FIXED FIRE-SAFETY SYSTEMSBONPET

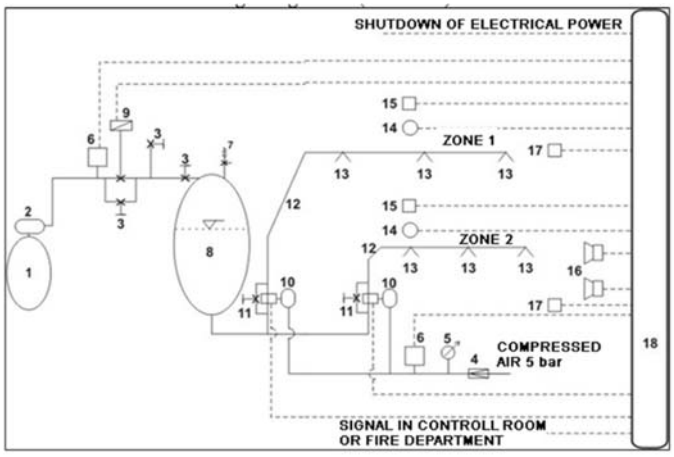
TECHNICAL DATA SHEET

1. Composition

Built in extinguishing system (fixed fire extinguishing system) is made up of elements of mechanical and electrical equipment, and is classified as a low-pressure system with a working pressure up to 5 bars, which means that for a system the tubes with a low-test pressure of 7.5 bar (water lines) can be used. The volume of liquid container is determined by the assessment of the fire risk.

The system is composed by:

1.The container with Nitrogen (N2)
2. The pressure reducing valve for Nitrogen (N2)
3. Manual valve - gas
4. Non-return gas valve
5. Pressure gauge
6. Pressure switch - adjustable signal to fire-control centre
7. Safety valve
8. Container for liquid BONPET
9. Solenoid valve
10. The automated pneumatic ball valve with a reservoir of compressed air
11. The manual ball valve
12. Pipeline
13. Nozzles
14. Automatic fire detectors
15. Manual fire detection switch
16. Sirens
17. Switch to stop/hold fire extinguishing
18. Fire control centre



Built in extinguishing system (fixed fire extinguishing system) with BONPET extinguishing liquid is designed as zone fire-extinguishing system. The system is used for extinguishing the fires of class A, B and F. Thesystem Bonpet in addition to the automatic operation also enables manual activation of the system. The system is suitable for fire protection of lacquering shops, electrical transformers (external and internal), hydraulic aggregates, machines for plastics (machines for vacuuming), storages of flammable liquids in the wood processing industry (filters etc.), warehouses, tunnels (in testing), etc.

2. Activation

The operating principle of the fire-fighting is with spraying extinguishing media Bonpet. The liquid is distributed by the pipeline and nozzles same as water system, the difference is in the volume of the liquid. Water systems are mainly used to hold the fire until the fire fighter's intervention, which is why the water systems have a longer time of spraying.

Spraying extinguishing liquid Bonpet has the main task to extinguish the fire, because of its effectiveness the extinguishing time (liquid spraying) is significantly shorter (up to 20 seconds)in the comparison with water systems. Due to the extraordinary ability of extinguishing with BONPET liquid the calculated volume of the liquid is a relatively small.
Nitrogen as a propellant (thru the system of automatic valves) makes the pressure in the liquid tank.
The release of the extinguishing fluid Bonpet in the pipeline system is carried out via an automated ball valve. Valve with pneumatic drive is opened by a signal from the fire alarm system, and thereby allow the flow of extinguishing liquid to the nozzles in the zone of extinguishing, where there has been a detection of a fire.

Bonpet liquid activation

The components of Bonpet liquid cause a fast transport of the heat on a chemical part, using water when they get in contact with hot surface. Wet chemicals decompose into gasses (CO2, N2) which suffocate fire directly on burning surface, by preventing fire to get to the oxygen. The gasses suffocate fire directly on burning surface (intensive cooling and approximately 60-times bigger volume comparing to the size of a drop) due to this relatively small quantity of chemicals is needed to effectively put out a fire.

Non-decomposed components of Bonpet liquid that remain on the surface after the fire has been extinguished, have the ability to disintegrate and cool the surface, if there is a slight increase of temperature.

Bonpet liquid is suitable for fire class A, B in F and the consequences from the fire class C.

3. Technical characteristics

Built in extinguishing system Bonpet (120 m^2/ zone)

Volume of the extinguishing media (BONPET)	600 l
Volume of the propellant gas (N2)	30 l
Working pressure	< 5bars
Extinguishing time	20-30 seconds
Extinguishing area	120 m^2
Number of the nozzles for extinguishing	According to the project
Pipe line material	carbon steel or stainless steel (Ø20mm to Ø100mm)
Usage	Indoor or outdoor / depends on the project type
Activation	Automatic or/and manual Fire detectors: smoke, temperature, optical ..
Activation time	approx. 20 sec(depends on the system)

Fired System Type	Fire Type	Fire Base	Bonpet Liquid	Nozzles	Reservoir	Zones (max)	Nozzles (max)	Detectors (+1 Contrl.C.)	Pipe line lenght (max)	Working preasure	Working temperature	Extinguishing Time
Fixed	A - regular fire	Wood	2,5l/m^2	1 pcs/2m^2	300l	120m^2	22pcs	4pcs	200m	5-7bars	0°C to 60°C	20-25sec
Fixed	A - regular fire	Other solid burning material	2,5l/m^2	1 pcs/2m2	300l	120m^2	22pcs	4pcs	200m	5-7bars	0°C to 60°C	20-25sec
Fixed	B - fire of inflamable liquids	Patrol and Oil	5l/m^2	1 pcs/2m2	600l	120m^2	22pcs	4pcs	200m	5-7bars	0°C to 60°C	20-25sec
Fixed	B - fire of inflamable liquids	Trafo Oil	5l/m^2	1 pcs/2m2	600l	120m^2	22pcs	4pcs	200m	5-7bars	0°C to 60°C	20-25sec
Fixed	B - fire of inflamable liquids	Varnishig	5l/m^2	1 pcs/2m2	600l	120m^2	22pcs	4pcs	200m	5-7bars	0°C to 60°C	20-25sec
Fixed	B - fire of inflamable liquids	CNC Machine (Industrial Oil)	5l/m^2	1 pcs/2m2	150l	7m3	10pcs	manual	50m	5-7bars	0°C to 60°C	20-25sec

Bonpet Liquid

Physical state	Liquid
Colour	Slightly coloured liquid
Smell	Slight ammonia smell
pH	8,5 – 9,1
Density	1,1000 – 1,1500 g/ml
Flammability	Not flammable
Solubility in water at 20oC v g/l	Completely soluble in water
Freezing point	-14,5°C
Boiling point	103°C
Flashpoint	Non-existent
Explosion point	Non-existent
Ignition temperature	Non-existent
Decomposition temperature	Above 300°C
Decomposition products	N2, CO2, H2O

4. How to use fixed fire-safety systems Bonpet

5. Guarantee and Life expectancy

Warranty: **1 year** (regular maintenance required)

Life time	20 years (regular maintenance required)
Liquid warranty	5 years

After 5 years the liquid must be changed. The chemical characteristics are changing as the result of the aging.

Reference values:

- BONPET liquid density (1,1000 g/ml),
- BONPET liquid viscosity (1,89 mm^2/s at 20°C).

IMPORTANT:
Warranty and the life time can be guaranteed only with regular maintenance and servicing in accordance with manufacturer's instructions.

6. SYSTEM SERVICE AND MAINTENANCE PLAN

Regular service (system checking)	System checking, filling propellant gas (if needed)	3 months
After activation service	- Pipe line cleaning - Filling with the ext. liquid - Filling with propellant gas - Setting up the system in the operational mode	Immediately after the activation
5- year service	- System checking - Filling with the ext. Liquid (replacement) - Filling with propellant gas	5 years

7. Additional reference documents and certificates

- Acknowledgment of fault free operation of the system
- STS – Slovenian Technical Approval No. STS-06/041 (ZAG),
- MPA Dresden certificate, certificate of conformity KB 185/14 water based extinguished media – Bonpet,
- Safety Data Sheet (based on Hygiene Institute report, Germany)
- User manual,
- Operational and maintenance manual,
- Maintenance agreement.