

SUCCESSFUL WATER MIST PROTECTION OF A FOOD PROCESSING PLANT.

IWMA October 2011
Hamburg

PROTECTION OF A FOOD PROCESSING PLANT. A SAUSAGE PRODUCTION PLANT IN DK.

- Danish Crown, a major food production company originated in Denmark, experienced a fire in one of their facilities and decided to evaluate all their facilities for fire safety.
- During this assessment they found that the smoke generators for adding flavor to the sausages was a potential risk and decided to mitigate that risk.
- Danish Crown made contact with one of our distributors to discuss a possible solution.
- Several solutions were evaluated, among them a conventional water spray system and water mist.
- A proposal was made to use a closed NFF18A nozzle with a glass bulb; to introduce a smoke alarm system and establish a fire cell.
- This solution was chosen and introduced to protect the smoke generators.

CONSIDERATIONS.

- Protect the smoke generator if overheated and starts a fire.
- The different sacks of wood chips each 25 kg stored in the area is a risk.
- Tar outlet from the exhaust dripping into a bucket is considered a high risk because of the possibility of the fire spreads to the exhaust pipes.

ROW OF SMOKE GENERATORS.



CLOSE UP OF THE SMOKE GENERATOR.



OTHER SOURCES OF FIRE RISK.

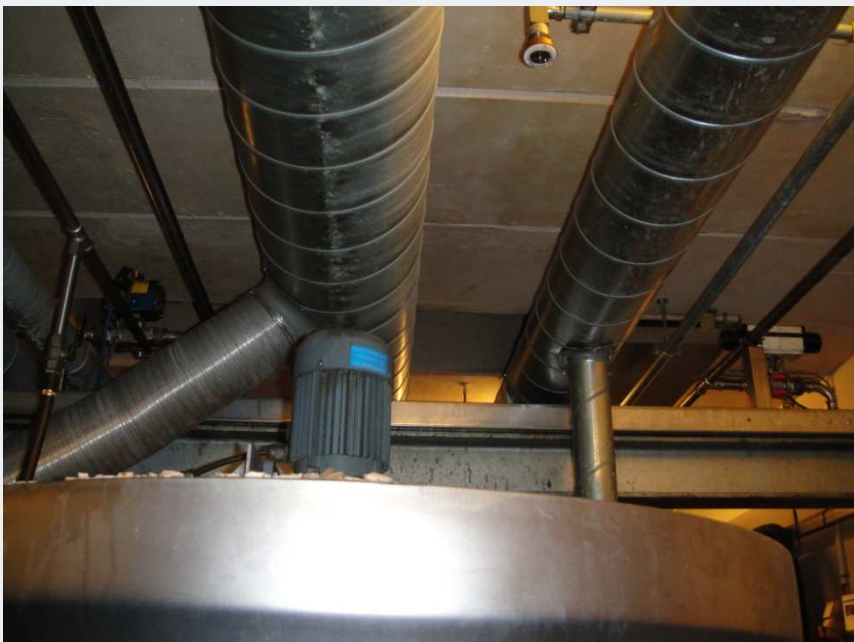


Wood chips in different flavors



Tar dripping from the exhaust channel.

NOZZLE POSITION AND FILLING.

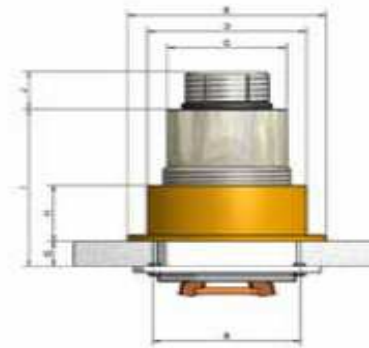


NOZZLE SELECTION: A CLOSED NOZZLE NF18 A-OP50

WATER MIST NOZZLE



Lloyds Approved



TECHNICAL DATA:

- Nozzle Material: Brass MS58/NiSn
- Installation: Pendant installation
- Flow Calculation: $Q = k\sqrt{\text{Working pressure}}$
- B: Ceiling hole diameter: 35mm-40mm
- C: Nozzle diameter: M32 x 1 - Ø32
- D: Top ring shaft diameter: 40mm
- E: Top ring plate diameter: 50mm
- F: Cover below ceiling: 15mm
- G: Ceiling thickness: 0-18mm
- H: Height of top ring: 18mm
- I: Nozzle stem length: 50mm
- J: ½" Pipe thread nipple: 18mm

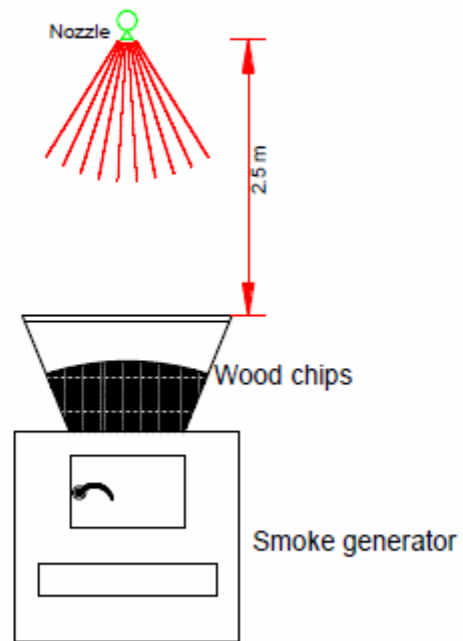
Type:		NF18A op50, 57/68°C	NF18AOP50, 93°C	NF18Aop50, 141°C
Working Pressure	[bar]	3,4	3,4	3,4
K-factor	[L / min * bar ^{1/2}]	31,4	31,4	31,4
Max. spacing between nozzles	m * m	5,5 x 5,5	5,5 x 5,5	5,5 x 5,5
Density of coverage	[L / min * m ²]	1,92	1,92	1,92

Owing to continued product development, Novenco reserves the right to introduce alterations without prior notice.

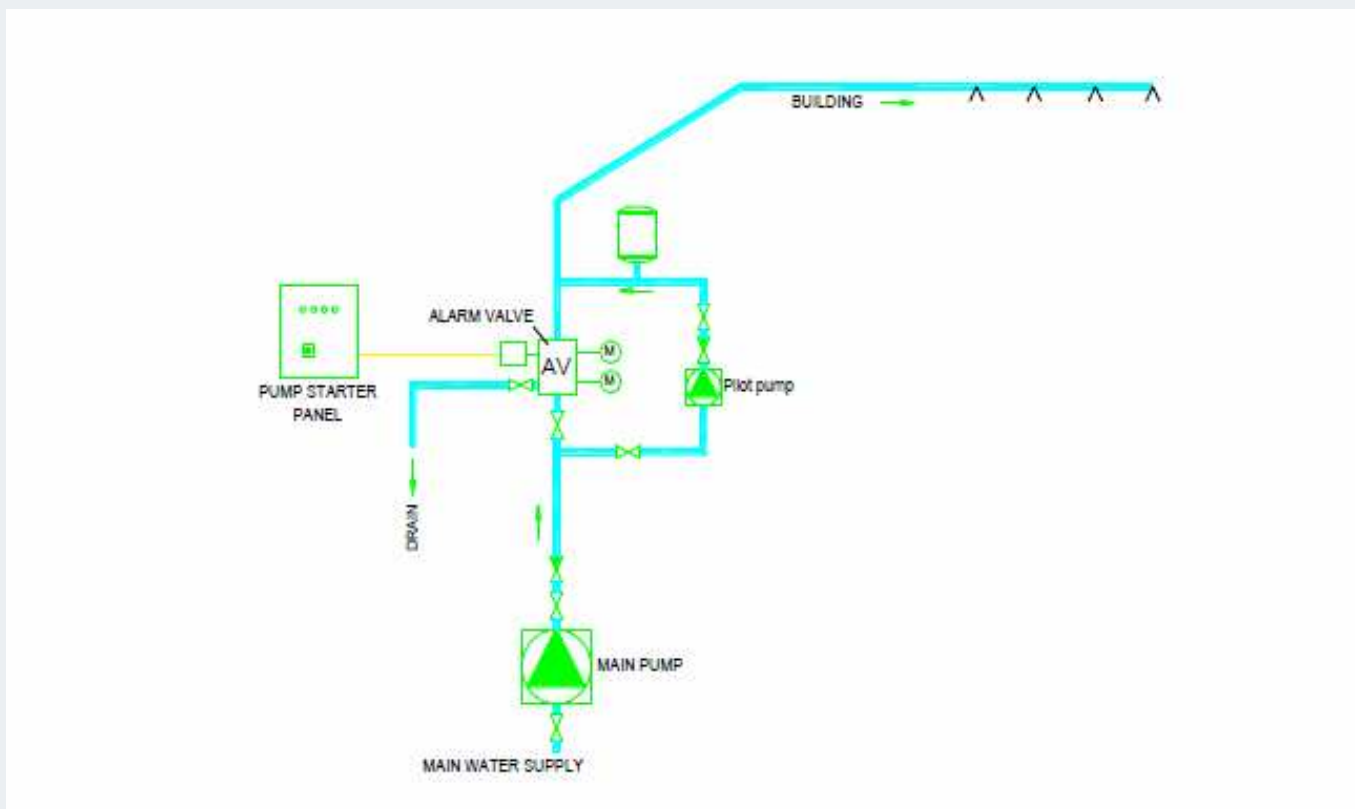
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POSITION OF NOZZLE.

Layout of the system seem in fig. 2



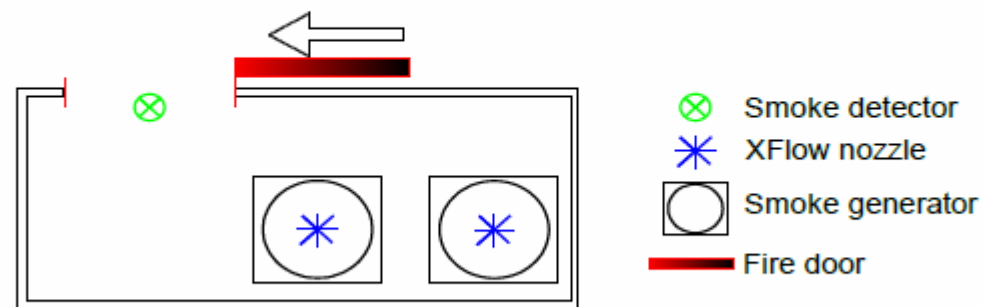
SYSTEM INSTALLATION.



THEN A FIRE HAPPENED.

- Sunday afternoon the 24th of October 2010 the fire alarm sounded at the duty personnel's phone.
- A smoke detector were activated in one cluster of the eleven smoke generators.

The position of the smoke detector which generated the first alarm can be seen from the plan in fig. 3



AFTER THE FIRE AND CLEAN UP.



Nozzle after activation, a little dark;
but no damages.

SPRINKLER VS. WATER MIST.

Sprinkler 0.5 bar.

NHP 18 A

Traditional sprinkler.

NFF Water mist nozzle 4 bar at nozzle.

PRODUCTION CONTINUES.

- After a cleanup of the debris and resetting the systems.
- The production continued Monday the 25th, except for the one smoke generator in which the fire originated.

FINIS