



**HEIDELBERG MATERIALS PICTON ALTERNATIVE FUELS PROJECT FIRE SUPPRESSION
DESIGN CRITERIA**

Project #: D26025

Prepared For:

Heidelberg Materials.
Heidelberg Cement Group,
Suite 300, 7535 Windsor Drive, Allentown,
PA 18106

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TAIREC FIRE CONSULTING LTD.

Certificate of Authorization Number: 100690829

Prepared by:

Charles Aire, M.Sc., P.Eng., CFPS

Senior Fire Protection Engineer

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1.0 INTRODUCTION

1.1 Project Identification

The Heidelberg Materials Plant is in the community of Picton located in Prince Edward County in southeastern Canadian province of Ontario. Currently, a project is proceeding with the primary goal to install a new Dosing Station which will include a fuel conveying/dosing system, Screen Tower and a Docking Station Tent Building. The new system will be connected to the existing Alternative Fuels (AF) Facility.

The fire suppression system primarily must satisfy the minimum requirements of all Prince Edward County, Ontario Building Code and Canadian regulations for permitting and operation, and secondarily provide adequate protection for the alternative fuel line equipment in case of fire. The layout of the equipment within the project is indicated in **Figure 1 to 5**.

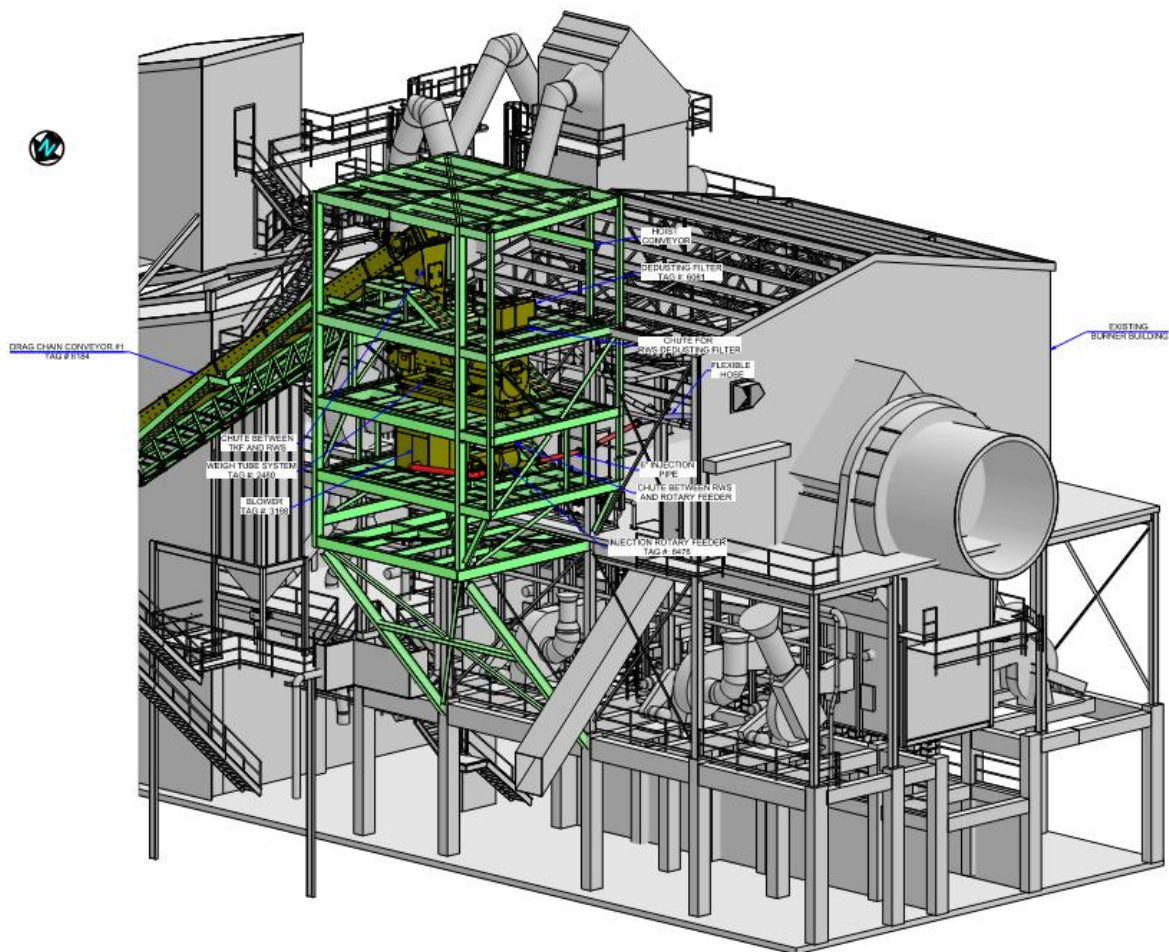


Figure 1 – Dosing Station (Coloured) connected to existing equipment (in grey)

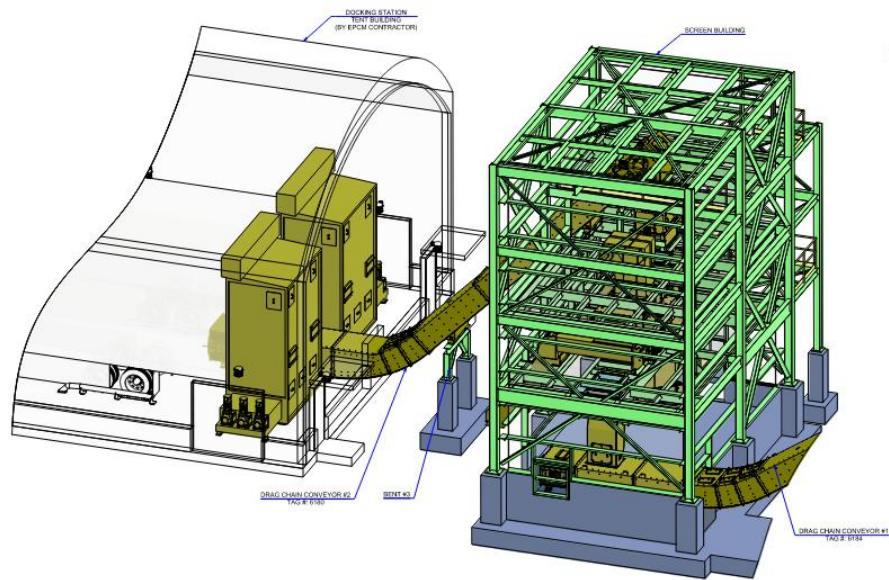


Figure 2 – Isometric View of the Screen Tower (connecting to new Docking Station Tent Building)

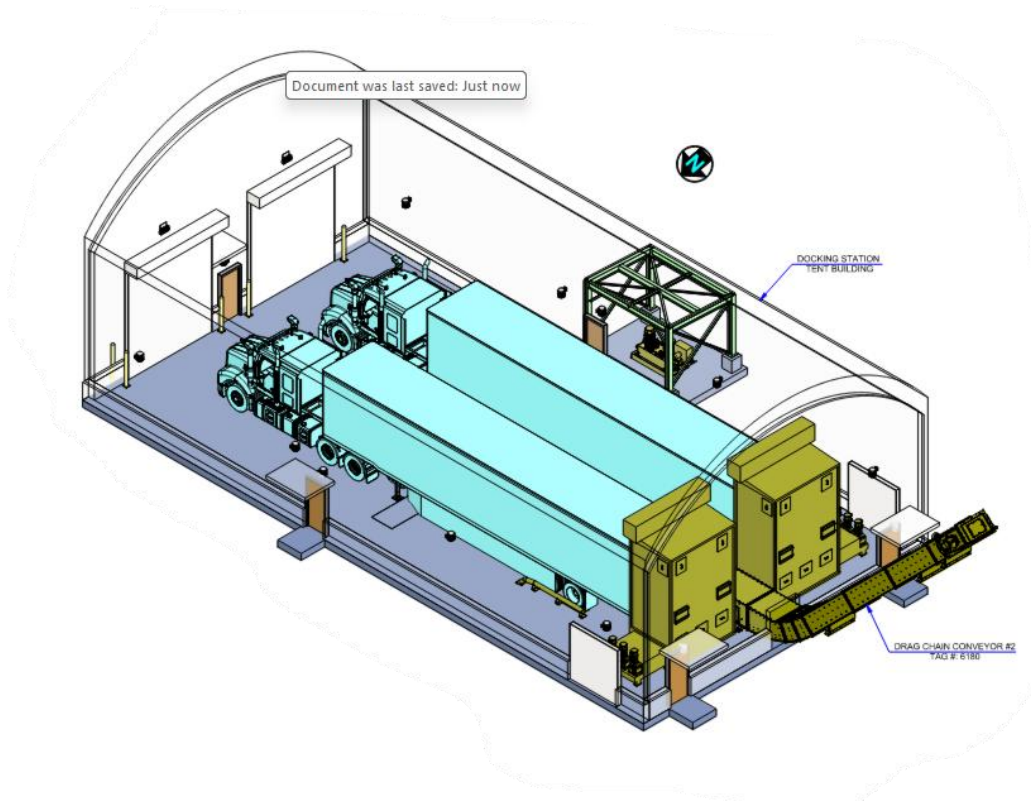


Figure 3 – Isometric View of Docking Station Tent Building



1.2 Process Description for the new scope

The alternative fuels will arrive at the plant via truck trailers. The trailers will be parked at the Truck Parking area (indicated in Figure 6) which will act as a temporary storage area and then the contents within the trailers will be transferred to the Docking Station Tent Building. The Docking Station Tent Building will be used for handling of the received products from the trailers which will then be discharged to the Docking Station and then to the Screen Tower via Conveyors (Drag Chain Conveyor #2) and then to the Dosing Station via Conveyors (Drag Chain Conveyor #1). The material will then be transported from the Dosing Station to be processed in the existing facility.

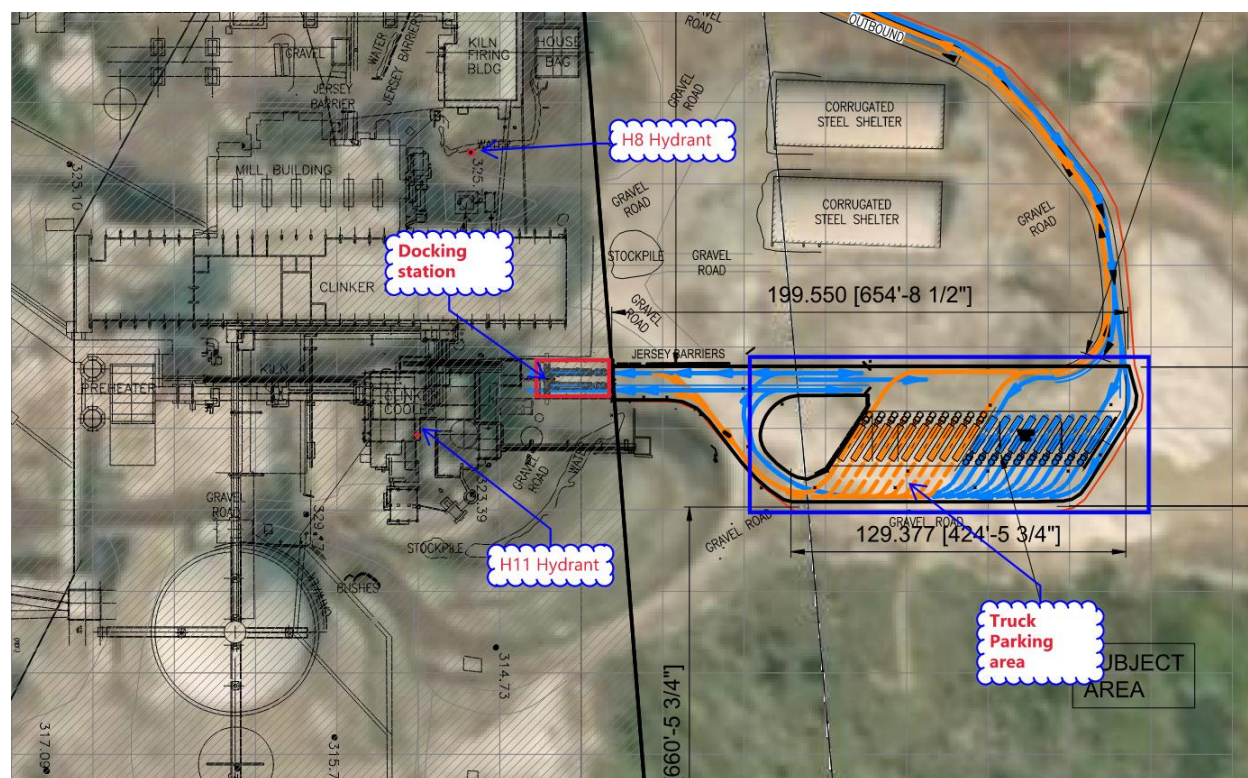


Figure 6 – Location of Truck Parking Area and Docking Station

1.3 Responsibilities

1.3.1 Authority Having Jurisdiction

The Prince Edward County (Ontario) is the authority having jurisdiction (AHJ).

1.3.2 Owner

Heidelberg Materials is the owner of the Plant.

1.3.3 Tairec Fire Consulting Ltd.

Tairec Fire Consulting Ltd. (Tairec) has been contracted by Heidelberg Materials to develop the Fire Protection Design Criteria for this project.

1.3.4 Insurance Provider

AIG is the insurance provider for Heidelberg Materials.

1.4 Document Scope

The Fire Protection Design Criteria provides design criteria, regulatory compliance, and quality control requirements for fire protection systems and equipment to be provided at the facility to the proposed Picton AFR Systems. The design basis provides an assessment of the minimum requirement necessary for regulatory compliance as well as the Heidelberg Material Risk Management Requirements. The new equipment within the project scope is summarized in Table 1.

Table 1 – Scope of Work

Scope of Assessment	
New Equipment	Equipment Tag
Truck Parking Area	
Dosing Station	6476 / 2480 / 6081
Fuel Conveying/Dosing System (Transport)	6184 / 6180
Screen Tower	
Docking Station Tent Building	4278 / 4279

1.5 Acronyms and Abbreviations

Acronyms and abbreviations used in the Design Basis Memo have the following meanings:

AHJ	Authority Having Jurisdiction
CSA	Canadian Standards Association
F&G	Fire and Gas (detection system)
OBC	Ontario Building Code
OFC	Ontario Fire Code
NFPA	National Fire Protection Association
ULC	Underwriters' Laboratory of Canada

2.0 GENERAL REQUIREMENTS

2.1 Applicable Codes

The applicable building code is the Ontario Building Code 2024 edition (OBC). The applicable fire code is the 1997 Ontario Fire Code (OFC, O.Reg. 213/07 as amended to O.Reg. 303/25)

The codes in turn reference numerous design standards that provide guidance on the design and construction of equipment and systems to obtain regulatory compliance.

2.2 Definition of Code Compliance

2.2.1 General

The Codes are applied as follows:

- OBC: Applies to design and construction of buildings.

The OBC recognizes that some industrial facilities differ from conventional buildings with regard to hazards presented, exposure of individuals to hazard, and configuration. The OBC defines such facilities as “**special and unusual structures**”, and permits variation from requirements when the variations result from the application of “good engineering practice”.

- OFC: Applies to hazardous materials and processes.

The Code in turn reference design standards for specific components of the facility. Compliance requires application of the specified standards.

Many of the standards also contain references to other standards. Care must be taken in applying the “nested” standards, to avoid contradictions or impractical provisions.

2.3 Codes and Standards

2.3.1 Mandatory

The following Codes apply to this project:

- Ontario Building Code, 2024 Edition
- Ontario Fire Code, 1997 Edition (OFC, O.Reg. 213/07 as amended to O.Reg. 303/25)

The following design standards are mandated by either the OBC or the OFC and apply to this project:

- NFPA 10, Standard for Portable Fire Extinguishers, 2013 Edition
- NFPA 17, Standard for Dry Chemical Extinguishing Systems, 2017 Edition
- CAN/ULC-S524 Standard for The Installation of Fire Alarm Systems, 2019 Edition
- CAN/ULC-S536 Standard for Inspection and Testing of Fire Alarm Systems, 2019 Edition
- CAN/ULC-S537 Standard for Verification of Fire Alarm Systems, 2019 Edition

2.3.2 Prescriptive Approach vs. Objective-Based Approach

The OBC and OFC provide prescriptive requirements, but also permit alternative measures based on providing the same or a greater level of safety compared to the prescriptive requirements. The Codes provide a list of objectives for the prescriptive provisions, and an alternative solution, to be acceptable must be shown to achieve the same objectives. Defining the level of safety achieved by the prescriptive requirements may be challenging because the intended level is generally not stated in the Codes.

The prescriptive requirements of the Codes are termed “acceptable solutions” and may be applied as written to any situation where such provisions are applicable.

“Alternative solutions” are generated by fire protection engineers and must be demonstrated to achieve the same level of safety by other means. Alternative solutions are usually adopted when application of prescriptive requirements is impractical for reasons related to facility configuration or operation.

The Codes require that alternative solutions be in accordance with “good engineering practice”, which is undefined, but which generally is based on documents from NFPA, API, FM Global, or similar recognized organizations.

3.0 BUILDING AND FIRE CODE ASSESSMENT

3.1 Assessment of the Picton Facility

3.1.1 Facility Description and Use

The Alternative Fuels Facility is used for storage and handling of one type of alternative fuel which is;

- Refuse Derived Fuel (RDF).

The facility primarily comprises a large above ground storage bin, Crane, hoppers, Conveyors, loading area and conveyor to the Pre-Heater facility. The existing facility also consists of existing buildings which are outside the scope of this assessment since they are not undergoing change of use or renovation.

3.2 Application of Ontario Fire Code

The OFC requirements are generally recognized as being suitable for application to “normal” buildings, and as being much less suitable for application to industrial facilities. The Code recognizes this and proposes that users apply “good engineering practice” where design concerns for such facilities are not addressed directly.

3.3 Application of OBC Division B Part 3

3.3.1 Building Classification

Buildings are required to comply with the requirements of Part 3 of Division B of the 2024 OBC. However, storage and processing facility as this are not explicitly addressed within Part 3 of Division B of the 2024 OBC.

As per 2024 OBC Division B Appendix A-3 “*Application of Part 3*”,

the requirements of Part 3 are intended to be applied with discretion to buildings of unusual configuration that do clearly conform to the specific requirements, or to buildings in which processes are carried out which make compliance with particular requirements in Part 3 impracticable.

The proposed Dosing Station which include a fuel conveying/dosing system, Screen Tower and a conveying system located outdoor which are all intended for the storage and processing of AF materials, and contains handling equipment (i.e. for the transfer of the AF materials to the existing processing facility) which only require intermittent access for maintenance, inspection and repair are not considered a building. These equipment within the facility are not generically similar to those explicitly within the scope and application of Part 3 of the 2024 OBC. These equipment and structure are of unusual configuration and do not clearly conform to typical building construction to which the scope of Part 3 is intended to apply. As such, the noted equipment and structure within the facility is classified per **Article 3.2.2.2.** as “**Special and Unusual Structure, Noncombustible Construction**”.

The Docking Station Tent Building is an enclosed tent building which has a characteristic of a building and as such will be regulated with the requirements of Part 3 of the 2024 OBC. The proposed tent fabric has been confirmed to be tested to both CAN/ULC S102.2-18 “*Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies*” and CAN/ULC S109-15 “*Standard Method for Flame Tests of Flame-Resistant Fabrics and Films*”.

The following documents are considered to provide guidance in good engineering practice for fire protection provisions at Heidelberg Facility:

1. NFPA Fire Protection Handbook, 2008

2. NFPA 10 – Standard for Portable Fire Extinguisher, 2013
3. NFPA 17 - Standard for Dry Chemical Extinguishing Systems, 2017
4. NFPA 72 – National Fire Alarm and Signaling Code, 2019
5. NFPA 101 Life Safety Code, 2018

The Screen Tower Structure cannot be identified by the characteristics of a building described in OBC Articles 3.2.2.20. to 3.2.2.93. The Screen Tower is to be designed and protected to limit an unnecessary risk of fire spread and collapse in conformance with good engineering practice as desired by the Owner.

3.3.2 Conveyors and Outdoor Equipment

The outdoor equipment, transport and conveyors are located above ground. The OBC and OFC do not regulate this structure/equipment. Protection based on good engineering practice is recommended.

3.3.3 Docking Station Tent Building

The docking station tent building is less than 395 m² and is single storey. The building is regulated by Part 9 (Small Buildings) requirements of the 2024 OBC. Part 9 does not require a sprinkler system, standpipe system, or a fire alarm system in the building.

The building is required to be protected with appropriate fire extinguisher in accordance with NFPA 10.

Heat detectors within the Docking Station Tent Building is to be provided for compliance with HM Risk Management Specification.

3.3.4 Truck Parking Area

The RDF raw materials will be delivered to the facility via truck trailers. The truck parking area is proposed for parking the truck trailers on wheels temporarily prior to the content within the trailers being moved to the Docking Station Tent Building.

The trailers will remain on wheels without being placed on a foundation/blocks and will not be a permanent structure but temporary to be transported. As such, the packed trailers are not considered a building and will remain classified a vehicles under the Ontario Highway traffic Act because they stay on their wheels, are entirely mobile, and are only parked temporarily before being transported out.

Additionally, an open-air parking lot or dedicated staging yard lacks walls, a roof, or a foundation. Because it functions purely as an outdoor transit and staging zone for active transport equipment, it fails to meet the threshold of a "building" or "constructed structure" under Ontario building regulations.

4.0 HAZARD ASSESSMENT

4.1 Hazard Assessment of Contents within the AF Facility

The facility construction is primarily of noncombustible construction. The combustibility of AF to be stored within the AF Building is assessed (**Table 2**).

Table 2 – Fire Properties of AF within the AF Facility

Name	Sample ID	Combustible or Flammable?
Refuse Derived Fuel (RDF)	Wood Chips	Combustible

Additionally, the material is stable under recommended storage conditions. It is understood that the material has not been tested to determine if explosible due to the size of the raw materials being majority of solid. The amount of dust was noted to be insufficient for a dust explosibility test.

4.2 Occupancy Classification

Occupancy classification will be based on NFPA 101. NFPA 101 specifies occupancy classification of “Special-Purpose Industrial Occupancy” (Section 40.1.2.1.1). The provisions in Section 40.1.2.1.1 for Special-Purpose Industrial Occupancies are classified based on the following:

- (1) *Industrial occupancies that conduct **ordinary and low hazard industrial operations** in buildings designed for, and that are usable only for, particular types of operations*
- (2) *Industrial occupancies that are characterized by a **relatively low density of employee population, with much of the area occupied by machinery or equipment***

Section 6.1.12 defines an industrial occupancy as:

An occupancy in which products are manufactured or in which processing, assembling, mixing, packaging, finishing, decorating, or repair operations are conducted.

The terms “ordinary and low hazard industrial operations” noted in Section 40.1.2.1.1.(1) are discussed in Section 6.2.2 as follows:

6.2.2.2 Low Hazard Contents. Low hazard contents shall be classified as those of such low combustibility that no self-propagating fire therein can occur.*

6.2.2.3 Ordinary Hazard Contents. Ordinary hazard contents shall be classified as those that are likely to burn with moderate rapidity or to give off a considerable volume of smoke.*

NFPA 101 addresses egress specific to industrial facilities in Chapter 40 and includes an occupancy classification of “Special-Purpose Industrial Occupancy” (Section 40.1.2.1.2). The provisions in Section 40.1.2.1.2 for Special-Purpose Industrial Occupancies are classified based on the following:

- (1) *Industrial occupancies that conduct ordinary and low hazard industrial operations in buildings designed for, and that are usable only for, particular types of operations*
- (2) *Industrial occupancies that are characterized by a relatively low density of employee population, with much of the area occupied by machinery or equipment.*

The occupant load within the building is expected to be of low density. Therefore, based on the hazard classifications in NFPA 101 the subject structure is classified as a Special-Purpose Industrial Occupancy and the requirements of Section 40.2 are applicable.

In accordance with Chapter 40 of NFPA 101, the following are required with respect to egress requirements from the industrial occupancies:

- Travel distance: 91 m [Table 40.2.6.1].
- Common path of travel: 15 m [Table 40.2.5.1].

The travel distance from the screening tower and all other areas are far less than the threshold specified in NFPA 101.

5.0 FIRE PROTECTION PHILOSOPHY

5.1 Objectives

The fire protection philosophy is to meet the following objectives:

- Life Safety
- Property Protection

The primary objective of the items listed above is the preservation of life. This objective takes precedence over all other considerations in regards to fire protection requirements necessary to meet the overall design philosophy for the Facility.

5.2 Design Fire Philosophy

The fires considered in this design basis report incorporate the following characteristics:

- Only one credible fire shall be considered to occur at one time. Unlikely or multiple fires are not considered.

5.3 Forms of Protection

The fire protection measures will follow good engineering practice and the fire extinguishing agent is required to be compatible with the conveyed material. The forms of fire protection include the following:

- a. Portable fire extinguishers to be located within buildings and at equipment tower.
- b. Hydrants: Existing hydrants to remain.
- c. Dry Chemical extinguishing systems at the new equipment and facility.

The proposed dry chemical system will be provided as an additional/supplemental fire suppression measures.

5.3.1 Portable Fire Extinguishers

The Docking Station Tent Building will be provided with fire extinguishers located in accordance with NFPA 10 "Standard for Portable Fire Extinguishers". The requirements of this standard outline placement locations of fire extinguishers based on the type, hazard, and class of fire to be protected.

Portable Fire extinguisher will be provided around equipment and platforms in accordance with NFPA 10.

5.3.2 Reliance on Existing Hydrants

Hydrants are located around and within the facility. The existing hydrants will still provide coverage to the new equipment within the project scope without requiring the installation of new fire hydrant (see **Figure 7**).

Specifically, hydrants H11 and H8 are the closest fire hydrants which could be used for firefighting purposes. Hydrants H11 and H8 are spatially located 50 m and 88 m respectively from the Docking Station Tent Building. A site review is recommended to be conducted in coordination with the fire department to determine the potential hose laydown route from these hydrants.

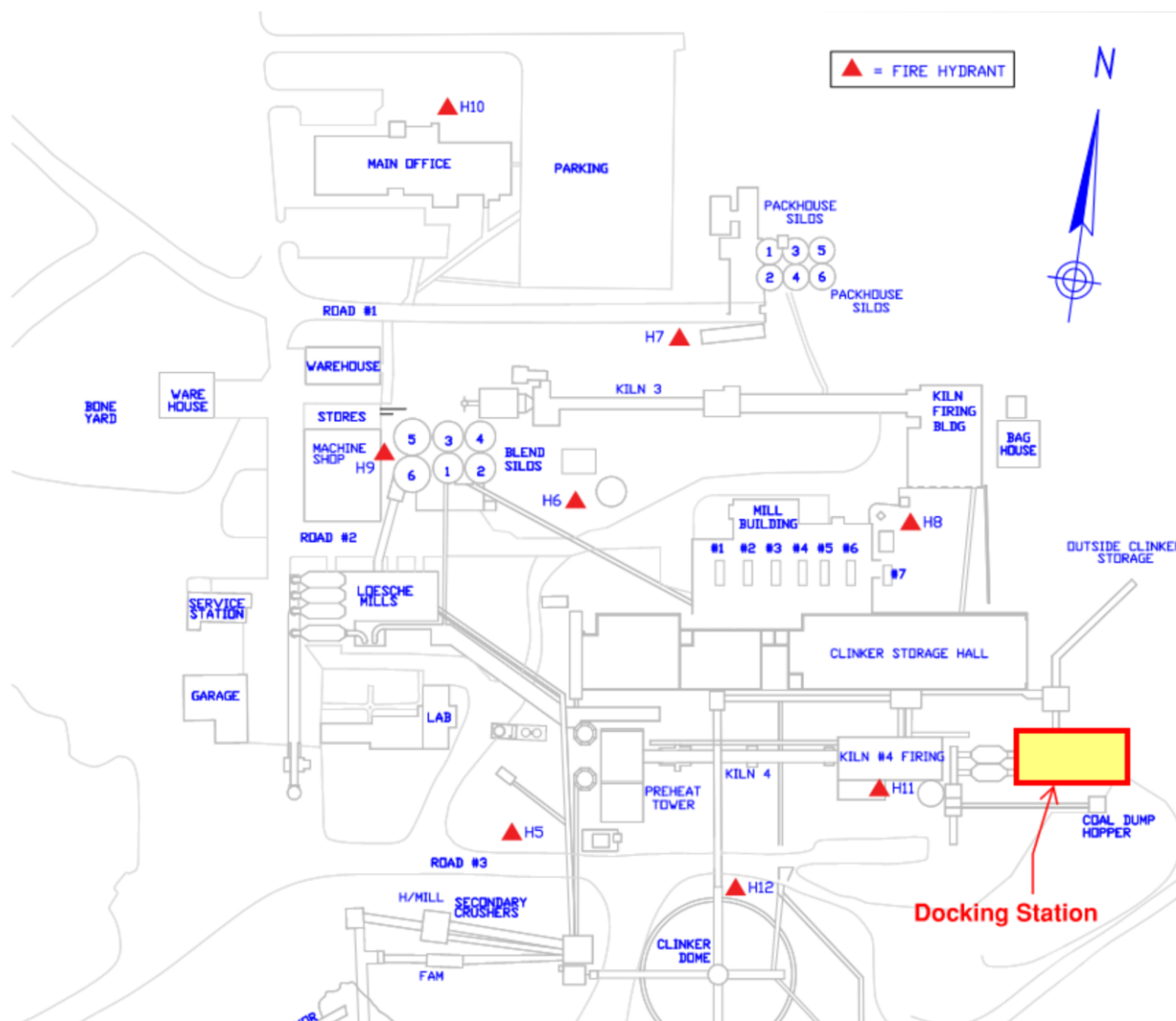


Figure 7 – Fire Hydrants at Picton AF Facility

5.4 Proposed System – Supplemental Dry Chemical Extinguishing System

For process equipment within the current project scope, supplemental fire protection measures will be the use of Tungus MPH 2.8T and MPH 10st dry chemical fire extinguishing system for Class ABC fires manufactured by Tungus in Germany (See Appendix B). Tungus MPH 2.8T and MPH 10st units use SAPP 100 fire extinguishing powder which is noted in MSDS as non-toxic chemical powder (See Appendix B). The Tungus MPH 2.8T and MPH 10st units are proposed as supplementary fire-protection measure for the industrial equipment and machinery and the proposed installation is not intended to replace any portable fire extinguisher, detection system, fire alarm system, emergency response procedure, or other fire-protection measure required by the applicable Ontario Fire Code or Building Code requirements. The Tungus dry chemical has been installed in other Heidelberg Facilities in outside Canada and has been been adopted by Heidelberg as a good engineering practice in providing supplemental fire protection measures to the equipment. The units will be installed on equipment and spaces as determined to be required and based on assessed coverages (See proposed schematic of areas of application in **Appendix A**).

The Tungus units are self-activating. Each unit is equipped with an electronic, autonomous start (e.g. a sensor) and is designed to activate the device automatically when the corresponding temperature is reached on the additional, external thermal sensor TPS-01. The MPH module can be used in the

temperature range between – 50°C to + 60°C, but there are also a special version for a higher temperature range from -60°C to +90°C available.

5.4.1 Testing and Certification

The Tungus MPH 2.8T and MPH 10st units are understood to have been tested to EN 3-7 and EN 3-10 and to have a CE Certificate of Conformity. EN 3-7 addresses characteristics, performance requirements, and test methods for portable fire extinguishers, while EN 3-10 addresses provisions for evaluating conformity of portable fire extinguishers to EN 3-7, including type testing, production control, factory assessment, documentation, and CE marking. These standards provide a recognized third-party conformity basis for product performance and manufacturing consistency.

The Ontario Fire Code sets out fire-protection requirements for the safe use and maintenance of buildings and for activities that may create fire hazards. Where portable fire extinguishers are required by the applicable Ontario code or regulation, those required extinguishers shall still be provided, selected, installed, inspected, tested, and maintained in accordance with the referenced NFPA 10 standard, and AHJ direction. This proposal does not seek equivalency for required extinguishers; it seeks acceptance of an additional/supplemental, localized protective measure for equipment where the equipment itself is not required to be provided with a dedicated fire protection system.

5.4.2 Reason for Supplementary Protection

Industrial equipment and machinery can contain localized ignition sources, moving components, electrical enclosures, bearings, belts, motors, hydraulic or lubricating oils, combustible residues, and process materials. Even where a code does not require a dedicated fire protection system at the equipment, a localized supplementary device can provide an additional layer of protection by applying extinguishing agent directly at or near the protected hazard during the early stage of a fire.

The proposed Tungus units which have been used in other similar facilities outside Canada (see Figure 8) are therefore intended to support, not replace, the facility fire-safety strategy. Its role is limited to supplementary protection of the identified machinery or equipment hazard, reduction of early fire growth potential, and potential limitation of damage to the protected asset before manual response or other building fire-protection measures are activated.



Figure 8 – Examples of Proposed Dry Chemical System

5.4.3 Compliance Position

- The installation is voluntary and supplementary where no dedicated extinguisher is required for the specific industrial equipment or machinery.

- The installation will not reduce, relocate, remove, or otherwise affect any required portable extinguishers, fire hose stations, sprinkler protection, detection, alarm, emergency lighting, egress provisions, fire safety plan requirements, or other mandated fire-protection measures.
- The Tungus units will be applied only within the manufacturer's stated listing, instructions, operating limitations, environmental limits, mounting requirements, protected volume or hazard arrangement, and maintenance instructions.
- The protected hazard will be reviewed to confirm that the extinguishing agent and unit size are suitable for the expected fire class, fuel arrangement, enclosure or open-equipment configuration, ventilation conditions, and electrical or mechanical hazards.
- The equipment owner will maintain records of product certificates, installation details, inspection and maintenance activities, and any manufacturer documentation requested by the AHJ.

5.4.4 Requested AHJ Determination

On this basis, acceptance is requested for the Tungus MPH 2.8T and MPH 10st units to be installed as supplementary protection for the specified industrial equipment and machinery (i.e. Dosing Station Fuel Conveying/Dosing System (Transport), Screen Tower, and Docking Station Tent Building). Acceptance is requested as permission to use the units as an additional equipment-protection measure only, and not as recognition that they satisfy any separate Canadian code requirement for required portable fire extinguishers or fixed fire suppression systems unless specifically approved in writing by the AHJ.

Where required by the AHJ, submission of manufacturer data sheets, CE Certificate of Conformity, EN 3-7 and EN 3-10 test evidence, installation drawings, hazard assessment, commissioning records, inspection procedures, signage requirements, or maintenance documentation will be provided to the AHJ.

5.4.5 Fire Detection Systems Requirement

Where fire detection systems are incorporated into the conveying, dust collection, or centralized vacuum cleaning system, the fire detection systems is required to be interlocked to shut down any active device feeding materials to the pneumatic conveying, dust collection, or centralized vacuum cleaning system, on actuation of the detection system. Where spark or infrared detection and extinguishing systems are provided, the process shall be permitted to continue operating on activation of the detection system.

All fire detection initiating devices and notification devices are required to be connected to the fire detection control panel via Class A or B circuits as described in NFPA 72. Additionally, all fire-extinguishing system releasing devices, solenoids, or actuators shall be connected to the fire detection control panel via Class A or B circuits as described in NFPA 72. The supervision shall include the continuity of the extinguishing system releasing device, whether that device is a solenoid coil, a detonator (explosive device) filament, or other such device. All supervisory devices that monitor critical elements or functions in the fire detection and extinguishing system shall be connected to the fire detection control panel via Class A or B circuits as described in NFPA 72.

The proposed self-contained dry chemical extinguishers should be equipped with a pressure switch (or a means) so as to send signal to the control panel and notification devices at the time of discharge.

The detection system shall be installed in conformance with CAN/ULC-S524, "Installation of Fire Alarm Systems" and verified in conformance with CAN/ULC-S537, "Verification of Fire Alarm Systems," to ensure they are operating satisfactorily.

5.5 Additional Fire Protection Measures

5.5.1 Housekeeping Plan

Manager and supervisors must adhere to good housekeeping practices. Managers will apply good housekeeping practices and clean up spills immediately and take precautions to avoid dust to collecting on surfaces, particularly surfaces that may become hot.

As such good housekeeping practices including regular cleaning of floor, beams and any equipment to minimize dust accumulations within occupiable areas of the facility is recommended. Bulk accumulations of RDF Wood dust may be removed using soft push brooms, having natural bristles and non-sparking scoops or shovels.

5.5.2 Training

Managers and supervisors of the facility must be safety conscious and constantly on the lookout for means to reduce unsafe conditions. All facility personnel should be properly trained, on an annual basis, in the use of the fire extinguishers available at the site. It is recommended that training sessions be conducted with local fire and emergency services. The training should also include procedures for notifying both fellow rescuers and personnel at the facility where the emergency occurs. Contact names of fire fighters and business owners should be listed in a hierarchy that enables callers to try one name after another on lists until they reach appropriate responders.

Where, these measures are implemented, personnel in the facility will be familiar with the life safety protocols and operational procedures in place at the Site. Those intimate with the fire will either try to do manual suppression and if unsuccessful will evacuate to an exit and activate the security system. Due to these additional operational protocols and training procedures (that will be part of a fire safety plan) shorter detection time is justifiable for these scenarios for the level of risk.

5.5.3 Fire Safety Plan

The site will be provided with a Fire Safety Plan that includes emergency evacuation procedures to be initiated by staff and emergency responders. The Fire Safety Plan takes into consideration the building's hazards, fire and life safety systems, firefighting equipment, and the safety of building occupants. This fire safety plan is to be reviewed annually to incorporate any changes that may need to be considered and ensure the following are included:

- Emergency procedures to be used in case of fire, including:
 - Sounding of fire alarm;
 - Notifying fire department or firefighting personnel;
 - Instructing personnel on procedures to be followed when the alarm sounds;
 - Evacuating personnel; and
 - Confining, controlling and extinguishing the fire;
- The appointment and organization of designated supervisory staff to carry out fire safety duties;
- The training of supervisory staff and other occupants in their responsibilities for fire safety;
- Documents including diagrams, showing the type, location and operation of building fire emergency systems;
- The holding of fire drills;
- The control of fire hazards in the facility; and
- The inspection and maintenance of building facilities provided for the safety of occupants

5.5.4 Client Risk Objective

The Client is aware of the implication of not using fixed water suppression system on the equipment. The Client considers this an “acceptable level of risk” in that alternative fire extinguishing measures are provided with regard to property protection and business continuity.

6.0 FIRE PROTECTION SYSTEM AND DESIGN SELECTED

The following are the selected fire protection systems and design based on what is available at the plant and based on good engineering practice that satisfy at least the minimum code compliant requirement for the current project scope.

6.1 Water Supply

6.1.1 Water Supply

Existing facility water supply and fire hydrants at the vicinity of the facility will be used. The existing water-based system will not be decommissioned but will remain functional as installed.

6.2 Fire Suppression and Detection Systems

6.2.1 Screen Tower and Transport System/ Conveyors – Fire Suppression and Detection Systems

The following automatic fire suppression and detection/release systems are selected for the AF Facility/Screen Tower and Transport System.

Table 3 – AF Facility Fire Suppression and Detection Selected

Fire Suppression Systems	Fire Detection System	Zones
- Existing fire hydrants - Portable fire extinguishers around personnel access where applicable - Self-contained Automatic Dry Chemical Fire Suppression System (Tungus)	Heat Detectors Dry Chemical Sensor	Multiple Zones I: Platform II: Drag Chain conveyor and Screws, III: Screen Tower & Conveyor

6.2.2 Docking Station Tent Building – Fire Suppression and Detection Systems

The following systems are proposed within the docking station tent building.

Table 4 – Docking Station Tent Building Fire Suppression and Detection Selected

Fire Suppression Systems	Fire Detection System	Zones
Existing Fire Hydrant Portable Fire Extinguisher Self-contained Automatic Dry Chemical Fire Suppression System (Tungus)	Heat and Smoke Detector Dry Chemical Sensor	Single

6.2.3 Dosing Station and Tower - Fire Protection Systems

The following automatic fire suppression and detection systems are selected for the Dosing Station/Tower.

Table 5 – Dosing Station /Tower Fire Suppression and Detection Selected

Fire Suppression Systems	Fire Detection System	Zones
Existing fire hydrant to remain Portable Fire Extinguisher Self-contained Automatic Dry Chemical Fire Suppression System (Tungus)	Fire detection system to remain Heat Detectors Dry Chemical Sensor	Single Zone

6.2.4 Conveyor System Fire Protection Systems

It is proposed to protect approximately 50 ft of the conveyor low end and 50 ft of high end. Self-contained automatic dry chemical systems described in this report will be installed.

Table 6 – Conveyors Fire Suppression and Detection Selected

Fire Suppression Systems	Fire Detection System	Zones
Existing fire hydrant to remain Self-contained Automatic Dry Chemical Fire Suppression System (Tungus)	Dry Chemical Sprinkler heads	Multiple Areas

6.2.5 Truck Parking Area Fire Protection Systems

The Truck Parking Area is located a minimum of 100 m from adjacent structure/facility and do not pose a fire hazard to any building or the process area. Fire extinguishers will be provided within each individual Truck.

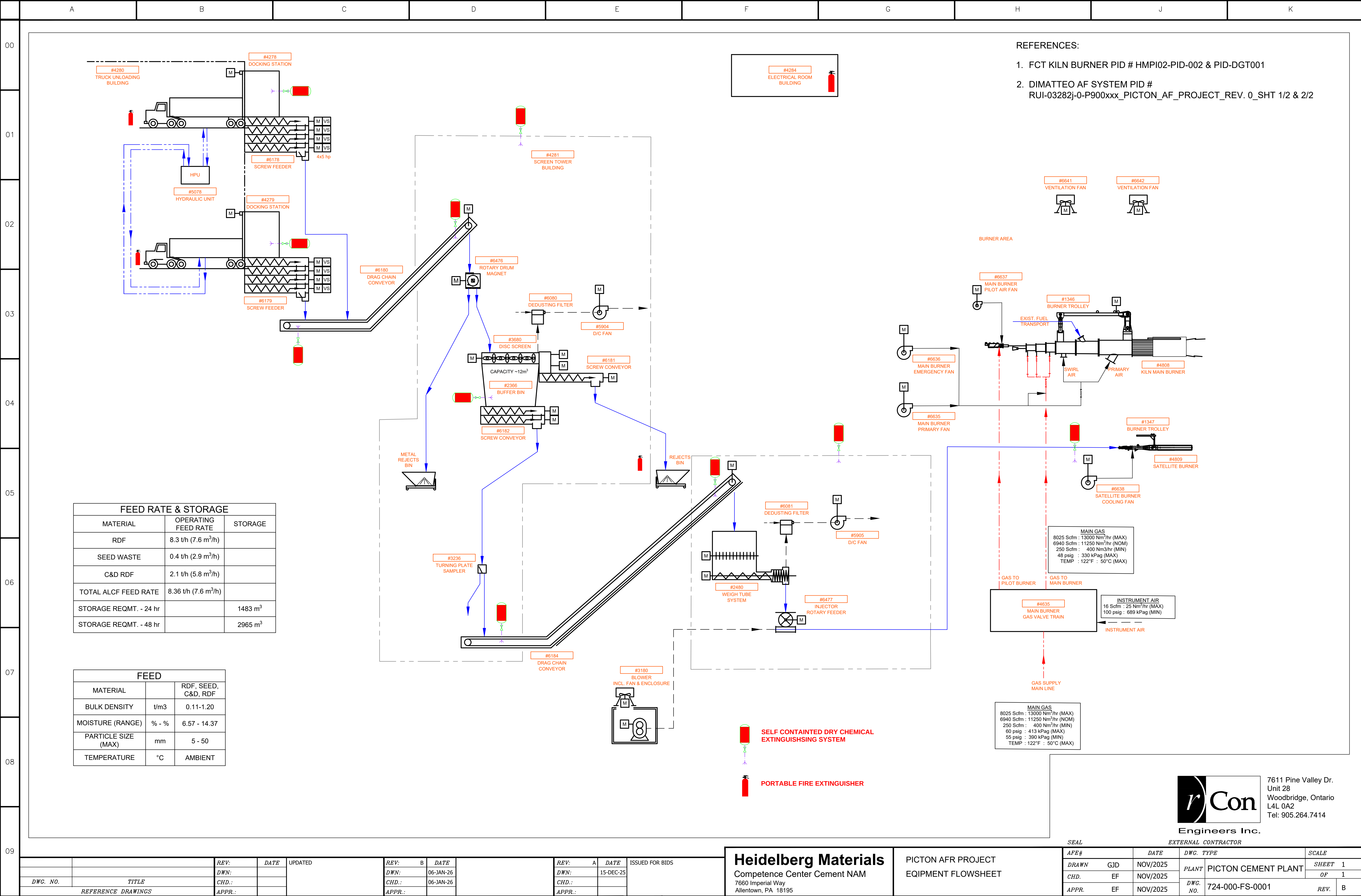
As previously stated, the open-air parking lot or dedicated staging yard lacks walls, a roof, or a foundation. The truck trailers will remain on wheels and the parking area functions purely as an outdoor transit and staging zone for the truck trailers prior to transporting product to the Docking Station Tent Building and as such, it fails to meet the threshold of a "building" or "constructed structure" under Ontario building regulation.

Under the Ontario Building Code (OBC) and Ontario Fire Code, a fire hydrant is not explicitly required to be placed inside or dedicated solely to an outdoor parking lot to protect truck trailers on wheels.

7.0 CONCLUSION

The measures outlined in this design criteria outlines the selected fire protection approach and requirements required for compliance with the OBC and OFC and that are in line with good fire protection practice. The selected system and design satisfy the intent of OFC and OBC. The fire protection measures selected are expected to mitigate the hazard identified within the facility for the type of fires expected.

APPENDIX A. SCHEMATIC LOCATION OF DRY CHEMICAL FIRE EXTINGUISHING SYSTEM

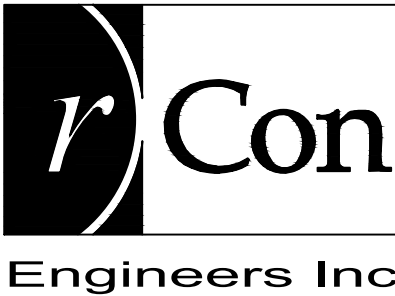


REFERENCES:

- FCT KILN BURNER PID # HMPI02-PID-002 & PID-DGT001
- DIMATTEO AF SYSTEM PID # RUI-03282j-0-P900xxx_PICTON_AF_PROJECT_REV. 0_SHT 1/2 & 2/2

FEED RATE & STORAGE		
MATERIAL	OPERATING FEED RATE	STORAGE
RDF	8.3 t/h (7.6 m³/h)	
SEED WASTE	0.4 t/h (2.9 m³/h)	
C&D RDF	2.1 t/h (5.8 m³/h)	
TOTAL ALCF FEED RATE	8.36 t/h (7.6 m³/h)	
STORAGE REQMT. - 24 hr		1483 m³
STORAGE REQMT. - 48 hr		2965 m³

FEED		
MATERIAL		RDF, SEED, C&D, RDF
BULK DENSITY	t/m3	0.11-1.20
MOISTURE (RANGE)	% - %	6.57 - 14.37
PARTICLE SIZE (MAX)	mm	5 - 50
TEMPERATURE	°C	AMBIENT



7611 Pine Valley Dr.
Unit 28
Woodbridge, Ontario
L4L 0A2
Tel: 905.264.7414

Heidelberg Materials
Competence Center Cement NAM
7660 Imperial Way
Allentown, PA 18195

PICTON AFR PROJECT
EQUIPMENT FLOWSHEET

SEAL		EXTERNAL CONTRACTOR		SCALE	
AFE#	DATE	DWG. TYPE	PLANT	SHEET	1
DRAWN	GJD	NOV/2025	PICTON CEMENT PLANT	OF	1
CHD.	EF	NOV/2025	DWG. NO.	724-000-FS-0001	REV. B
APPR.	EF	NOV/2025			

APPENDIX B. TUNGUS DRY CHEMICAL EXTINGUISHING SYSTEM DOCUMENTATION

CE VYHLÁSENIE O ZHODE CE DECLARATION OF CONFORMITY

VÝROBCA: **SAPFIR s.r.o.**
MANUFACTURER: Zahradna 19
90024 Velký Biel
Slovak republic

prehlasujeme na svoju výlučnú zodpovednosť, že výrobok:
declare under our sole responsibility that the following product:

Produkt: **Modul práškového hasenia**
Product: **Powder fire-extinguishing module**

Typ: MPH-065, MPH-2, MPH-2.8, MPH-4, MPH-5, MPH-5M,
Type: MPH-6, MPH-9, MPH-10, MPH-10st, MPH-24, MPH-2.8T,
MPH-5T, MPH-10Tst, MPH-24T

Zodpovedá certifikátu ES Certifikát typu PA 1395-0040/2015
Appropriate of the certificate EC Certificate of type
EU-Type examination Certificate
PA 1395-0060/2021

je v súlade s nasledujúcimi normami alebo inými dokumentmi:
is in conformity with the following standards or other documents:

EN 3-7:2004+A1:2007, EN 3-8:2021-11, EN 1866-1: 2007,
EN 3-10:2009, EN 1866-2: 2014,

smernicami: 2013/29/EU, 2001/95/ES
and directives:

Podľa smernice 2014/68/EÚ všetky typy modulov MPH sú:
According to Directive 2014/68 / EU, all types of MPH modules are:

Beztlakovým zariadením
Non-pressurized device

Vo Veľkom Bieli 24.03.2024

Natalia Ščerbak
Konateľ
Director

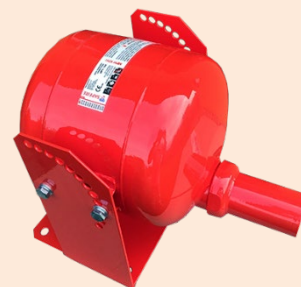
SAPFIR s.r.o.
Záhradná 19, 900 24 Veľký Biel
IČO: 35 802 057
IČ DPH: SK2021552841



Sapfir s.r.o.
Záhradná 19
900 24 Veľký Biel

tel.: +421245916247
fax: +421245916247
info@sapfir-sro.eu
www.sapfir-sro.eu

IČO 35 802 057
IČ DPH SK2021552841
VAT: SK2021552841



Registrovaná na OR
Okresného súdu
Bratislava I
Oddiel :Sro,
Vložka č.:23069/B

Trade name: SAPP 100

1 Identification of the substance / mixture and of the company / firm

- 1.1. Trade name:** Fire-extinguishing powder SAPP 100
Use of the substance/mixture: Non-toxic chemical powder for all kinds of fire extinguishers.
Usage not advised against: Do not use for extinguishing flammable material that can burn without oxygen.
- 1.2. Manufacturer identification:**
Name or business name: Sapfir Ltd.
Place of business or registered office: Zahradna 19, 900 24 Veľký Biel, Slovakia
Phone: +421245916247
Fax: +421245916247
E-mail: info@sapfir-sro.eu
- 1.3 Importer identification:**
Name or business name: Sapfir Ltd.
Place of business or registered office: Zahradna 19, 900 24 Veľký Biel, Slovakia
Phone: +421245916247
Fax: +421245916247
E-mail: info@sapfir-sro.eu
- 1.4 Emergency telephone number:** Tel.: +42125477 4166 Fax: +42125477 4605
(Poison Information Center, Department of Occupational Medicine and Toxicology, University Hospital akad. L. Déreza, Limbová 5, 833 05 Bratislava)

2. Hazardous identification

- 2.1 Classification of the substance or mixture**
Classification according to Directive 67/548 / EEC or Directive 1999/45/EC: Void
Classification system: The classification is according to current national and EU chemicals legislation (see Chapter 15).
Additional information: Although the product is not classified as hazardous, it may show signs of danger (see more chapters 9-12).
When sprayed into the workspace in higher concentrations can cause irritation of eyes and respiratory tract.
- 2.2 Label elements**
Designation according to EC guidelines: The product is not subject to labeling according to Directive / Regulation on dangerous substances and preparations.
Special labeling: Safety data sheet available for professional user on request.
- 2.3 Other hazards**
PBT: The mixture according to the available information does not meet the criteria of a PBT (persistent, bioaccumulative and toxic) in accordance with Annex XIII of Regulation No. 1907/2006, as amended.
vPvB: The mixture according to the available information does not meet the criteria as vPvB (very persistent and very bioaccumulative) in accordance with Annex XIII of Regulation No. 1907/2006, as amended.

3. Composition / information on ingredients

3.2 Chemical characterization:

Description: A mixture of non-toxic inorganic salts.

Dangerous chemical substances:

CAS: 7783-20-2 EINECS: 231-984-1	Ammonium sulphate	 Xi R36,37,38  Eye Irrit. 2, H319;
CAS: 7722-76-1 EINECS: 231-764-5	amofos	 Xi R36,37,38  Eye Irrit. 2, H319;

Additional information: For more complex risk list (ie. R phrases and H phrases) refer to section 16.

Trade name: SAPP 100

4. First aid instructions

4.1 Description of first aid

General information:

Remove contaminated clothing. In case of any uncertainty, or in case of any symptoms seek medical assistance and present this card or label. Take safety precautions. Information for doctor: Treatment is symptomatic.

After inhalation:

Immediately move the victim to fresh air. If unconscious, victim must be moved in stabilized position. Immediately, or if necessary by symptoms, consult a doctor.

After contact with skin:

Wash affected skin with soap and water, rinse thoroughly and treat with protective or cosmetic cream. Do not use any solvents. If skin indicates irritation or other symptoms, consult with another specialist doctor.

After eye contact:

Open the eyelids, if necessary, remove contact lens and rinse the affected eye thoroughly with running water for 15 minutes. Next, consult an ophthalmologist.

After swallowing:

Thoroughly rinse the mouth with water if person is conscious, it should drink plenty of water and not induce vomiting. Uložit'v affected person warm and at rest. Consult a physician immediately.

4.2 Most important symptoms and effects, both acute and delayed

There is no other relevant information (for more see chapter 2 and 11).

4.3 Indication of any immediate medical attention and special treatment

It depends on the individual routes of exposure (see info above).

5. Fire-fighting measures

5.1 Extinguishing agents

Suitable extinguishing agents:

Water fog.

Water spray.

Unsuitable extinguishing media: Strong water jet.

5.2 Special hazards arising from the substance or mixture

During heating in a fire may produce harmful gases and vapors. Inhalation of dangerous decomposition products of combustion may result in injury.

Carbon dioxide (CO₂)

Carbon monoxide (CO).

5.3 Advice for firefighters

Protective equipment:

Use adequate breathing apparatus with independent ventilation and chemical protective clothing. Protective equipment shall be selected according to size of fire.

Additional information

Agents in closed containers that are near the fire must be cooled with water. If possible, agents in undamaged packing must be removed from the danger zone. Contaminated fire fighting water must be separately temporarily stored and not emptied into drains. Extinguishing water, used extinguishers together with the waste remaining after fire, must be disposed according to relevant regulations (Waste disposal law, see Chapter 15).

Trade name: SAPP 100

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel:

Respect the instructions set out in paragraphs 7 and 8. Avoid contact with eyes, skin and clothing. Do not inhale dust. Space adequately ventilated. Under the influence of fumes, use respirator. Unauthorized personnel not allowed to enter.

For emergency responders:

Workers of emergency response must have adequate personal protective clothing (see Chapter 5).

6.2 Precautions for the environment:

Avoid widening the spilled quantity. Composition must not be left to flow into the drains, surface, groundwater and soil. In case of contamination of rivers, lakes or drains follow local regulations (Water Act, see Chapter 15) and contact the relevant authorities (management of sewers, water course administrator, Slovak Environmental Inspectorate).

6.3 Methods and materials for containment and cleaning up:

Spillage must be mechanically harvested and then placed in suitable containers. Another method of disposal is governed by the rules set out in paragraph 13, also be careful about the values in paragraph 8. Affected place and used tools must be washed thoroughly with a suitable cleaning agent, do not use solvents.

6.4 Reference to other sections

For information on safe handling, see Section 7. For information on personal protection and equipment, see Section 8. For information on disposal see chapter 13.

7. Handling and storage

7.1 Precautions for safe handling

Before use, you must be familiar with the contents of paragraphs 2, 6, 8 and 11. Respect the health and safety rules for handling chemicals. Avoid dust. Keep product away from open flames and sources of high temperatures or smoke. Respect the guidelines and instructions for usage printed on the label packaging.

Do not eat, drink or smoke. Before breaks and after work wash hands and take off contaminated work clothing. The clothing must be stored separately.

Information about protection against explosions and fires: No special measures.

7.2 Conditions for safe storage, including any incompatibilities

Storage:**Requirements for storage rooms and containers:**

Do not store above 50 ° C in dry and well ventilated storage areas, well away from fire sources.

Advice on storage: Store away from foodstuffs.

Further information about storage conditions: None

7.3 Specific end use (s)

Usage of the product by the manufacturer's instructions for use, which is stated on the package label or in accompanying documentation.

Trade name: SAPP 100

8. Exposure controls / personal protection

8.1 Control parameters

Exposure limits for chemical agents in the workplace atmosphere according to Slovak legislation and EU legislation:

Dust - general value for the fixed aerosol (NPELc) median value of total exposure (respirable) of solid aerosol exposure limit: 10.0 mg / m³

8.2 Control of exposure

General safety and hygiene measures:

Appropriate engineering controls:

The usual precautionary measures for handling chemicals.

Individual protection measures, such as personal protective equipment

Respiratory protection:

Normally, it is not required. In case of insufficient ventilation, or if formation of dust is exceeding the permissible exposure limits, use appropriate respiratory mask with filter against solid aerosols.

Hand/Skin protection:

Protective gloves (EN 374). Glove material rubber gloves (EN 374).

Eyeface protection:

Use tight-fitting protective goggles with side protection (EN 166).

Other: Protective work clothing, if necessary. safety shoes.

Thermal hazards: Not applicable.

Environmental exposure controls

After work and during it, keep container properly closed. Packages must be stable. Prevent tipping over the unsecured packages. Contaminated packaging must be cleaned of contaminants.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

General Information

Appearance:

States of matter:	fixed powder
Color:	Fine powders from white to dark gray, cream tint is allowed
pH:	Not applicable
Flammability (solid, gaseous):	unspecified
Flash-point:	unspecified
Ignition temperature:	Not applicable
Explosive properties:	not determined
The mass fraction of ammonium phosphate, %	45 ÷ 88
The mass fraction of ammonium sulphate, %	12 ÷ 55
The mass fraction of substances which are insoluble in hydrochloric acid, %	0 ÷ 15
Mass humidity, %	0.25
Powder flowability, kg/s	≤ 0.28
Breakdown voltage, kV	6.4

Trade name: SAPP 100

10. Stability and reactivity

10.1 Reactivity: There is no other relevant information.

10.2 Chemical stability

The conditions under which the product is stable:

Upon observance of the rules of storage and use, the agent is stable (see Chapter 7). Avoid excessive heating from different sources of heat.

10.3 Possibility of hazardous reactions: Strong oxidizing agents.

10.4 Conditions to avoid: There is no additional relevant information.

10.5 Incompatible materials: See section "possibility of hazardous reactions".

10.6 Hazardous decomposition products: When exposed to high temperatures may produce hazardous decomposition products (see Chapter 5).

11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity:

LD / LC50 values relevant for classification: (LD 50 = median lethal dose LC 50 = median lethal concentration):

7783-20-2 Ammonium sulphate

Oral	LD50	2840 mg/kg rat
------	------	----------------

7722-76-1 Amofos

Oral	LD50	2000 mg/kg rat
------	------	----------------

Primary irritation effect:

On the skin:

Based on available data, the criteria for classification are met.

The product may cause temporary mechanical irritation.

On the eyes:

Based on available data, the criteria for classification are met.

The product can cause mechanical transient irritation.

Sensitization: Based on the available information, no known sensitizing effects.

Inhalation exposure:

Based on available data, the criteria for classification are met.

When inhaled it may cause irritation of the respiratory tract.

Ingestion: Based on available data, the criteria for classification are met.

Additional toxicological information:

The product is not subject to classification according to the calculation method of the General EC Classification Guidelines for substances as issued in the latest version.

When used and handled right, according to our experience and the information provided, using the product does not produce any harmful effects.

The product has not been tested.

CMR effects (carcinogenicity, mutagenicity, reproductive toxicity)

For a product – are not stated. Components of the mixture are not carcinogenic, mutagenic or teratogenic.

Trade name: SAPP 100

12. Ecological information

12.1 Toxicity

Aquatic toxicity: There is no other relevant information.

12.2 Persistence and degradability: There is no additional relevant information.

12.3 Bioaccumulative potential (BCF): There is no other relevant information.

12.4 Mobility in soil: No any relevant information available.

Additional ecological information:

General information:

The product is not classified as dangerous for the environment.

12.5 Results of PBT and vPvB

PBT: Not applicable

vPvB: Not applicable

12.6 Other adverse effects: There is no additional relevant information.

13. Disposal information

13.1 Waste treatment methods

Recommendation: Smaller quantities can be disposed of with household garbage.

Waste catalogue

Catalog Numbers with an asterisk (*) denotes hazardous waste (H), the number without asterisk indicates a non hazardous waste, so called other (O).

16 03 06 organic wastes other than those mentioned in 16 03 05

Contaminated packaging:

Recommendation: Dispose of in accordance with the Act on waste as non-hazardous (O) waste.

14. Transportation information

14.1 UN-Number: ADR, IMDG, IATA	Void
14.2 UN proper shipping name: ADR, IMDG, IATA	Void
14.3 Classes of danger for transport: ADR, IMDG, IATA	Void
14.4 Packing group: ADR, IMDG, IATA	Void
14.5 Environmental hazards:	Void
Marine Pollutant:	No
14.6 Special precautions for user	None
14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Void
Transport/ Additional information:	*

* The product is not classified as a dangerous thing in terms of transport regulations

15. Regulatory information

15.1 Regulations / legislation specific for the substance or mixture in connection with safety, health and environment

Tactile warning of danger for people with impaired vision and the blind:

It may not be placed on the packaging.

Packaging equipment safety child-resistant fastenings:

It may not be placed on the packaging.

Legislation: Regulation (EC) No1272 / 2008 on classification, labeling and packaging of substances and mixtures (CLP), by amending and repealing Directives 67/548 / EEC and 1999/45 / EC on amendments and amending Regulation (EC) No. 1907/2006.

Trade name: SAPP 100

(Continued from page 6)

Regulation of the European Parliament and Council Regulation (EC) No.1907 / 2006 REACH, as amended.

Directive 1999/45 / EC of the European Parliament and of the Council on the approximation of the laws, regulations and administrative provisions of the Member States relating to the classification, packaging and labeling of dangerous preparations.

Law No.67 / 2010 Z.z. the conditions referred to chemical substances and mixtures, and amending and supplementing certain acts (D).

The time of publication. 3/2010, which lays down details on general requirements for the classification, labeling and packaging of hazardous substances and mixtures.

Law No.355 / 2007 Z.z. on protection, support and development of public health and amending certain laws.

NV Nr. 355/2006 Z.z. Worker Protection connected to risk of exposure to chemical factors at work as NV SR No.300 / 2007 Coll

Law No.223 / 2001 Z.z. Waste in z.n.z.

As Decree No.284 / 2001 Z.z. the Catalogue of waste z.n.z.

The law No.364 / 2004 Z.z. Water and its Regulatory Decree No.100 / 2005 Coll

Law No.124 / 2006 Z.z. OSH.

MV SR Decree No.96 / 2004 Z.z. which are stated as principles of fire safety at handling and storage of combustible liquids, heavy fuel oils and vegetable and animal fats and oils.

ADR - European Agreement concerning the International Carriage of Dangerous Goods

RID - Regulations concerning international carriage of dangerous goods and materials

IATA / ICAO Code - International regulations on air transport of dangerous goods

IMDG Code - Medzinárodný predpis on the transport of hazardous materials by sea

15.2 Chemical Safety Assessment: A Chemical Safety Assessment has not been carried out.

POWDER FIRE EXTINGUISHER MODULE MPH-2.8 and MPH-2.8T



FUNCTIONAL DESCRIPTION AND OPERATING INSTRUCTIONS

Version 10/2025



Tungus General Representation
Steinberg Trade & Trust GmbH & Co. KG
Elsastr. 1, 59320 Ennigerloh / Germany
Tel. +49 (0)2525 / 96 27 27

1. Determination, general and possible applications

The powder fire extinguishing modules of the MPH-2.8 and MPH-2.8T series (automatic) can be mounted on the ceiling or on the wall. The fire extinguishing modules are used in fires of classes A (solid), B (fluid) and C (gaseous).

The MPH series can be equipped with an electronic, autonomous start (e.g. a sensor). This activates the device automatically when the corresponding temperature is reached on the additional, external thermal sensor TPS-01.

- 1.1 The MPH module cannot be used in fires that burn without oxygen supply, e.g. magnesium etc.
- 1.2 With the MPH module, local fires but also surface fires can be fought and extinguished.
- 1.3 In the standard version, the MPH module can be used in the temperature range between – 50°C to + 60°C, but there are also a special version for a higher temperature range from -60°C to +90°C available.
- 1.4 The MPH modules are designed for use up to a relative humidity of 95%.
- 1.5 The MPH modules can be used for several areas and requirements can be used.
- 1.6 Inside the module, a gas generator provides the necessary pressure build-up to allow the extinguishing powder to escape under pressure in the event of use. (GSP-4).
- 1.7 Examples of the designation of different MPH modules:
 - MPH-2.8 and MPH-2.8T – (wall or ceiling) standard version Temperature range -50°C to +60°C
 - MPH-2.8 and MPH-2.8T - (wall- or ceiling) special version Temperature range - 60°C to +90°C

The MPH modules are only put under pressure by the triggering of the gas generator and are pressure-free until then. After the gas generator is triggered, the pressure builds up in the the pressure in the module and the membrane is, after reaching the intended pressure of approx. 2.5 bar, cut out and ejected by the pressure. This enables the extinguishing powder to escape explosively. After the powder from the module has leaked, it is again depressured .

2. Technical data MPH-2.8 and MPH-2.8T series

Table 1

Parameters	Value		
1. Pressure vessel volume (l)	2,7 ± 0,2		
2. Dimensions (mm): - Height (with installed holder) - Diameter	≤ 155 ≤ 215		
3. Total weight MPH (kg)	≤ 4,8		
4. Weight of extinguishing powder SAPP100	2,6 ± 0,2		
5. Activation time MPH (s)	3 – 10		
6. Erasure time (s)	≤ 1		
7. Pressure when opening the membrane, (MPa)	2,5-2,7		
8. Protective surface (S) and volume (V) from height (H) when installed with vertically downward-oriented insert atomizer in class A fire room	H, m	S, m²	V, m³
8.1 For fires class A	2	32,5	65
	2,6	25	65
	4	25	65
8.2 For fires class B	2	25	-
	2,6	25	-
	4	25	-
9. Extinguishing capacity MPH when wall-mounted for area (S), volume (V) and height (H)	H,m	S, m²	V, m³
9.1 For fires class A	1-3	25	65
9.2 For fires class B	1-3	14	17
10. Maximum degrees of the model fire hearth class B when extinguishing in open terrain	4,0	89B**	
11. Properties of cold gas generator:			
11.1 Properties of electrical ignition element:			
- Safe flow of the control chain, A	0,03-0,05		
- Activation current, not less than, standard version, A	0,12-0,35		
- Activation current, not less than, special version, A	0,20-0,35		
- Electrical resistance, (ohm)	8-16		
- Isolation resistance of electrical anger, (Ohm)	> 100		
11.2 Burning time, (s)	23±2		
11.3 Initiation time, (ms)	780±30		
11.4 Total weight, (g)	150±20		
11.5 Total weight after activation, (g)	85±10		
12. Coefficient of the dissimulation/uniformity of the extinguishing powder, K1	1,0		

* Extinguishing capacity MPH when extinguishing from height is calculated using the formula: For Class A fire with height interval from 2 to 2.6 m: $S=32-12.5(H-2)$, $V=50+25(H-2)$.

** According to EN 3-7:2004+A1:2007

3. Package contents:

3.1 The packaging of the MPH module contains:

- Module, MPH-2.8T includes a mounted tube for diverting the extinguishing powder
- Operating instructions

4. Type of construction and functional principle

4.1 MPH (Figure 1. and Figure 2.) consists of the pressure body 1, which includes: extinguishing powder (HP) 2 and cold gas generator (GSP) 3 with electric fuse 4. On the other side of the hood is the atomizer insert 5, as well as the outlet, which closes with a membrane 6. The module is equipped with a grounding terminal 7. The upper part of the MPH is equipped with a holder 8.

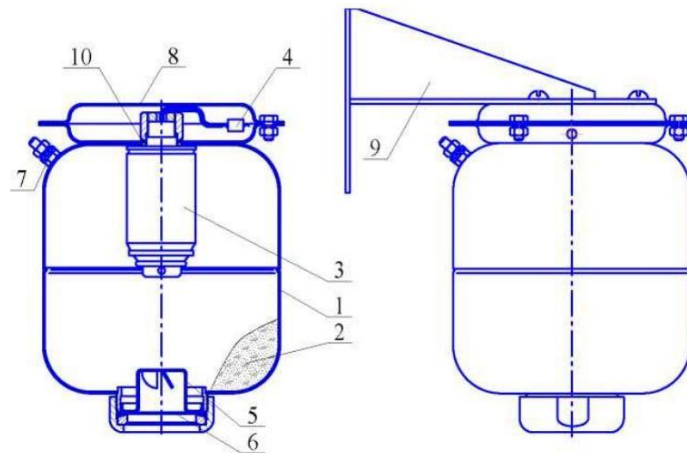


Figure 1 and Figure 2

Principle of operation :

After receiving the pulse on the electrical output switch 4 GSP 3 spreads generated gas with the help of the gas generator HP 2 and creates the necessary pressure inside the pressure body MPH for the opening of the membrane 6 and emission of the extinguishing powder 5 .

4.2 The MPH is activated by an electrical impulse which can be triggered by:

- Electronic control (e.g. fire alarm control center)
- Manual triggering by a switch
- Electronic activation component, thermal sensor TPS-01

5. Certainty

5.1 Persons authorized to operate the MPH module must know the contents of this operating manual and follow the instructions.

5.2 Please avoid:

- The storage of the MPH module near strong heat sources
- An environment with direct rain, direct sunlight, aggressive environment and strong humidity
- Strong shocks on the pressure body and GSP
- The fall of the MPH module from a height of more than 2 m
- The disassembly of the MPH module, with the exception of work on the technical supply in with point 7 of these operating instructions
- The use of the MPH module after damage to the hood / pressure body (visible dents, cracks, holes).

5.3 Before mounting the module, the outputs of the electrical controllers must be closed and secured by rotating the cable. In the case of electrical installation, the country's safety regulations must be observed during electrical work.

5.4 Technical maintenance of the MPH modules may only be carried out by specialized personnel. The manufacturer and licensed companies are able to carry out this work.

5.5 In case of defects in the MPH modules (damage, cracks, holes, etc.) send the corresponding module for maintenance back to your sales partner.

5.6 During use, the module is fire and explosion-proof.

5.7 The extinguishing powder is harmless to people, animals, technology / electronics and the environment. It is easily removable. After activation of the MPH module, the corresponding rooms must be well ventilated. Residues of the extinguishing powder can be absorbed with a commercially available vacuum cleaner, if necessary, additionally cleaned with dry or damp cloths. Dispose of the resulting substances in accordance with your local disposal regulations.

If you have any questions, please contact your sales partner.

5.8 The disposal of the steel parts (i.e. of the pressure vessel) after one use takes place as a scrap fraction.

5.9 Mount the MPH module on a resilient substrate that is strong enough to withstand the impulse load when activated.

6. Preparation and assembly

6.1 After opening the package, check the MPH module for damage to the housing and the membrane.

6.2 Suspension 8 can be mounted under the ceiling (Figure 1) or suspension 9 (Figure 2) can be attached to the wall. Please mark the places for attaching the suspension as on the (Figure 3) and on the wall acc. (Figure 4).

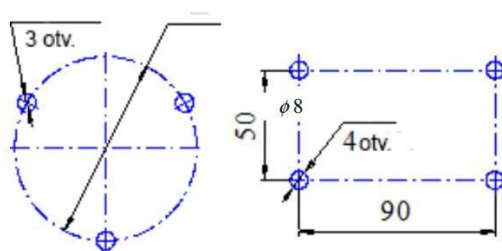


Figure 3

6.3 Use suitable screw connections to fasten the MPH modules. If you have any questions, please contact your sales partner.

6.4 The necessary amount of modules in the areas to be protected is calculated by the local conditions and calculated with the data in Table 1. If you are unsure, contact the manufacturer or your sales partner.

6.5 The protection for sub-areas of surfaces in rooms or installations at heights (H) up to 3.5 m, local protection surfaces (S) under 7.32 m², at heights of 3.5 m up to 7 m where the surface to be protected represents a circle, is calculated according to the formula: **$S = 7,32 - 0,8 \cdot (H - 3,5)$** .

6.6 The configuration of the powder propagation and the representation of the erasing surfaces shown in the following figures 4, 5 and tables 2 and 3.

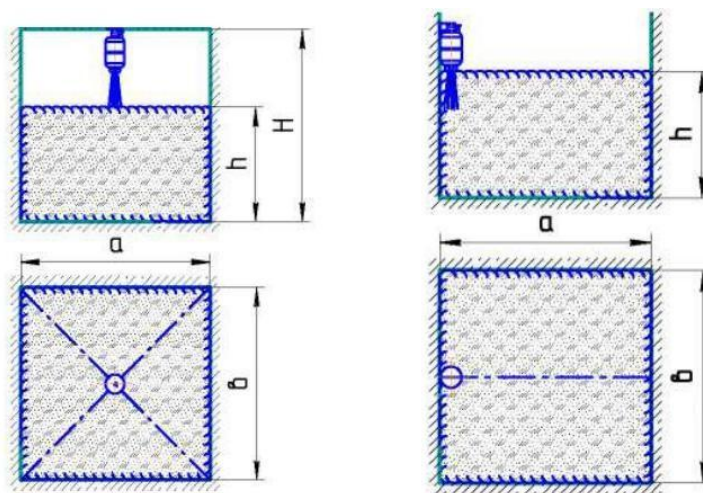


Figure 4 and Figure 5

Table 2 Extinguishing parameters MPH with ceiling mount

Parameters	Class A			Class B		
H, m ²	2,0	2,6	4	2,0;4,0	2,0	4,0
S, m ³	32,5	25	25	14	-	-
V, m	65	65	65	-	17	17
a, m	5,7	5,0	5,0	3,74	2,91	2,04
b, m	5,7	5,0	5,0	3,74	2,91	2,04
h, m	2,0	2,6	2,6	-	2,0	4,0

Table 3 Extinguishing parameters MPH with wall mounting at a height of 1-4m

Parameters	Class A	Class B		
S, m ²	25	14	-	
V, m ³	65	-	17	
A, m	5,0	3,33	2,91	2,04
B, m	5,0	4,2	2,91	2,04
H, m	2,6	-	2,0	4,0

7. Technical maintenance

7.1 Special technical maintenance during the specified period of use is not indicated. However, it is recommended to check the density of the membrane every quarter. A visual check is usually sufficient here. In case of damage to the membrane (holes, cracks) it is necessary to replace the module.

7.2 Checks and maintenance carried out are shown on stickers / labels on the pressure vessel of the MPH module and logged in the maintenance booklet.

8. Transport and storage

8.1 The transport and storage of the MPH modules should be in the original packaging of the manufacturer at temperatures of - 50°C to + 50° C.

8.2 When transporting and storing the MPH modules, please avoid mechanical influences and damage, massive moisture, direct sunlight and contact with aggressive substances (i.e. chemicals).

9. Disposal of the MPH modules after the guaranteed service life

The disposal of the MPH modules should be carried out by the manufacturer or licensed companies.

10. Manufacturer's warranty

10.1 The manufacturer guarantees compliance with all above mentioned points, the proper storage, the professional assembly, the regularly recurring (view) inspections as well as the proper use of the modules as follows:

- 12 years of operation with MPH standard version
- 5 years operating time at MPH special version.

The warranty begins after the delivery of the modules. If the modules are mounted by a specialist company. The warranty period begins after the assembly and the joint acceptance with the customer on site, but no later than two months after the delivery of the goods.

10.2 The manufacturer is not responsible for:

- Incorrect operation of the MPH modules
- Improper storage and transport of the MPH modules
- Failure to observe the technical description and operating instructions
- Changes of the modules by an unauthorized company
- Use of the modules after the warranty period.

TUNGUS General Representation
Steinberg Trade & Trust GmbH & Co. KG
Elsastr. 1, 59320 Ennigerloh / Germany Tel.
+49 (0)2525 / 96 27 27

POWDER FIRE EXTINGUISHER MODULE MPH-10ST



FUNCTIONAL DESCRIPTION AND OPERATING INSTRUCTIONS

Version 10/2025



Tungus General Representation
Steinberg Trade & Trust GmbH & Co. KG
Elsastr. 1, 59320 Ennigerloh / Germany
Tel. +49 (0)2525 / 96 27 27

1. Determination, general and possible applications

The powder fire extinguishing modules of the MPH-10(st) series (automatic) can be mounted on the ceiling or on the wall. The fire extinguishing modules are used in fires of classes A (solid), B (fluid) and C (gaseous).

The MPH series can be equipped with an electronic, autonomous start (e.g. a sensor). This activates the device automatically when the corresponding temperature is reached on the additional, external thermal sensor TPS-01.

- 1.1 The MPH module cannot be used in fires that burn without oxygen supply, e.g. magnesium etc.
- 1.2 With the MPH module, local fires but also surface fires can be fought and extinguished.
- 1.3 In the standard version, the MPH module can be used in the temperature range between – 50°C to + 60°C, but there are also a special version for a higher temperature range from -60°C to +90°C available.
- 1.4 The MPH modules are designed for use up to a relative humidity of 95%.
- 1.5 The MPH modules can be used for several areas and requirements can be used.
- 1.6 Inside the module, a gas generator provides the necessary pressure build-up to allow the extinguishing powder to escape under pressure in the event of use. (GSP-4).
- 1.7 Examples of the designation of different MPH modules:
 - MPH-10(st) Standard version Temperature range -50°C to +50°C
 - MPH(T)-10(st) Special version Temperature range -60°C to +90°C

The MPH modules are only put under pressure by the triggering of the gas generator and are pressurefree until then. After the gas generator is triggered, the pressure builds up in the the pressure in the module and the membrane is, after reaching the intended pressure of approx. 2.5 bar, cut out and ejected by the pressure. This enables the extinguishing powder to escape explosively. After the powder from the module has leaked, it is again depressured .

2. Technical data MPH-10(st) series

Table 1

Parameter	Value		
1. Pressure vessel volume (l)	9,2±0,5		
2. Dimensions, (mm):			
- Height (with installed holder)	≤ 310		
- Length	≤ 396		
- Width	≤ 305		
3. Total weight MPH (kg)	≤20		
4. Weight of extinguishing powder SAPP100	9,5±0,3		
5. Activation time MPH (s)	3 - 10		
6. Erasure time (s)	≤ 1		
7. Pressure when opening the membrane, MPa	2,0 – 2,2		
8. Protective surface (S) and volume (V) from height (H) when ceiling-mounted*	H, m	S, m ²	V, m ³
8.1. For class A fires	2,5	80	240
	6	80	240
	16	65	169
8.2. For class B fires	2,5	36	53
	6	36	53
	16	12	53
9. Extinguishing capacity MPH when installed with the module axis angled at 20° to the horizontal plane with the atomizer insert pointing downwards	H, m	S, m ²	V, m ³
9.1. Class A fires	1	65	216
9.2. Channel length (average 2.2*2.2m), m	1	43	-
10. Maximum degree of model fire source class B when extinguishing in open terrain	12	233B**	
	16	89B**	
11. MPH extinguishing capability for local object protection	H, m	S, m ²	V, m ³
11.1 For Class A fires when installed with the module axis angled at 70° from the horizontal plane and the atomizer insert pointing downwards.	16	6	54
11.2 For Class B fires during remote extinguishing: 11 m when installed with the module axis at an angle of 0 to 10° relative to the horizontal plane, with the nozzle directed downward.	-	24	48
11.3 Protection area for local extinguishing of Class A, B, C, E fires: with the module axis at an angle of 3°, nozzle directed downward, and at a distance of up to 12 m from the center of the protected object to the MPH.	1	14	-
12. Properties of cold gas generator:			
12.1 Properties of electrical ignition element:			
- Safe flow of the control chain, A	0,03-0,05		
- Activation current, not less than, standard version, A	0,2-0,35		
- Activation current, not less than, special version, A	0,2-0,35		
- Electrical resistance (ohm)	8-16		
- Isolation resistance of electrical angrer (MOhm)	> 100		
12.2 Burning time (s)	23±2		
12.3 Initiation time (ms)	810±30		

12.4 Total weight (g)	330±20
12.5 Total weight after activation (g)	120±10
13. Coefficient of the dissimulation/uniformity of the extinguishing powder, K1	1,0

** According to EN 3-7:2004+A1:2007

3. Package contents:

3.1 The packaging of the MPH module contains:

- Module with bracket
- Operating instructions

4. Type of construction and functional principle

4.1 MPH (Figure 1. and Figure 2.) consists of the pressure body 1 , which includes: extinguishing powder (HP) 2 and cold gas generator (GSP) 3 with electric fuse 4 . On the other side of the hood is the atomizer insert 5 , as well as the outlet, which closes with a membrane 6 . The module is equipped with a grounding terminal 7 . The upper part of the MPH s equipped with a holder for the ceiling 8., or for the wall 9.

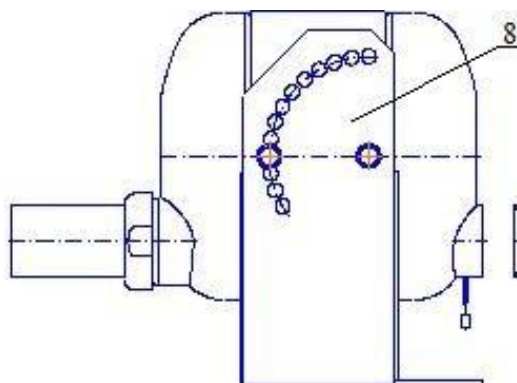


Figure 1

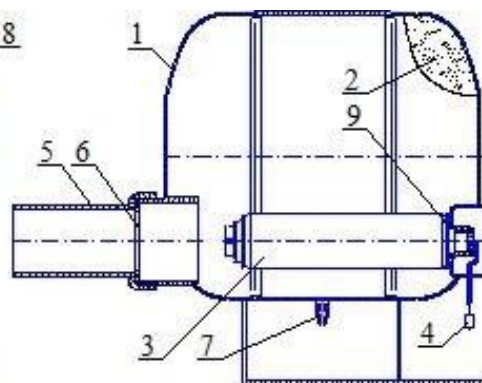


Figure 2

Principle of operation:

After receiving the pulse on the electrical output switch 4 GSP 3 spreads generated gas with the help of the gas generator HP 2 and creates the necessary pressure inside the pressure body MPH for the opening of the membrane 6 and emission of the extinguishing powder 5 .

4.2 The MPH is activated by an electrical impulse which can be triggered by:

- Electronic control (e.g. fire alarm control center)
- Manual triggering by a switch
- Electronic activation component, thermal sensor TPS-01

5. Certainty

5.1 Persons authorized to operate the MPH module must know the contents of this operating manual and follow the instructions.

5.2 Please avoid:

- The storage of the MPH module near strong heat sources
- An environment with direct rain, direct sunlight, aggressive environment and strong humidity
- Strong shocks on the pressure body and GSP
- The fall of the MPH module from a height of more than 2 m
- The disassembly of the MPH module, with the exception of work on the technical supply in with point 7 of these operating instructions
- The use of the MPH module after damage to the hood / pressure body (visible dents, cracks, holes).

5.3 Before mounting the module, the outputs of the electrical controllers must be closed and secured by rotating the cable.

In the case of electrical installation, the country's safety regulations must be observed during electrical work.

5.4 Technical maintenance of the MPH modules may only be carried out by specialized personnel. The manufacturer and licensed companies are able to carry out this work.

5.5 In case of defects in the MPH modules (damage, cracks, holes, etc.) send the corresponding module for maintenance back to your sales partner.

5.6 During use, the module is fire and explosion-proof.

5.7 The extinguishing powder is harmless to people, animals, technology / electronics and the environment. It is easily removable. After activation of the MPH module, the corresponding rooms must be well ventilated. Residues of the extinguishing powder can be absorbed with a commercially available vacuum cleaner, if necessary additionally cleaned with dry or damp cloths. Dispose of the resulting substances in accordance with your local disposal regulations.

If you have any questions, please contact your sales partner.

5.8 The disposal of the steel parts (i.e. of the pressure vessel) after one use takes place as a scrap fraction.

5.9 Mount the MPH module on a resilient substrate that is strong enough to withstand the impulse load when activated.

6. Preparation and assembly

6.1 After opening the package, check the MPH module for damage to the housing and the membrane.

6.2 Suspension 8 can be mounted under the ceiling (Figure 1) or suspension 9 (Figure 2) can be attached to the wall. Please mark the places for attaching the suspension as on the (picture 3) and on the wall acc. (Figure 4).

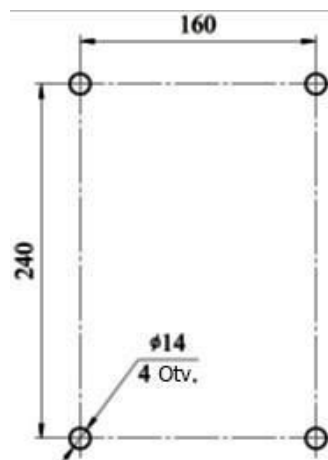


Figure 3

6.3 Use suitable screw connections to fasten the MPH modules. If you have any questions, please contact your sales partner.

6.4 The necessary amount of modules in the areas to be protected is calculated by the local conditions and calculated with the data in Table 1. If you are unsure, contact the manufacturer or your sales partner.

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6.6 The configuration of the powder propagation and the representation of the erasing surfaces shown in the following figures 4, 5, 6, 7 and tables 2 and 3.

Table 2. MPH installed in a room or duct at a height of 1 m from the floor with an axial angle of 20 degrees.

Parameters	Class A	Class B
S, m ²	65	43
V, m ³	216	-
a, m	20,3	13,5
b, m	3,2	3,2
h, m	3,32	-
l, m	2,3	4,5

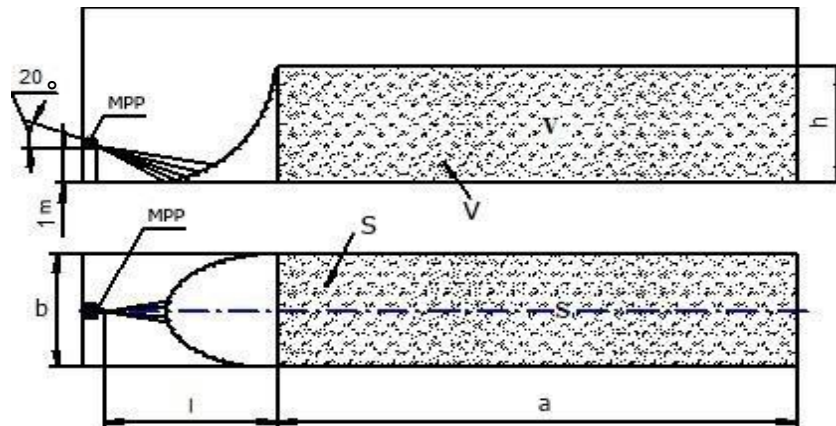


Figure 4. In room or duct at a height of 1m with an axis angle of 20 degrees and the atomizer insert pointing downwards.

Table 3. Vertical mounting

Parameters	Class A		Klasse B			
	Protective area and volume		Schutzfläche		Schutzvolumen *)	
H, m	2,5; 6	16	2,5; 6	16	2,5	5,89... 16
S, m ²	80	65	36	12	-	-
V, m ³	240	169	-	-	53	53
a, m	8,94	8,06	6,0	3,46	4,6	3,0
b, m	8,94	8,06	6,0	3,46	4,6	3,0
h, m	3	2,6	-	-	2,5	5,9

*)Bei Brandlöschung Klasse B mit Höhe ab 2,5 bis 5,9m, Schutzvolumen 53m3 ist bestimmt für Decken, bei Installation höher als 5,89m sind die Parameter des Schutzobjektes in der letzten Spalte der Tabelle.

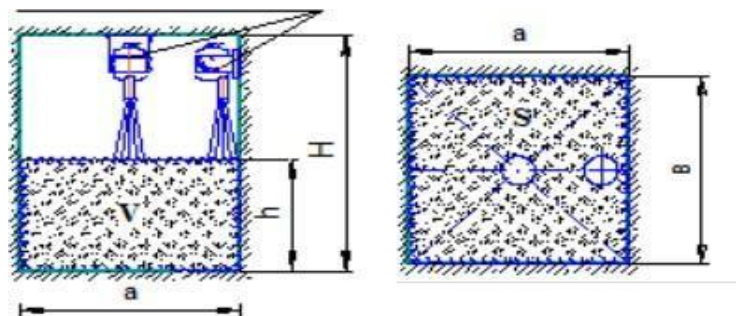


Figure 5.

6.7 MPH installed at an angle, for local protection of objects with shadow areas for Class A fires.

Installation on shelves:

- ✓ Powder flow angle 20° ;
- ✓ Module installation at least 15% higher than the object to be protected. Object width no greater than 6m per module.
- ✓ Object depth no greater than 2m, maximum protected volume 54m^3 .

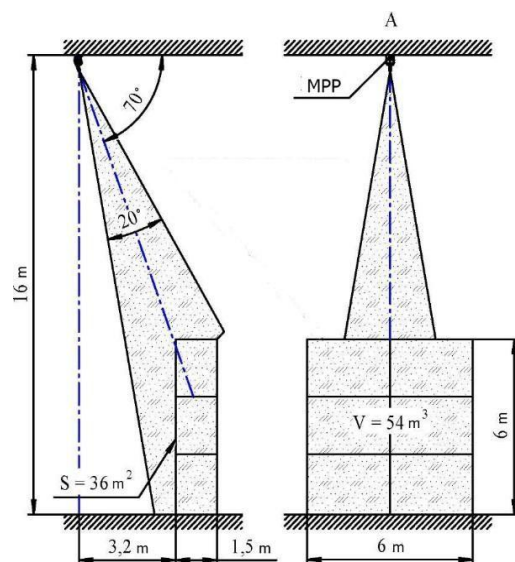


Figure 6. MPH installation on shelves for class A fires.

6.8 MPH installed at distances up to 11m with axis angle 0 to 10 degrees for local object protection with extinguishing shadow in Class B fires

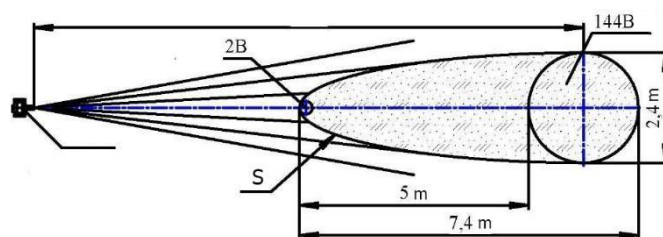


Figure 7. MPH Installation in 1m height with with 3° axis angle

7. Technical maintenance

7.1 Special technical maintenance during the specified period of use is not indicated. However, it is recommended to check the density of the membrane every quarter. A visual check is usually sufficient here. In case of damage to the membrane (holes, cracks) it is necessary to replace the module.

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