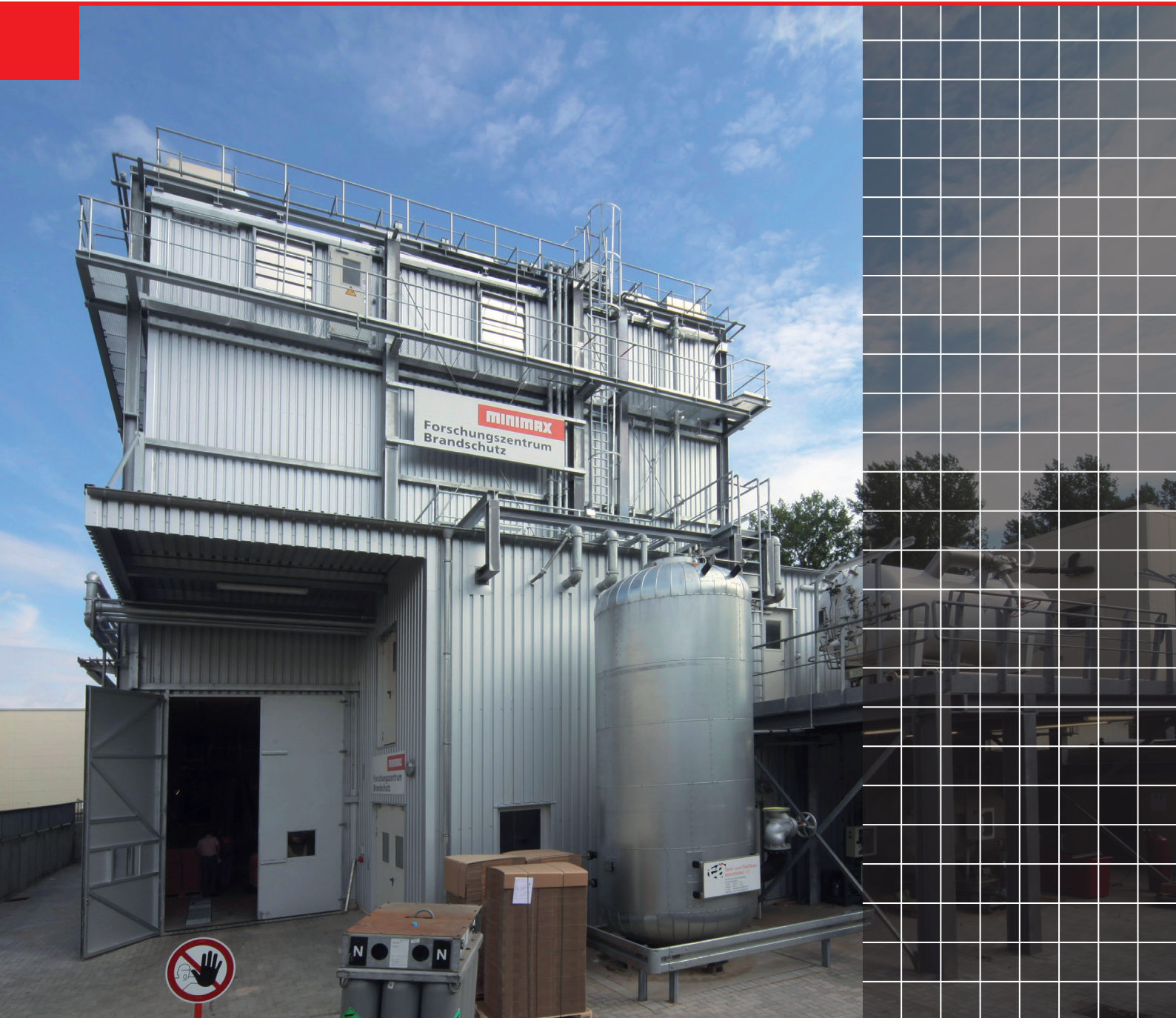


Experts in fire protection

MINIMAX

Fire Protection Research Center



RESEARCH CENTER

FIRE PROTECTION

Cutting-edge research for safety

Since 1968 Minimax has operated one of few private fire protection research centers in Germany - the biggest of its kind in Europe and uses it to carry out cutting-edge safety research. Minimax was the first company in Germany to decide to build up its competency in the development of fire protection solutions in an in-house research center.

The research center gives the option of carrying out fire tests at a scale of 1:1. The range of jobs is diverse, from the validation of development results, regular effectiveness tests, testing of customer concepts, training of customers and employees up to acceptance tests for national and international product approvals.

Development of the research center

The equipment is constantly modified and extended to meet the latest technical findings. In 1992 the set-up was converted by the installation of a smoke gas cleaning system and a water retention system into one of the most modern and environmentally friendly fire research centers in Europe. An observer area was incorporated in 1998 which allows visitors to observe fire tests safely and comfortably. In 2009 the fire hall and technical center were renovated and the spark test stand opened.

The centerpiece: The great fire test hall

The main building has a base of 320 m². The height can be varied between 2 m and 15 m using a mobile suspended ceiling. The mobile ceiling is divided into two halves, so that two test structures can also be created in parallel. The building consists of an external supporting steel structure with internal sheet steel cladding. An exterior spray system is on standby to protect/ cooling the building when carrying out large-scale trials.

Other test areas

A fire test area is available which meets the international standards for determining fire suppression system application rates. This area, with a base of 25 m² and a height of up to 5 m, can be used for a variety of smaller fire scenarios.

The **spark test section** is used to recreate the conditions in pneumatic conveyor sections, which are used e.g. in suction devices in the timber industry. This way the responses of spark detectors and spray patterns of extinguishing nozzles can be investigated under realistic conditions and adapted to local conditions.



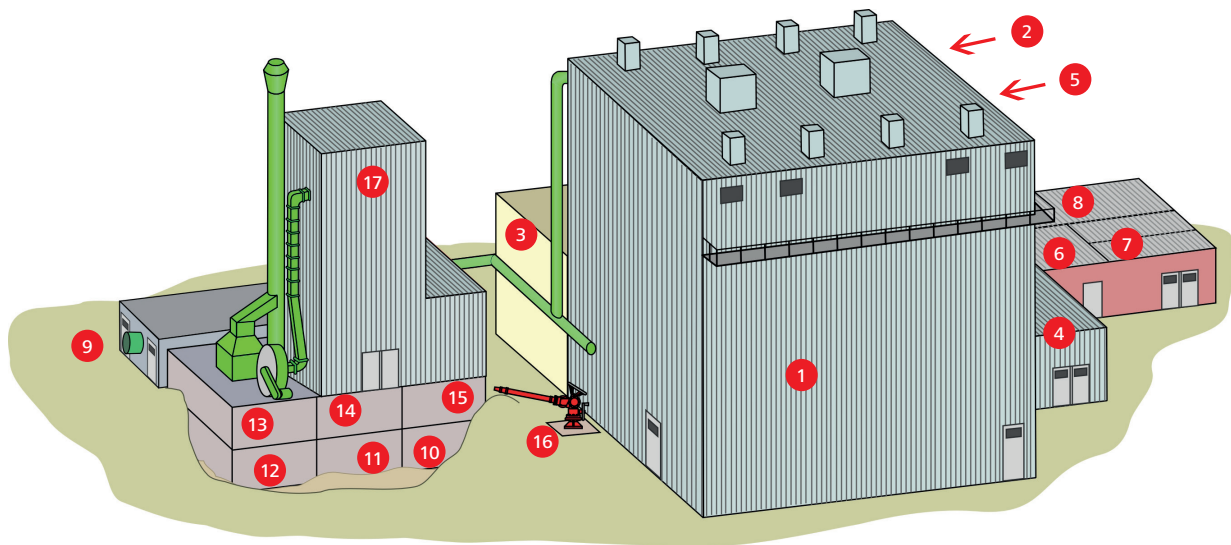
Component testing

The fire protection research center is equipped not only for fire tests but also for the testing of special extinguishing system components. The spray pattern of nozzles (sprinklers) can be analyzed with the help of a water distribution measuring station. Fittings up to DN 200, such as valves and screens, can be tested in a test section over 200 m long. It can be used to simulate extreme flow rates. The volumes of water used (up to 15,000 l/min) are recycled in an environmentally friendly manner.

Electronic fire and gas detectors are trialed in practical use in the detector application laboratory and tested under limiting conditions. For water projectors (monitors), discharge ranges and water volumes are measured.

Test data recording

As part of the test, comprehensive data is recorded using measurement systems, for example temperatures, water pressures and flows, the concentration of various gases and concentrations of harmful substances.



1	Fire test room (15 x 21 m, 2 m to 15 m high)	6	Measurement area/office	10	Waste water collecting tank 1	14	Engineering room 1
2	Fire test room 2 (6.5 x 4 m, 5 m high)	7	Storage and workshop	11	Waste water collecting tank 2	15	Engineering room 2/ Test sprinkler system
3	Auditory area	8	Valve test rig	12	Industrial water circuit tank	16	Monitor test stand
4	Control and water supply room	9	Spark test section	13	Laboratory	17	Smoke gas purification system
5	Sprinkler test stand						

Range of services

- Consultation before tests and fire tests and their design
- Carrying out of component tests, spray and fire tests
- Test documentation
- Help with approval procedures and acceptances
- Acceptance tests for national and international product approvals
- Demonstration tests, e.g. for training
- Development of extinguishing systems and extinguishing concepts and validation of development results
- Effectiveness tests



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