO® Academy organizes special training courses to allow trainees to acquire competence and expert knowledge of Protective Systems in hazardous areas. Thus, as a manufacturer of Protective Systems, we contribute to preventive plant safety schemes.

Know-How Transfer for Plant Safety everywhere on the Globe

Exchange of Experience for Service Technicians & Planning Engineers
At your disposal, everywhere in the World

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