

THE CATALYST

Q4 2022



JOIFF

The International Organisation For Industrial
Emergency Services Management

JOIFF Welcomes New Members

The Board of Directors were pleased to welcome new Members during Q4 2022.

JOIFF Role of Honour

A list of JOIFF qualifications that have been awarded to specific persons during July, August and September 2022.

News from Accredited Training Providers

Highlighting successful audits that took place during Q4 2022.

IN THIS ISSUE:

Industrial Disasters – Can they be prevented?

Full Surface Storage Tank Fires Getting the Right Number of Bubbles into the Tank

Gamification in the Fire Service

Managing Emergency Response for Space Launch Operations

London Fire Brigade Drone Capability from Inception to The Future

Skin temperature measurements and subjective responses during flue gas cooling experiment

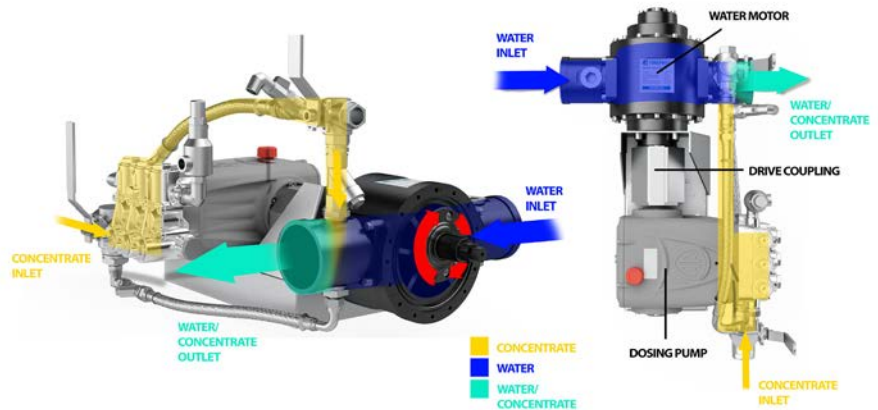
RelyOn Nutec
Fire Academy

Verifying dosing rate

According to EN 13565-1, NFPA 11 and FM 5130 on water driven volumetric proportioners.

To measure and verify the dosing rate on a proportioning system according to regulations and standards at the commissioning and regular yearly maintenance is an important task for the persons in charge. The aim is to ensure that the installed firefighting system proportion the correct amount of the concentrate into the firefighting water flow, as intended and designed.

FIREMIKS is a water driven volumetric proportioner for firefighting – for fixed installations connected to a concentrate tank with gravity feed to the dosing pump. Extinguishing water drives the volumetric water motor, which in its turn drives the positive displacement pump that doses the correct amount of concentrate in the extinguishing water exiting the water motor.



FIREMIKS Basic function principle

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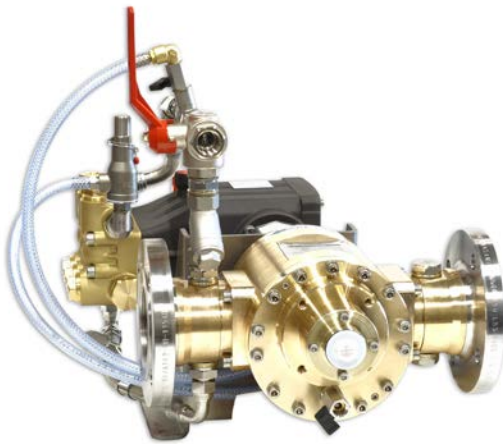
To be able to easily test and verify the correct proportioning the FIREMIKS unit needs to be equipped with an optional Dosing return valve (DRV) (no 22a.) that directs the concentrate back to tank instead of being induced into the water flow. This allows for testing the system without mixing the concentrate.

A Pressure relief valve (PRV), (no 22f.) is included with the DRV to eliminate the risk for over-pressure if return line to tank is closed/ blocked by mistake.

Furthermore, one needs to install two calibrated Flow meters; one for main water line (22b.) and one electromagnetic flow meter for concentrate return line (22c.), combined with a Pressure regulating valve (or a regular valve which can be partly closed to regulate the backpressure, e.g., globe valve) (22d.) to simulate system pressure, displayed by a Pressure gauge (22e.). See Flow chart for correct set-up of the above optional equipment's which all can be supplied together with the FIREMIKS unit.

Environmentally and economically beneficial testing system

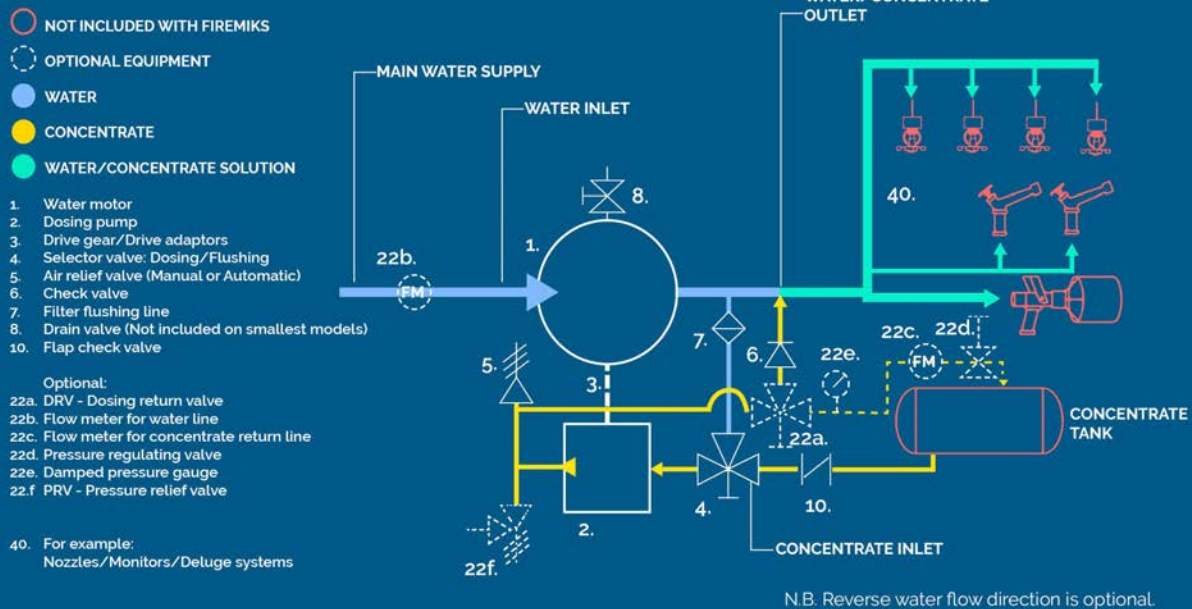
This described dosing test system ensures that it is possible to practise and test dosing rate without consuming the concentrate. It gives also substantial savings over the years with no cost for cleaning or destruction of dispersed solution after the test. With the growing strict environmental regulations, this advantage has become even more important today.



FIREMIKS 1200-3-PP-F-BRZ-DRV, equipped with optional Dosing return valve (DRV) and Pressure relief valve (PRV)

System for Dosing rate test according to EN 13565-1, NFPA 11, FM 5130 for water driven volumetric proportioner FIREMIKS in fixed installations

FLOW CHART with the optional DRV, PRV, 2 x Flow meters, Pressure regulating valve for simulating system pressure and Pressure gauge



The accurate way of verifying dosing rate
Verifying dosing rate equals to verifying the correct volumetric function of both the water motor and dosing pump with two independent calibrated flow meters and calculate to this formula, in accordance with EN 13565-1, NFPA 11, FM 5130:

Revolution counting with handheld tachometer
The estimated water flow can be measured with handheld tachometer (contact or non-contact) to ensure that the unit is not over-speeding, i.e. working within the upper rpm = flow limit specified in the Data sheets of each FIREMIKS model.

In our experience, Magnetic flow meters work well for measuring concentrate flows. Even so, it is even better to be able to establish a known weight or volume of concentrate used in a known time interval, because even approved magnetic flow meters are not tested on all concentrates available.

Concentrate flow

$$\text{Water flow} + \text{Concentrate flow} \quad \times 100 = \text{Dosing rate \%}$$

Handling and monitoring on site or remote

The flow meters, valves and pressure gauge described above can either be handled, monitored and read on site, or connected to remote handling, monitoring and readings. Independently of this - the most important factor is to ensure that data is measured in an accurate way according to the standards, to ensure that the installed firefighting system proportion the correct amount of the concentrate into the firefighting water flow, as intended and designed.

Revolution counter method – the limits

The revolution counter method which is also presented on the market assumes the correct working of the water motor, this means it gives only an estimate of water flow and therefore this estimated water flow cannot be used to correctly verify the dosing rate, as the dosing rate is directly dependent on the performance of the water motor.

The revolution counter method is not an approved method to verify dosing rate as described by EN 13565-1, NFPA 11 and FM 5130, who each require the use of a separate flow meter to measure water flow. Quote from FM Approval guide ref. rpm method: "...may be used to provide a general estimate of the extinguish water flow...."

Measuring concentrate flow

An alternative method to measure the pumped concentrate that does not require a flow meter, is to pass it into a separate container after the pressure regulating valve (22d) and weight the amount used from the tank during a defined time and then converting it to the corresponding flow rate.

This is akin to the Nordtest NT Fire 042 method, and this is actually the prescribed method for EN 13565-1 5.3. The flow meter method for the concentrate described above must be shown to correlate to this Nordtest method.

Similarly to Nordtest, FM 5130 requires the concentrate flow measurement with a flow meter to be correlated with the weight method.

Author information:

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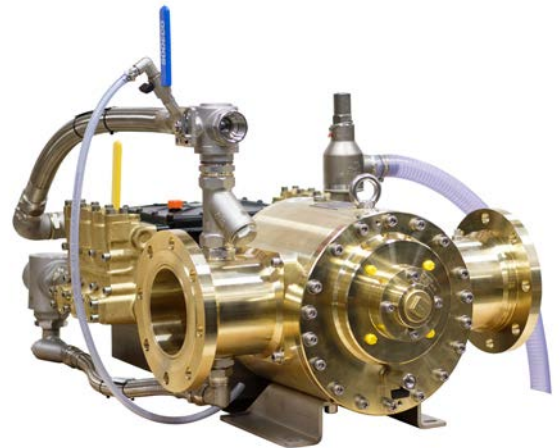
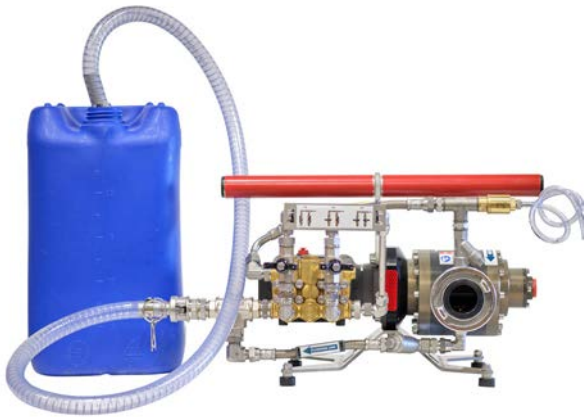
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FIREMIKS is the reliable and easy-to-use
pump proportioner, driven by the water flow only.

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COMPACT DOSING SYSTEM,
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EASY TO USE

RELIABLE MECHANICAL
PROPORTIONER, DRIVEN BY THE
WATER FLOW, NO NEED
FOR PRESSURE BALANCING

EASY TO TEST

ECONOMICAL AND ENVIRONMENTALLY
BENEFICIAL TESTING WITH
A DOSING RETURN VALVE AND
SEPARATE FLOW METERS