

Protect your values.



members of svt group

AIK



flamro

ROLFKUHNGBH



Fire Protection for Batteries

Customised Safety Solutions for an
“Energetic” Future



svt: Smart Solutions for All Your Needs

svt Products GmbH, based in Seevetal near Hamburg (Germany), is the international one-stop supplier of the certified fire protection systems and fire protection products manufactured by svt, Rolf Kuhn, Flamro, AIK, Odice, Securo and DDL. Under the roof of svt Group of Companies, these highly specialised manufacturers offer Europe's largest fire protection product and solution portfolio. It includes ablative and intumescent fire protection coatings, sealing compounds and fillers as well as fire protection fabrics and bags.

The internationally certified products and penetration sealing systems of the FLAMMADUR®, FLAMRO®, FLEXILODICE®, Firebreather™, GEAQUELLO®, KERAFIX®, PYRO-SAFE®, ROKU® and VENTILODICE® brands are sold by svt in over 50 countries worldwide. The extensive portfolio is rounded out by one-off solutions that are tailored to suit specific needs. All fire protection systems and fire protection products sold by the svt Group of Companies are quality-assured by thorough in-house research and development, whereby continuous product evolution is a matter of course.

At a glance – the svt Group of Companies portrayed on film



Battery Applications

Fire protection that keeps pace with a fast-growing (e-mobility) market



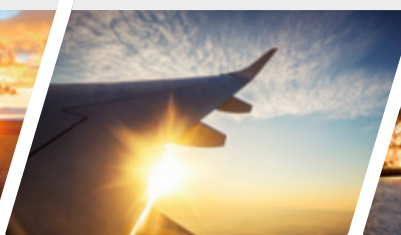
Rolling Stock

High-performance fire protection at any speed



Aviation Industry


Fire protection for all types of aircraft and air traffic environments



Ships & Offshore

Fire protection systems for the specific requirements of ships and offshore infrastructures





»Preventive and passive fire protection has been our expert domain for over fifty years. We are both creators and implementers of high-performing systems that are recognised around the world.«

Dr. Jens Reiners, CEO svt Group of Companies

Full Power Ahead for Maximum Safety

High-performance batteries are major drivers of the technology-inspired world we live in, and their impact is steadily rising, not least due to today's fast-changing mobility landscape. As batteries gain in prominence, the requirements and expectations placed on them are becoming more sophisticated: "Minimum weight – maximum performance" is the prime principle to go by in state-of-the-art battery development and design. Since battery systems with high energy density can reach temperatures of over 1,300 °C and are thus at risk of exploding and releasing massive amounts of particles and gases in the event of a battery fire, developers and manufacturers worldwide are increasingly also turning their attention to aspects such as thermal event prevention (burn-through protection) as well as protection against the release of environmentally and health-hazardous substances. Whether it is during production, storage, transport, deployment, use or recycling – made-to-measure fire protection measures are indispensable for the safety of HV accumulators.

svt has established a reputation as a leading manufacturer of innovative fire protection products and systems for industrial as well as mobility applications. We have a long track record in supporting clients from many different industries in their multifaceted efforts to get the mobile future up and running for good. With this perspective, we are working today to help our clients get fit for tomorrow's challenges – with full speed ahead for maximum safety.

Market requirements & developments

Much of the growing demand for batteries is due to the transformation of electromobility, which is primarily fuelled by the automotive industry. However, rail transport and hobby equipment, such as e-bikes, also account for an ever larger share of the rising demand. Alongside the field of e-mobility, sectors such as the energy storage systems (ESS) and consumer goods industries are likewise bound to see an increase in demand for battery systems.

Doors & Glazing

Fire protection solutions for doors, glazing and façades



Renewable Energies

Protection for buildings & plant engineering systems against fire, gas, electricity, liquids etc.



Energy Industry

Fire protection for the entire system



Construction Projects

Complete solutions for building services and through-penetration seals



360°: svt Keeps a Close Eye on the Battery Cycle

Seamless safety is key – and in the best of hands with svt as a fire protection supplier to the industry! Effective battery protection covers the battery's entire life cycle: It begins at the stage of cell production and then extends all the way from the battery's first charging cycle and safe transport to the place of use through to the removal of old systems or systems with issues.

Our extensive product portfolio enables us to offer just the right solution for every need. As we also maintain long-standing partnerships, we can draw on an unparalleled pool of top-notch expertise that benefits our clients in many ways.

Production



Transport



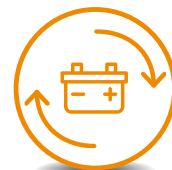
Storage



Use (E-mobility)



Recycling



Production

We offer the following services to ensure all-round safety throughout the battery cell development process:

- Solutions for module and pack production
- Upgrading of formation and ageing cabinets
- Safeguarding of production facilities

Transport and Storage

The storage as well as the transfer of systems with issues require special safeguards. As a supplier, we offer customised fire protection solutions for:

- Storage containers
- Storage packaging
- Secondary packaging
- Transport boxes
- Shelving systems

Use (E-mobility)

We consider the following critical aspects to ensure the overall safety of battery cells in the finished system:

- Fire protection between cells
- Fire protection between modules
- Profile gaskets in housings
- Moulded parts and sealing compounds
- Shielding from the vehicle housing
- Cable penetration sealing systems
- Fire protection solutions for covers and housings

Recycling

The quantity of old batteries that are fed into the recycling process continues to increase. It is, therefore, all the more important not to disregard the aspect of fire protection in the recycling process. We offer:

- Solutions for module and pack recycling
- Safeguarding of recycling facilities
- Quarantine boxes

Customised Fire Protection Products for Your Specific Application

While we are entirely conversant with the specific battery safety requirements relevant to industries such as rail and aviation, we will consistently also take your specifications into account. We implement projects in these fields using a tried and tested variety of technologies and methods of operation.

Coatings

The fire protection coatings developed by svt feature excellent cooling / insulating properties. Our portfolio includes water-based single-component coatings as well as two-component polyurethane coatings.

Highlight products:

- PYRO-SAFE® B CX 2200
- PYRO-SAFE® B CX 1100
- PYRO-SAFE® B CX 1200

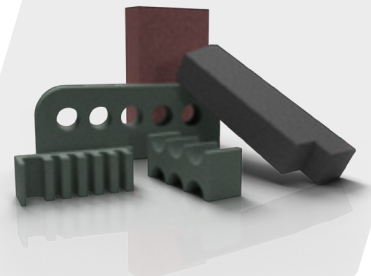


Foams and Fabrics

Our fire protection fabrics and foams are made of cooling or insulating materials. Their low weight per unit area helps to ensure that the overall structure is not too heavy. Our fire protection foam can not only be individually customised in terms of density, but can also be produced as a customised moulded part.

Highlight products:

- PYRO-SAFE® B F 2200
- PYRO-SAFE® B FX 1200
- PYRO-SAFE® B FX 1201



Sealing and Filling Compounds

Our sealing compound systems, from which we can also produce moulded parts to the client's specifications, are not only capable of withstanding extreme weather conditions, but are also resistant to oils, chemicals as well as operating supplies. Furthermore, they meet the requirements for gas-tightness.

Highlight products:

- PYRO-SAFE® B PX 2100
- PYRO-SAFE® B PX 2200



Sealants

Reactive materials based on graphite, phosphate, vermiculite and silicate are ideal ingredients for creating flexible solutions designed to prevent fire and its spread. The intumescent materials swell and foam up in case of fire, thus forming a protective layer.

Highlight products:

- PYRO-SAFE® B SX 1200
- PYRO-SAFE® B SX 3200





Bags

Our range of fire protection bags provides optimum safety, especially when it comes to transport and storage. Not only do the bags safeguard the adjacent areas from fire, but they also exhibit an excellent ability to absorb leaking liquids and to act as an impact protector for cells and systems.

Highlight products:

- PYRO-SAFE® B BX 3200
- PYRO-SAFE® B B 3200

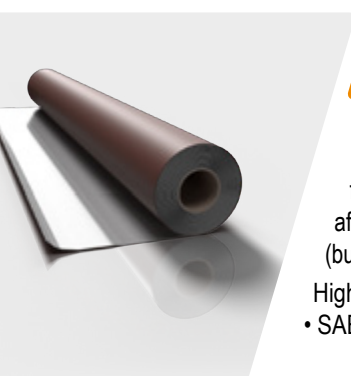


Boards

These materials, which are based on gypsum, calcium silicate or e.g. water glass, undergo an endothermic reaction in a fire, i.e. they absorb energy and often release bound water in the process. The high heat capacity of this water causes adjacent materials to cool down and ensures that only a small amount of heat is transferred to the non-exposed side.

Highlight products:

- PYRO-SAFE® B M 3100
- PYRO-SAFE® B B 3100
- PYRO-SAFE® B B 3101



Special Solutions

Together with SAERTEX GmbH & Co KG, we have developed a groundbreaking flagship product: SAERTEX LEO® COATED! The material, which consists of glass-fibre reinforced plastics with integrated fire protection agents, sets new standards – particularly in lightweight construction. The design freedom afforded in the manufacturing process in conjunction with the high level of thermal event safety (burn-through safety) even for damaged cells ensures optimum housing and system protection.

Highlight product:

- SAERTEX LEO® COATED



Your Product

We will be more than happy to work with you and develop the right product for your specific needs and preferences. We look forward to your enquiry!

Our Research & Development Expertise Will Build Your Customised Solution

Thanks to our modern fleet of machinery, we can manufacture fire protection products and systems in practically any required size and finish. Highly customised solutions are part and parcel of our daily business! Whatever you need delivered to your doorstep, whether it's large-scale series-manufactured products or custom one-off parts: We will accommodate and implement your requirements without ifs and buts ... but with maximum commitment. Our fully integrated process chain is designed to ensure that only fully compliant products – expertly manufactured and tested in accordance with current fire protection standards – will find their way to the client.

We boast six locations where ongoing research, development and production activities are conducted with a view to creating market-relevant innovations and extensions to existing systems. With six in-house fire testing furnaces and numerous service centres in place, we deliver on what we promise, so each customer can rightly expect us to provide the optimum solution in terms of efficiency, safety and fast response whenever and wherever needed. Regular quality control and inspection also matter to us, as does know-how transfer with scientific research institutes and universities. These priorities together form the strong foundation on which the innovation and progress of our Group are built.



Enhanced Expertise

svt has partnered with TÜV Rheinland, thus complementing long-grown in-house expertise with external specialist services. Together, we not only develop solutions geared to ensuring overall system safety, but we also subject systems to extensive fire protection testing in one of Germany's most advanced test centres. This collaboration has given us the opportunity to investigate cell behaviour during a thermal runaway condition – this so-called “thermal runaway” test is the most crucial part of the battery safety approval process. Systems with a capacity of up to 150 kWh, an overall size of up to 1.6x2.3x0.4 m (WxLxH) and a weight of up to 800 kg are eligible for testing at the centre.

Patented Testing Services – Fast, Easy and Cost-Effective

We use a variety of shielding materials to protect the battery housing and the environment from the intense forces that may occur in a battery event. These materials need to withstand extreme temperatures, pressure variations and particle impact. Thanks to our patented test procedure, we can perform all relevant tests on materials in a quick, easy and cost-effective manner.

In testing, we simulate the loads and stresses that act on a battery housing during a battery event. Based on the insights thus gained, we can provide optimum support to our clients, also in material selection. We are able to adjust the duration of the actual load on the system, the maximum temperature as well as particle impact grain size. Also, the distance and angle between the test sample and the particle discharge opening can be varied in accordance with your specifications.

In a nutshell: All relevant parameters can be adjusted to suit your needs – accurately, flexibly and fast. With this approved method, we have already tested and evaluated over 100 different materials and material combinations.



svt Battery Stress Test: Particle impact captured on video



The following tests can also be carried out:

Electrical tests

- Service life and behaviour under different climatic conditions

Mechanical tests

- Vibration
- Shock
- Mechanical integrity

Environmental testing

- Dust
- Corrosion
- IP leakage
- Salt water immersion tests

Abuse tests

- Electrical
- Mechanical
- Thermal

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