AQUASYS

firefighting is responsibility

- BUILDINGS
- TUNNELS
- INDUSTRY
- RAIL

FIRE FIGHTING

WITH HIGH PRESSURE WATER MIST

FIRE FIGHTING WITH HIGH PRESSURE

ENGINEERING & SYSTEM EXPERTISE 004-005
PHYSICS OF WATER MIST 006-007
SYSTEM COMPARISON 008-009
BUILDINGS & INDUSTRY 010-011
RAIL & MOBILE FIRE PROTECTION 012-013
TUNNELS & SPRAYING TECHNOLOGY 014-015
DEVELOPMENT, PRODUCTION & SERVICE 016-017
SYSTEM DESIGN 018-019

We are a leading international supplier of fire fighting equipment and process engineering spray/atomisation solutions, based in Linz in Upper Austria.

We are a reliable, flexible and innovative partner, providing high quality systems to design engineers, manufacturers and operators of buildings and transport infrastructure, machinery and equipment, as well as railway and special purpose vehicles.

Extensive expertise in the fields of systems engineering, simulation and life cycle costs, as well as quality, project and process management, are complemented by our first class production, assembly and service facilities. Getting to know the customer's individual application allows us to offer expert advice and a cost effective solution. We also maintain close contact with partners from research as well as fire fighting and fire protection institutions, and are always ready to meet new technological challenges.

FIRE FIGHTING IS RESPONSIBILITY

BUILDINGS

The use of high quality stainless steel design parts allows an efficient and architecturally sophisticated fire protection solution.

INDUSTRY

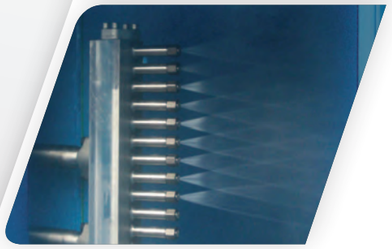
Installation of the robust and durable AQUASYS fire fighting system in new or existing industrial plants increases plant availability while covering a variety of fire risks.

TUNNELS

The AQUASYS fire fighting system for tunnels is one of the core elements of modern safety equipment for minimising the potential risks in road construction.

RAIL

Space and weight optimised components together with the environmentally responsible technology of AQUASYS fire fighting systems allow space saving and sustainable installation in rail vehicles.



SPRAYING TECHNOLOGY

We provide environmentally responsible, innovative solutions through intelligent use of the unique physical properties of high pressure water mist. Our solutions are used in the fields of cooling and the replacement of structural fire partitions or visual barriers.

SOLUTIONS WITH SAFETY

ENGINEERING & SYSTEM EXPERTISE


Responsibility and trust in the product


Flexibility and readiness for use


Added value through constant further development

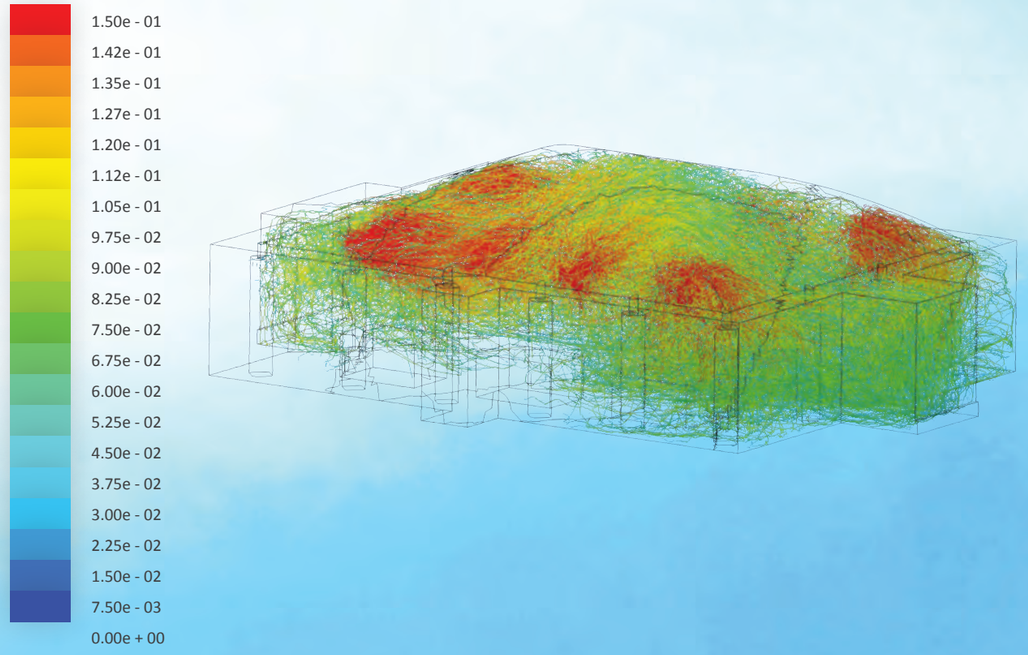
RESEARCH & DEVELOPMENT
Real fire tests and cooperation with research centres.

ENGINEERING
Flexible solutions in cooperation with accredited institutions.

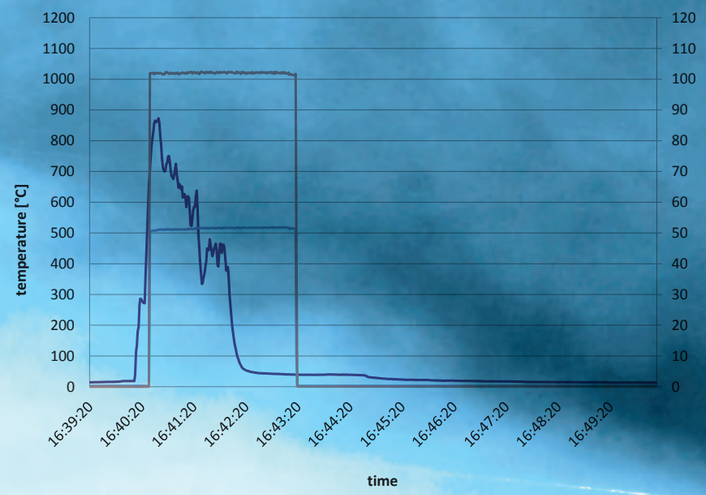
PRODUCTION & ASSEMBLY
High quality design from a single source.

COMMISSIONING & SERVICE
Satisfied customers as the basis for growth.

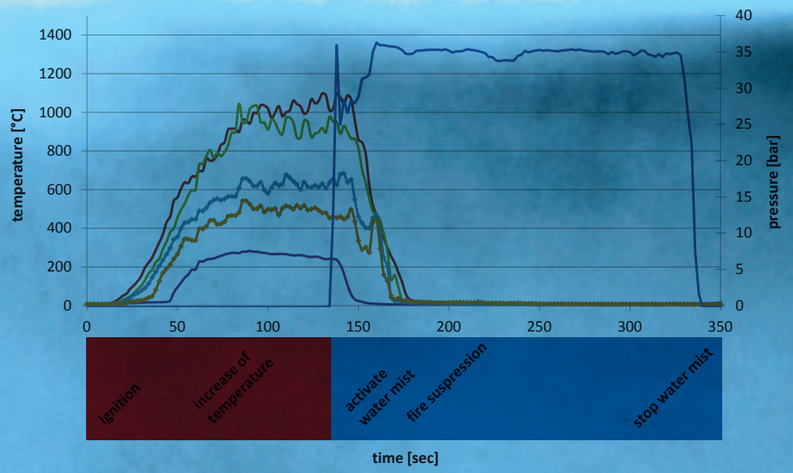
THE PHYSICS OF WATER MIST



Performance on engine room fire



Performance on 200 MW liquid fire



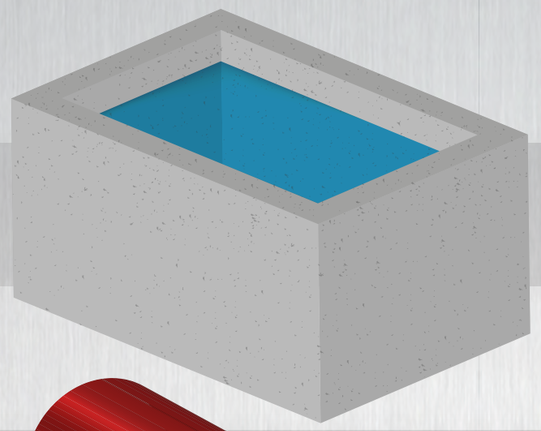
RESEARCH & IMPROVEMENT

We actively carry out basic research to develop proven technologies as the basis for future systems. As well as participating in support projects and developing patentable products, we also employ modern CFD simulations. The data from numerous real fire tests is also considered in our custom built models. This puts the knowledge we have acquired on a sound scientific footing and ensures ongoing validation and improvement of our simulation models.

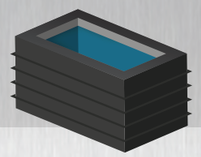
SYSTEM COMPARISON

SPRINKLER SYSTEM

HIGH PRESSURE WATER MIST

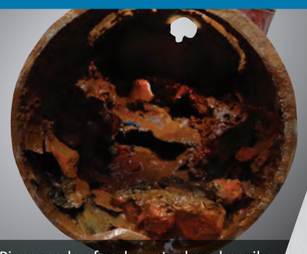


Concrete water tanks are usually required.

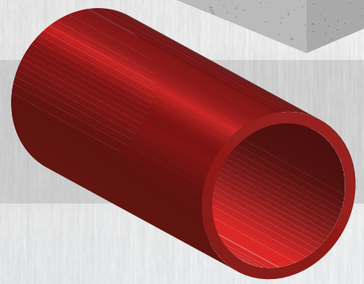


Upgradeable and transportable water tanks made of plastic or stainless steel are sufficient. (on-site assembly possible)

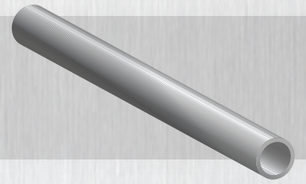
CARBON STEEL PIPE



Pipes made of carbon steel are heavily rusted after 10 years of service.



Carbon steel pipe, painted or galvanised
Required due to much higher water quantity:
Dimensions DN32 to DN150

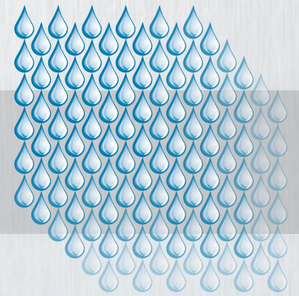


Durable and corrosion resistant pipe thanks to complete stainless steel finish.
Dimensions DN10 to DN40

STAINLESS STEEL PIPE

Stainless steel pipe after 10 years of service

Droplet size typically 1 to 2 mm, approx. 4 m² water surface per litre allowing limited cooling and evaporation rate



Droplet size typically 50 to 300 µm, approx. 60 m² water surface per litre allowing very high cooling and evaporation rate.
3-dimensional dispersion due to low weight

Added value of high pressure water mist systems (HPWM)
compared to sprinkler systems

- **Water consumption with HPWM**
  Very low: approx. 15 - 35 % compared to conventional sprinklers
- **Cooling effect of HPWM**
  Very high due to small droplets and space-filling property of the water mist
- **Water damage with HPWM**
  Low due to small water quantity and high evaporation rate
- **Oxygen displacement by HPWM**
  Displacement effect of the water mist leads to additional containment of the fire

Fire classifications

Sprinkler systems

High pressure water mist

Added value of high pressure water mist systems (HPWM)
compared to gas extinguisher systems

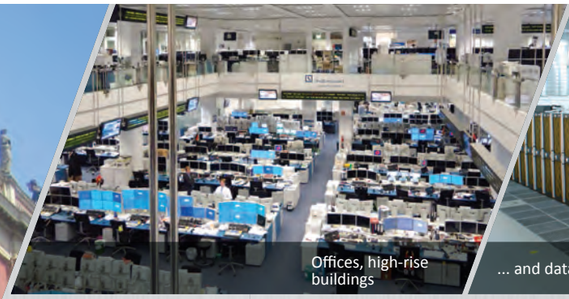
- **No danger to life from extinguishing agents with HPWM**
  The use of water instead of extinguishing agents with deadly CO^2 concentrations means no danger to life in enclosed spaces.
- Quick recommissioning HPWM
  Automatic refilling of the water tank instead of expensive replacement of gas cylinders.
- **No additional room partitioning with HPWM**
  Water mist also works in open areas or air currents.
- **Immediate activation after detection with HPWM**
  Non-hazardous extinguishing agent allows immediate or selective activation.

Fire classifications

CO^2 extinguisher systems (only in enclosed spaces)

High pressure water mist (also in open spaces)


Historical buildings


Offices, high-rise buildings


... and data centres

BUILDINGS

EFFICIENT & SMART

A highly efficient fire fighting system must take into account that different buildings serve different functions. The protection of a library, the creation of artificial fire zones in modern and open office complexes, or the protection of out-of-sight utility shafts are just a few of these. Maximum availability with a requirement for small installation space and an attractive design are further important expectations of such safety equipment. The specially developed nozzles with their appealing visual appearance produce a particularly fine water mist, fighting the fire with impressive efficiency and effectively preventing it from spreading. As a result, the water mist system protects not only building structures and escape routes, but also electronic equipment and culturally significant works of art in historical buildings, using 70 - 80 % less water compared with conventional solutions.

INDUSTRY

ROBUST & RELIABLE

High pressure water mist (HPWM) ensures high availability of the production processes by avoiding or reducing standby times. This has already been demonstrated to the satisfaction of our customers in many production processes which have a high fire risk, such as paper machines, cable ducts or test benches. The AQUASYS system is particularly impressive as it quickly contains the fire, minimises water damage and allows fast recommissioning.

In response to the special demands of industry, we have developed individual functions which have proven outstanding in day-to-day operation. Both the production plant and the HPWM system are soon ready for operation again following an emergency. The degree of atomisation and water exposure are adjusted to the specific fire load of each component, and calculated by accredited, globally recognised test institutes under real fire test conditions.

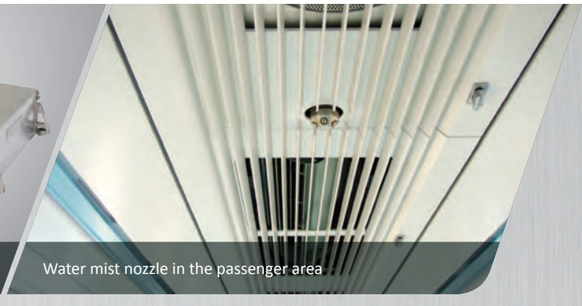

Reliable transformer protection


Flexible small scale central technology


Best possible protection of large industrial facilities

Effective protection for passengers


Supply unit
for roof mounting


Water mist nozzle in the passenger area

RAIL

COMPACT & SAFE

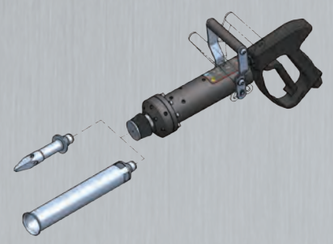
Rail vehicles pose special challenges for fire fighting – both in emergencies and in day-to-day operation. This applies not only to the direct protection of passengers, but also to primarily in preventing the spread of fires in hard-to-reach zones such as the engine and electric systems. To meet the special requirements of mobile fire fighting, we have developed a weight-optimised system that can withstand the high vibration loads and at the same time satisfy the continual demand for reduced space. The specially developed nozzles produce a particularly fine water mist, fighting the fire with impressive efficiency and effectively preventing it from spreading. This system accommodates the different carriage and compartment styles by targeting specific sources of risk in the passenger area whilst still considering the aesthetics.

MOBILE FIRE PROTECTION

SMALL & EFFECTIVE

The high efficiency of water mist also has outstanding benefits for applications in manual fire fighting. The water mist gun from AQUASYS with its high pressure supply achieves maximum extinguishing power with minimum water consumption in the smallest possible installation space. In contrast to low pressure systems, the fine misting of water and reduced flow speed combine to fight not only Class A fires (solid fires), but also Class B (liquid fires) and Class F fires (fat fires). The foam pipe can even be used to generate low expansion foam to fight pool fires.

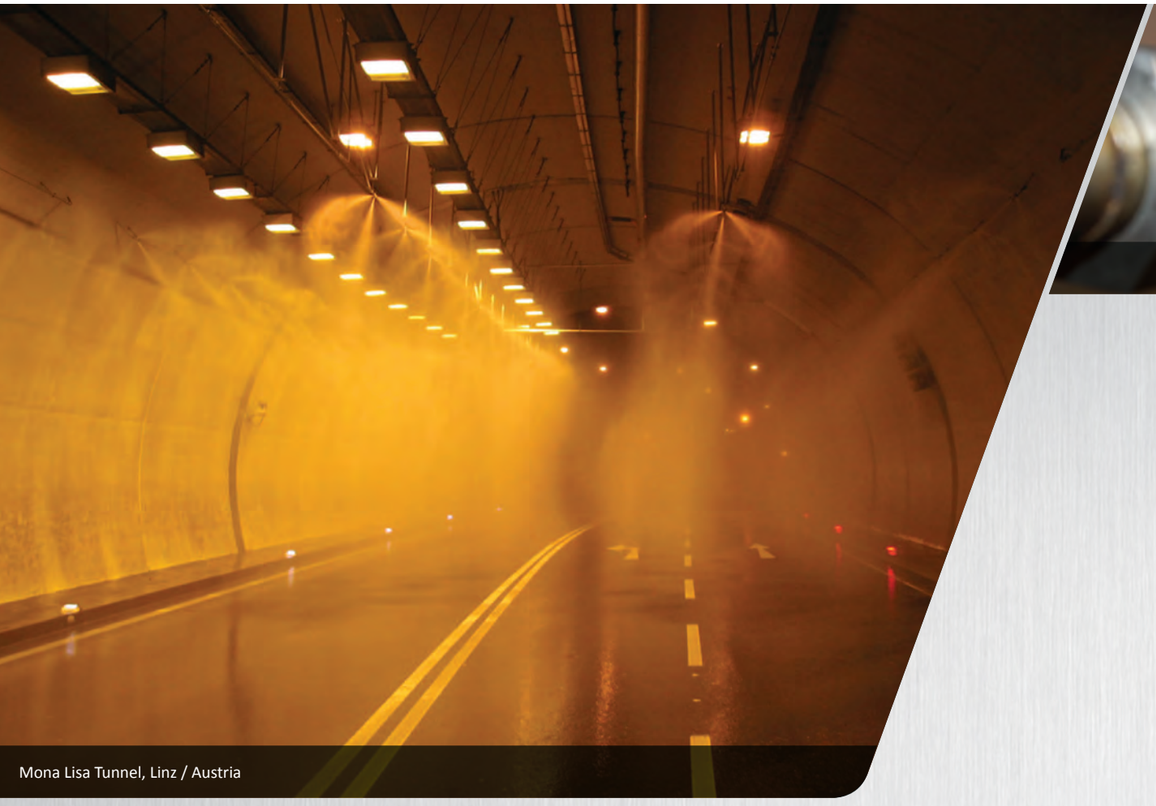
- Perfect tool for initial application
- Easy, ergonomic operation
- Low operational weight
- Solid and liquid fires
- Efficient extinguishing effect minimises water damage




Compact customised car unit


Mobile extinguishing system
for industrial applications


Vehicle fires firmly under control



Mona Lisa Tunnel, Linz / Austria

Space saving in-line nozzle heads

Pump room in Felbertauern Tunnel, Austria

TUNNELS

POWERFUL & UNOBTRUSIVE

Extremely high fire loads (up to 200 MW) and the resulting temperatures (up to and exceeding 1000 °C) are the fundamental challenges which our fire fighting system has been proven to handle. Effective personal protection through immediate activation of the system and good building protection increase the safety of tunnel users, whilst ensuring high availability of the infrastructure for the operators. Specially developed and patented nozzle solutions make it possible to control various fire scenarios, such as solid or liquid fires. The use of high quality materials and coating processes take into account the special requirements of this aggressive environment and the high temperature differentials of the components installed in the tunnel.

SPRAYING TECHNOLOGY

COOL & CLEAN

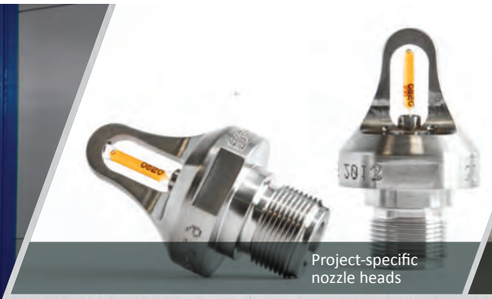
Intelligent use of the physical properties of water mist and our fluid mechanical know-how have created additional innovative applications. Plant and buildings can be protected by cooling the hot gases from fires or processes and cooling the materials and components used in the production process. Water mist curtains are increasingly used as projection surfaces for visualisations and as a visual barrier or a substitute for structural fire safety partitions in modern buildings and transport systems. Extensive knowledge gained from fluidic simulations in combination with the selected use of water hydraulic systems allow applications in industrial cleaning and dust suppression.

Fan protection by smoke gas cooling

High pressure cleaning pump

Optical drive-through barrier

Demo room for visualisation of different spray patterns


Project-specific nozzle heads

Many years of experience and know-how in the industry

DEVELOPMENT

DYNAMIC & TARGETED

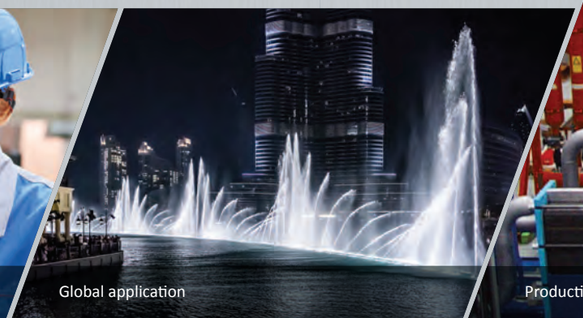
The determining factors of our ongoing development processes are efficiency, effectiveness, safety and economic viability. Close contact with our customers and notified body, as well as active cooperation with standardisation institutes, ensure that our development priorities remain clearly focused on the market and the needs of the customer. High pressure test benches up to 800 bar test pressure, a laboratory and a test centre for nozzle development as well as spray pattern optimisation are only some elements of the infrastructure we have directly available in house. The quality and environmental management systems we implemented and practise are supported by independent audits executed by external inspection agencies or our customers.

PRODUCTION & SERVICE

QUICK & RELIABLE

Technology meeting the highest specifications is manufactured in layout-optimised production and assembly halls covering 26,000 m². The focus here is on maximum economic viability, quality and punctuality. Experienced staff, company-trained specialists and an advanced production park ensure maximum productivity. Our service quality is valued by renowned customers around the world. Highly qualified staff are available around the clock to support you. We can also guarantee short delivery times and smooth handling of your project thanks to our own production and an extensive stock.

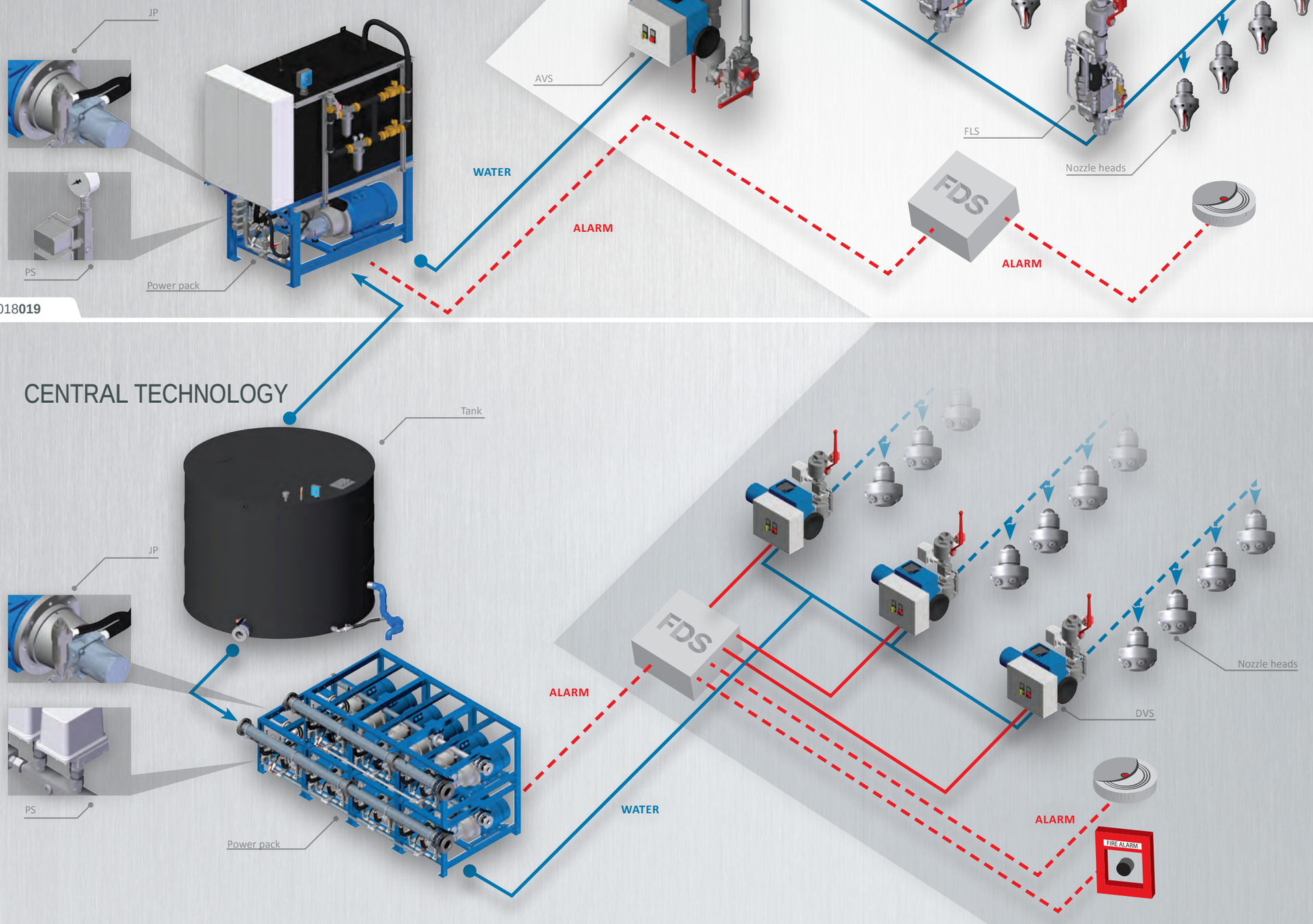

Highly qualified service technicians


Global application


Production and assembly halls covering 26,000 m²

SYSTEM DESIGN

CENTRAL TECHNOLOGY



WET SYSTEM

This system is mainly used in buildings and is characterised by an independent activation in the case of fire. The entire pipework system is filled with water up to the nozzles, which are sealed with thermally activated elements, and loaded with a defined standby pressure. An integrated standby pump (JP) keeps this pressure constant.

Thermally activated elements melt when the defined temperatures are exceeded and immediately release the water flow. The resulting pressure drop (alarm via pressure switch (PS)) causes the main pumps, which provide the full power of HPWM system, to start automatically.

Features:

- Permanent monitoring of the pipework system via standby pressure
- Fire fighting takes place only locally via thermally opened nozzle heads
- Optional fire detection for additional advance warning
- Optional standby pressure also feasible via compressed air

DRY SYSTEM

This system, which is preferred in industrial applications, is characterised by open nozzles, dry pipes and activation of predefined extinguishing sections. The pipework system is filled with water up to the section valves (DVS).

When they are alerted via the fire detection system, each section valve opens and releases the water to all the nozzles in its section. The resulting pressure drop (alarm via pressure switch (PS)) causes the main pumps to start automatically, ensuring efficient fire fighting for the entire section.

Features:

- Targeted localisation of extinguishing areas possible
- Activation via fire detection systems (smoke, flame or heat detectors)
- Application also in areas prone to frost
- Manual activation possible

Fire fighting is responsibility – with this slogan we want to make an active contribution to the safety of people, property and productivity. In order to fulfil this responsibility, we constantly demand and promote the innovative ideas and expertise of our motivated team.

We are glad to discuss your individual requirements. Close cooperation between R&D, sales, project management and production all on one site guarantees the flexibility and customer focus necessary in all sectors.

We invite you to challenge us to identify the benefits of high pressure water mist technology for your requirements and goals! My team and I are always available to share with you our total commitment to the product!

Josef Hainzl
Executive Manager
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