

AQUASYS
firefighting is responsibility

- BUILDING
- TUNNEL
- INDUSTRY
- RAIL



RAIL

FIRE FIGHTING

WITH HIGH PRESSURE WATER MIST

FIRE FIGHTING IS RESPONSIBILITY



We are a leading international supplier of high pressure water mist fire fighting systems, based in Linz, Austria. As part of an owner managed company group we benefit from extensive experience in the fields of fluid engineering systems for industry and building services equipment.

We offer high quality fire fighting systems and turnkey solutions for the manufacturers and operators of rail vehicles. Our wide ranging expertise in systems engineering, simulation and life cycle costs, as well as quality, project and process management, is complemented by first class production, assembly and service facilities. Our personal approach to each customers individual application enables us to provide expert advice and highly cost-effective solutions.

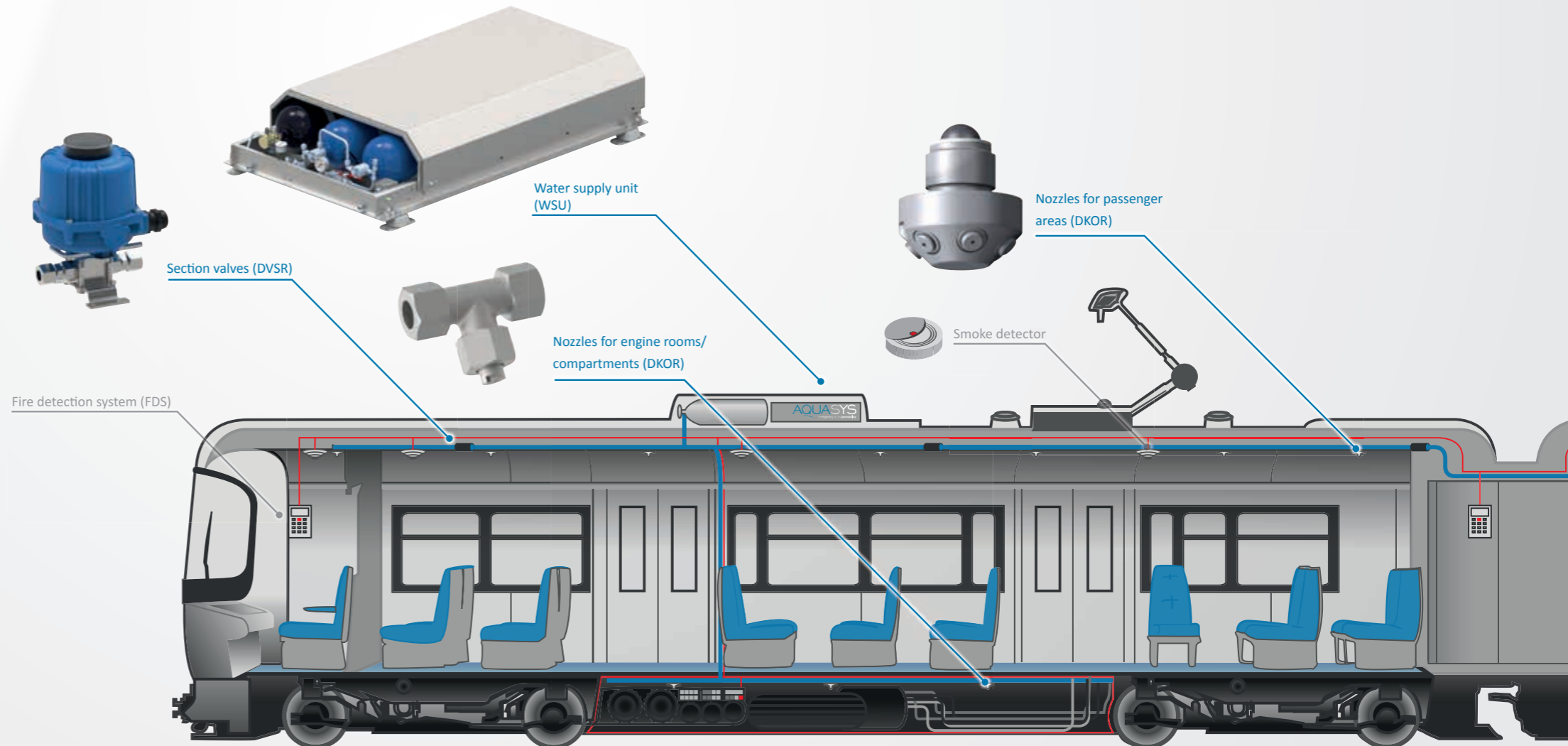
We also maintain close contact with our partners in research and the fire service as well as with fire safety institution and are always ready to meet new technological challenges.

RAIL

COMPACT & SAFE

Rail vehicles place very specific demands on fire fighting, in emergencies as well as in everyday operation. Besides the immediate protection of passengers, the spreading of the fire must also be prevented in areas difficult to access such as engine rooms or electrical cabinets. In line with the specific demands of mobile fire fighting, we have developed a weight-optimised system, which withstands the high vibration loads and simultaneously meets the permanent demand for a reduction of the installation space. The effectiveness

of the AQUASYS water mist system has been verified in numerous full-scale fire tests and has been certified by independent institutes. Our offer includes the manufacturing of the systems as well as the planning and design of the fire fighting system for customer-specific vehicles. The system can be designed for the protection of passenger areas as well as for the fire extinguishing for engine- and generator rooms in locomotives or rail track building machines.

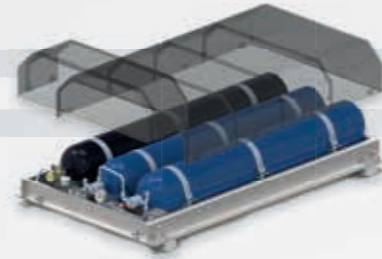
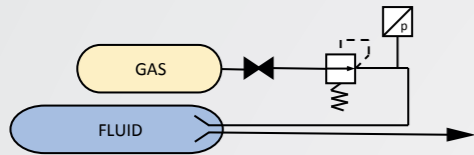


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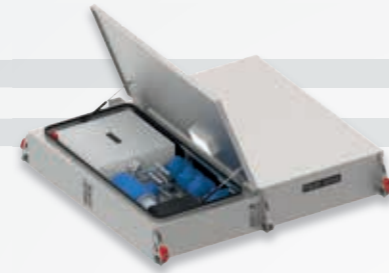
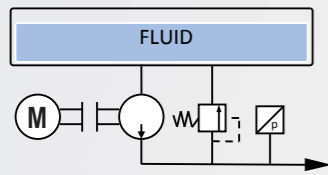
PRODUCT OVERVIEW & SERVICES

..... WATER SUPPLY UNIT (WSU)

- Gas driven unit:**
- Compact system design
 - Energy self-sufficient (only trigger impulse necessary)
 - System size scalable



- Pump driven unit:**
- Without high pressure cylinders
 - Maintenance reduced



..... FIRE FIGHTING AGENT

- Pure drinking water according EEC 80/778 or distilled water
- Additives like anti freezing agents possible



..... FROST PROTECTION

- Heating device for water cylinders
- Temperature monitoring of water and nitrogen
- Emergency draining system in case of critical low temperatures



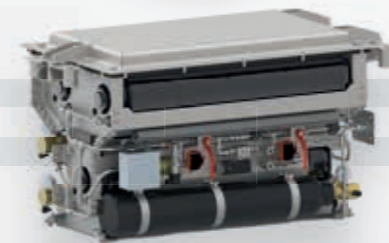
..... AEROSOL GENERATOR

- Fire extinguishing agent for technical areas, machine- and engine-rooms as well as electrical cabinets
- Insignificant global warming potential
- Zero atmospheric life
- Zero ozone depletion potential
- Non-toxic



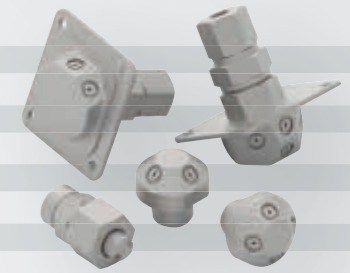
..... CUSTOMIZED DESIGN

- Customized mechanical and electrical interface
- Vertical and horizontal installation position possible
- Roof top, underfloor and inside installation
- Up to IP67



..... NOZZLE HEADS

- Patented nozzle design – inline construction
- Wide range of versions spray angles and flow rates
- Droplet size < 300 µm
- Suitable for very small installation space
- Special design for railway application
- Single- or multi-nozzleheads available
- Customized nozzlehead design for special installation position like double deck trains
- High quality design in stainless steel



..... SECTION VALVES

- Special design for railway application
- Nominal pressure: up to 315 bar
- 2 way and 3 way version
- Nominal diameters: 12 L or 15 L acc. EN ISO 8434-1
- Power supply 24 VDC
- Maintenance free
- Protection class: IP67
- SIL2 optional



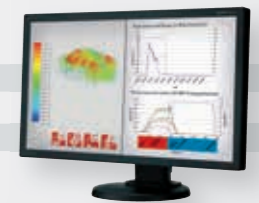
..... PIPING

- Nominal pressure: up to 315 bar
- Nominal diameter DN 8 to DN 32
- Materials 1.4404 or 1.4571
- Form locked connections acc. EN ISO 8434-1
- Pipes acc. EN ISO 10217-7



..... FIRE TESTS & SIMULATIONS

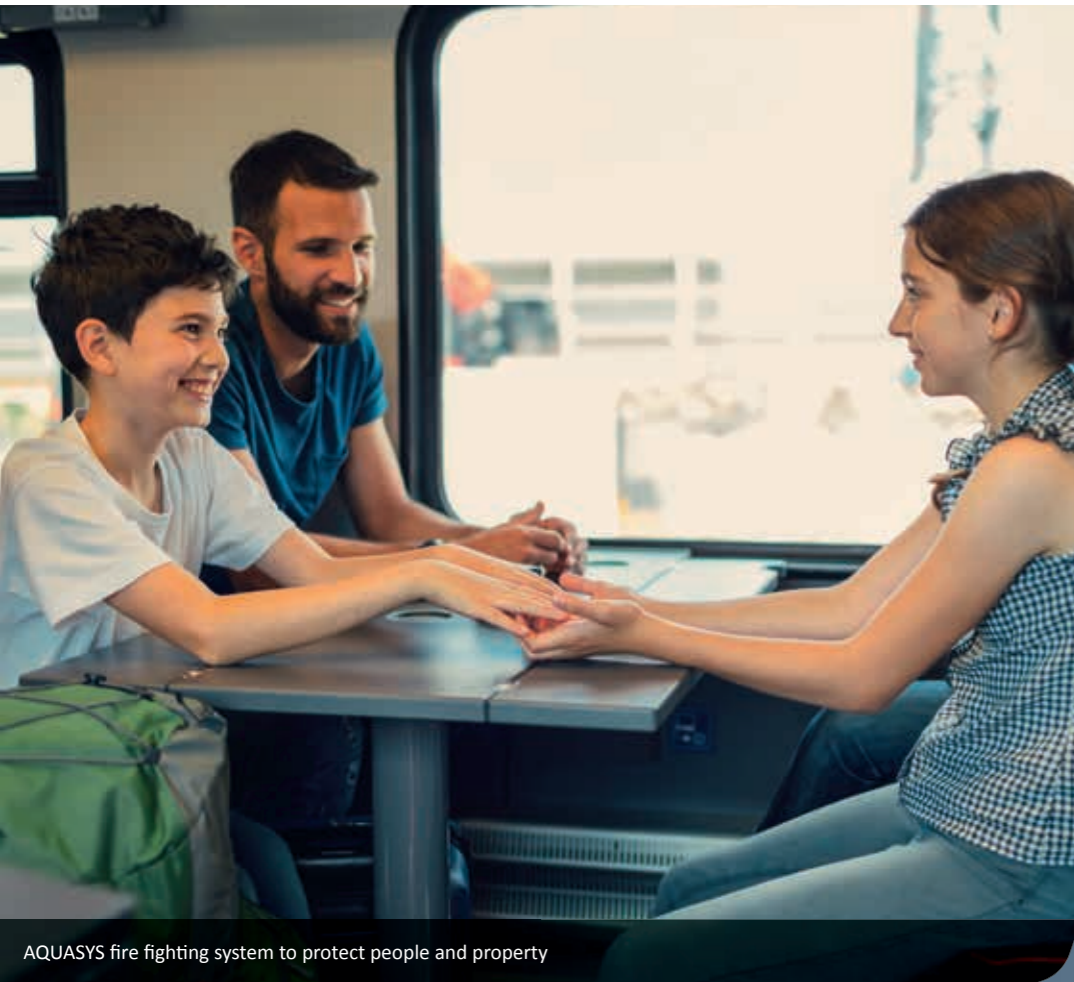
- AQUASYS test area for application specific fire tests
- Tests according ARGE Part II guideline for engine rooms and passenger areas
- Tests according UNI 11565



..... SERVICE & MAINTENANCE

- Extensive spare parts store
- Quick and straightforward support
- 24/7 on-call service





High grade stainless steel for very long lifetime

Aesthetic nozzle design for discreet integration

Simple installation in narrow engine compartments

PASSENGER AREAS & TECHNICAL COMPARTMENTS

RINA & TÜV approved



For a safe journey

Fire protection in rolling stock requires different kind of fire protection systems. The safety of passengers has the top priority in rail transport. Intelligent detection systems promptly detect fires and efficient fire fighting systems ensure the rapid evacuation of passengers out of the danger zone. Water mist, which is harmless to people, is the ideal extinguishing agent for the passenger area. The AQUASYS fire fighting system easily accommodates the different carriage and compartment designs by protecting specific sources of danger in the passenger area in a targeted manner and taking account of aesthetic demands. Electrical switchgears and control

units, diesel engine rooms and drive systems are important system components in rail vehicles. They ensure the functionality of the vehicle, but often have a high fire potential. Oils, lubricants and fuels present a high risk. A reliable fire fighting system is therefore a critical part of safe railway vehicles and engines. The outstanding extinguishing effect of water mist means that it is universally applicable for fire classes A, B, C and F. Water mist and aerosol are adequate extinguishing agents for electrical danger zones. Of course, all AQUASYS fire fighting systems are based on rolling stock specific real-scale fire tests, executed with independent institutes.



Setup ARGE Firetest for passenger area

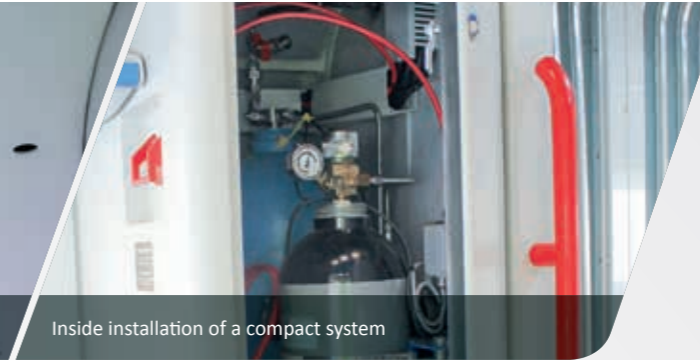
Fire test according UNI11565 including luggage rack

System after activation in a machine room

RAIL-REFERENCES



Maximum service life and easy maintenance



Inside installation of a compact system

NEWAG VULCANO DMU

PASSENGER SAFETY, SICILY (IT)

Passengers can explore the picturesque landscape around the Sicilian volcano Etna with the new trainset of the Polish manufacturer NEWAG. Since 2015, four new double railcars of the line operated by Ferrovia Circumetnea (FCE) on Sicily have been running between Catania and Riposto. AQUASYS fire fighting systems protect the

passengers area, the toilets, the driver's cabs and the diesel drive units of the DMU's (Diesel Multiple Unit) in the new trainset. The effective protection of the nitrogen-operated water mist system provides a space-saving and service-friendly way of fire fighting.

Fire fighting system according UNI11565

008009

INCHEON METRO LINE 2

PASSENGER SAFETY, INCHEON (KOR)

More than 100,000 passengers use the Incheon Metro Line 2 every day in South Korea's third largest city. 37 metro trainsets, all equipped with AQUASYS fire fighting systems, run on the 29.2-kilometre line between Incheon and the centre of Seoul. On behalf of the vehicle manufacturer Hyundai Rotem, AQUASYS installed a compact

system design for roof installation and an insulated system design for frost protection on the metro fittings in Incheon. Our fire fighting systems significantly increase the safety of every single passenger with their high efficiency.



Smart integration of nozzles into interior design



Water supply unit installation on the rooftop



Highest safety standards for thousands of passengers

RAIL-REFERENCES



Installation inside of the technical compartment



Noozles for engine rooms

TEJAS EXPRESS

PROTECTION OF ENGINE ROOMS (IND)

India's first semi-high-speed train has been running through the country since 2017: instead of an average speed of 56 kilometers per hour up to now, this train can reach speeds of up to 180 km/h. Under the climatic conditions, this is a major load test for the machines: the operator therefore relies on water mist to protect the engine of the train as a preventive measure. Locomotive machine

room specific water mist nozzles protect engines and generators. The design and layout of the fire fighting systems was carried out by AQUASYS, the installation on site by a local partner. In addition to the Tejas Express, other vehicles in India are continuously being equipped with AQUASYS technology to protect the technical areas in rail vehicles.

Tejas Express: India's first semi-high-speed train.

010011

PLASSER & THEURER

RAIL CONSTRUCTION MACHINES, LINZ (AT)

For more than 20 years AQUASYS has been supplying the world market leader for track construction machines in series. The flexible and compact designed fire fighting systems for the protection of the diesel engines ensure a high level of reliability and safeness for the high quality working machines. The railway construction machines

have a long service life and guarantee safety for the operating personnel. Therefore, AQUASYS equips railway construction machines from Plasser & Theurer with fire fighting systems based on water mist to protect the engine and generator compartments and ensures maximum safety during operation and when parked.



Smart temperature measurement for fire detection

Easy integration in the engine room



Plasser and Theurer track building machine

Fire fighting is responsibility – the safety of people in the event of a fire in a rail vehicle and the availability of important transport connections in a functioning economic area are more important than ever today. How the use of water as a natural and environmentally friendly extinguishing agent and innovative solutions for low-maintenance, durable fire-fighting systems that can be seamlessly integrated into the design of the train are the hallmarks of our daily activities.

Utilising our capabilities from R&D, sales, project management and production at our site in Linz makes it possible to analyse any given specific application and your individual requirements. Close cooperation with notified bodies and the ability and willingness to perform short term and comprehensive fire tests ensure well founded and approved system solutions.

Get in touch with 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!

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