



PRESENTATION 2026-02

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1. INTRODUCTION OF

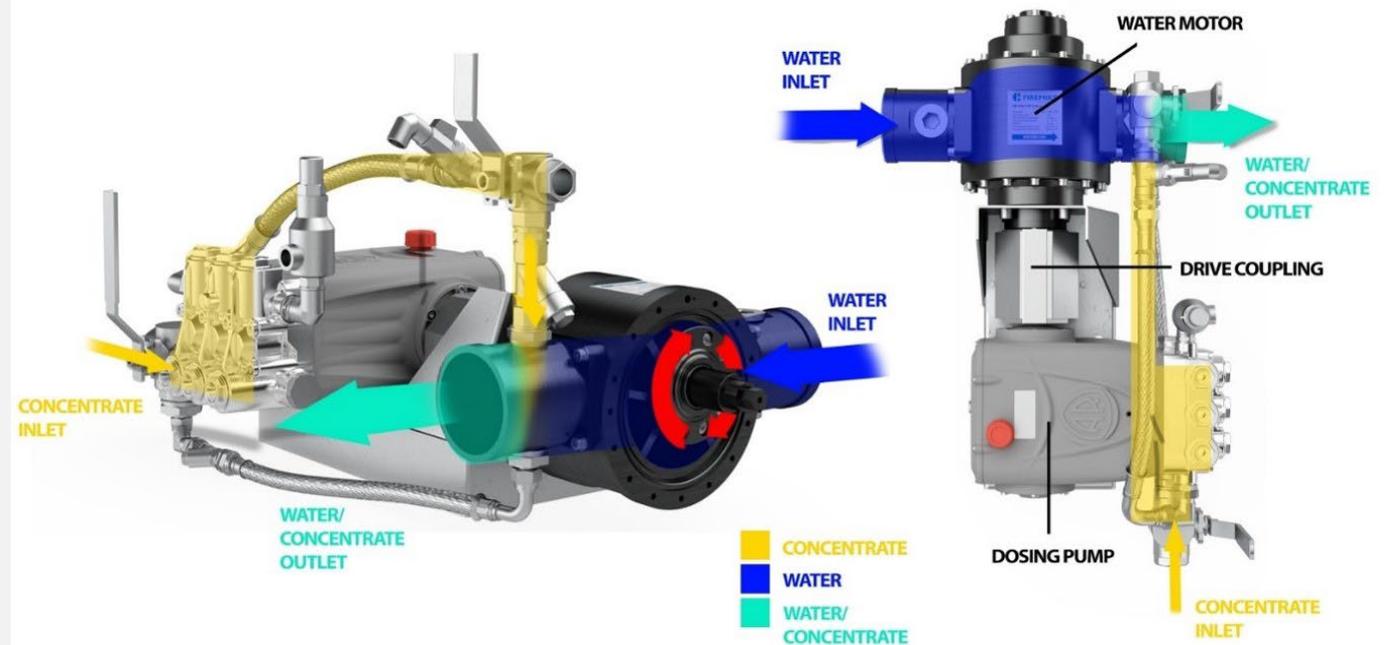
FIREMIKS WATER DRIVEN VOLUMETRIC PUMP PROPORTIONERS FOR FIRE FIGHTING

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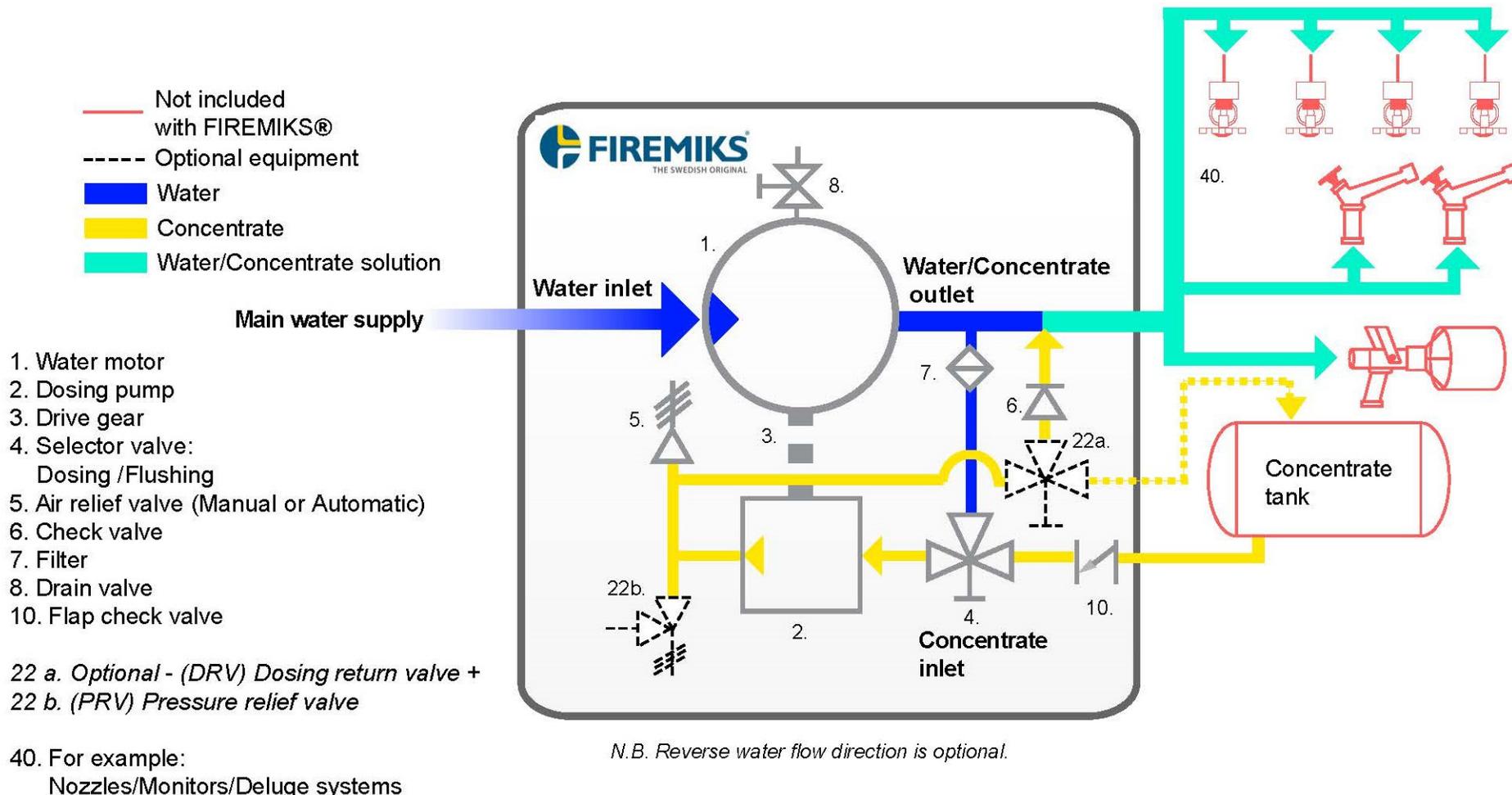
FIREMIKS WORKING PRINCIPLE

WATER FLOW DRIVEN PROPORTIONER

- The water flow goes through the FIREMIKS volumetric water motor. This generates an axial rotation, transferred over the drive coupling to the positive displacement dosing pump.
- Since the water motor functions both as a drive to the dosing pump and as a volumetric device, the system becomes by that flow proportional: dosing remains within approved tolerances regardless of variations in the water flow.



PRINCIPLE FLOW CHART





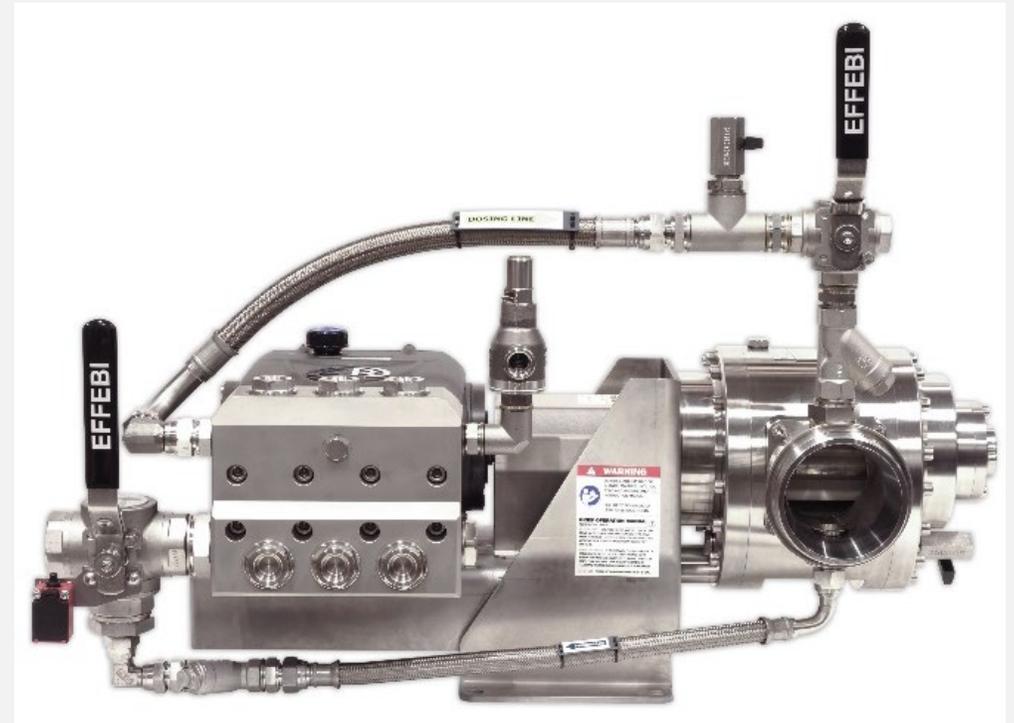
2. ADVANTAGES WITH

FIREMIKS WATER DRIVEN VOLUMETRIC PUMP PROPORTIONERS FOR FIRE FIGHTING

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WIDE OPERATING WINDOW

- Accurate proportioning is inherent to the self-regulating volumetric FIREMIKS system, which automatically and instantly follows any water flow changes, and in practice is insensitive to pressure variations.
- No need for calibration and auxiliary control systems to regulate proportioning.



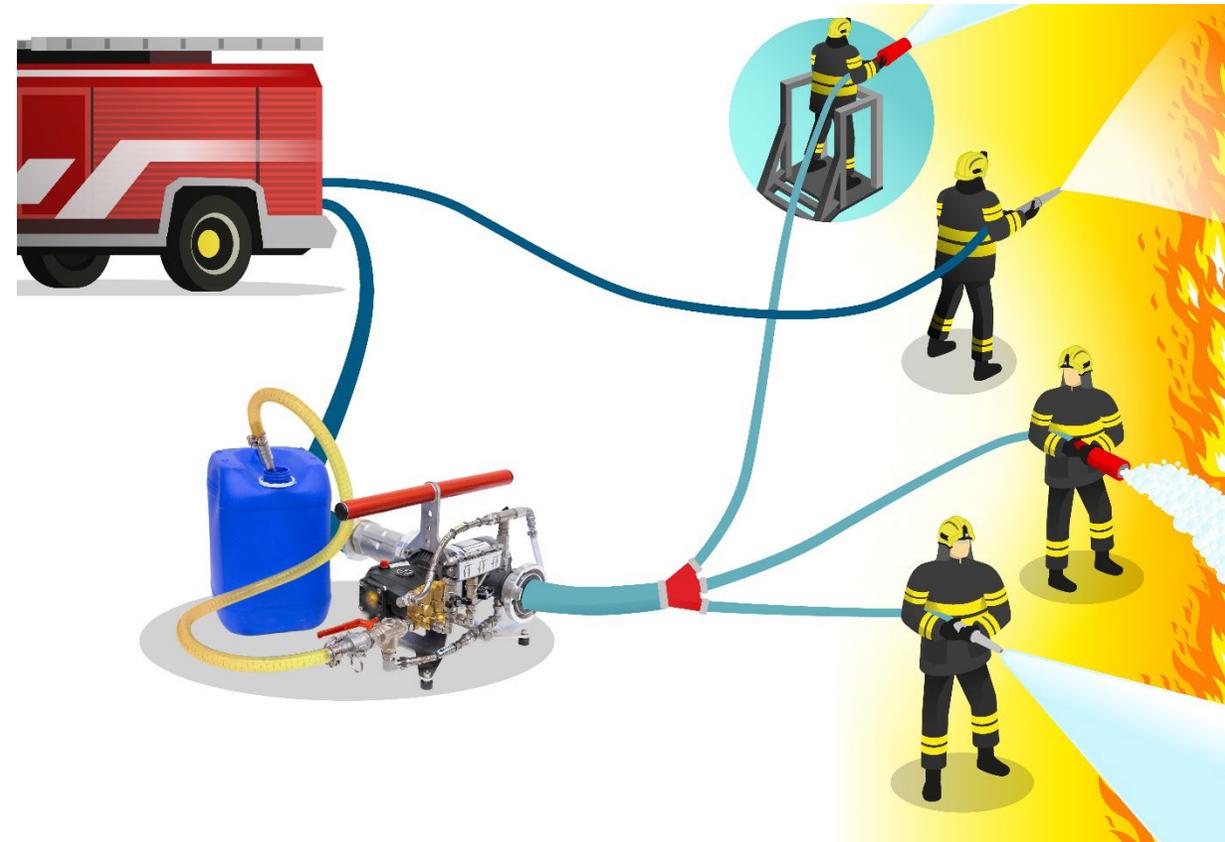
SIMPLIFYING PROPORTIONING

-
- Fighting fires with flammable material in high hazard environments is a challenging task. To work with reliable and simple systems is paramount.
 - The use of FIREMIKS simplify the correct and stable dosing of the concentrate for both fixed system and mobile fire fighting. The fire fighter can focus on fighting the fire.



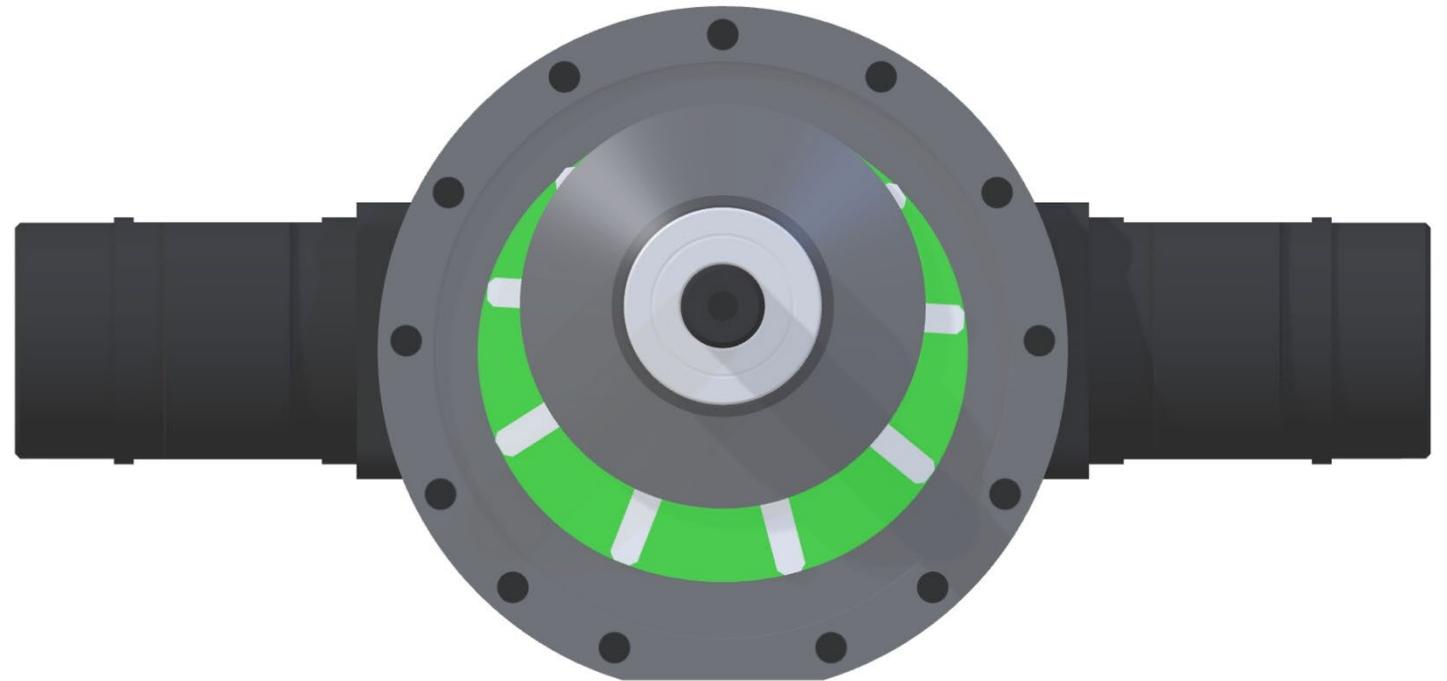
EASY TO CREATE A MOBILE FLEXIBLE SYSTEM

- With FIREMIKS fire fighters get a flexible resource, easy to adapt to different fire-fighting situations.
- Use independently several nozzles simultaneously, positioned at different lengths and heights from FIREMIKS
- Possible to quickly open and close nozzles “pulsing”. Immediate correct dosing is achieved.



UNIQUE WATER MOTOR

- In-house designed volumetric multi-vane water motor.
- Multiple overlapping vanes results in spreading of loads and a wide volumetric function, without using moving elastomer sealings.
- This robust multi-vane motor gives low noise, early start from 2-3 bar and smooth rotation.



EASY TO INSTALL IN FIXED SYSTEMS

- Independent, self-contained proportioner with no need for other energy supply such as electricity, combustion engine or PTO (power take-off).
- No need for auxiliary control systems to regulate proportioning.
- Gives simplicity of installation, operation and testing.
- Proportioning starts immediately when the water flow is started, no latency.





3. EXAMPLES OF APPLICATIONS

FIREMIKS WATER DRIVEN VOLUMETRIC PUMP PROPORTIONERS FOR FIRE FIGHTING

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INDUSTRIAL – SPRINKLER



BMW, Germany

FM-approved FIREMIKS 1200-3-PP-F-ALU



PDO, Oman

FM-approved FIREMIKS 1800-3-PP-F-SS



Netherlands

FIREMIKS 6000-3-PP-F-ALU-DRV

FLEXIBLE SOLUTION - MOBILE FOAM TRAILERS



Hexion GmbH, Germany

FIREMIKS 2400-1-2-3-4-5-6-PP-F



Dow Chemical, Netherlands

FIREMIKS 4000-1-PP-F

FIRE BRIGADES – MOBILE USE



Portugal, Lisbon Fire brigade

FIREMIKS 800-1-2-3-PP-M



Italy, Brescia Fire brigade

FIREMIKS 180-1-2-3-PP-M

FIRE BRIGADES – MOBILE USE



Our latest mobile models are:

600-0,5-1-3-PP-M and
1000-0,5-1-3-PP-M

For selectable 0,5%-1%
and 3% with only one
piston pump.

FIREMIKS 0-1-2-3-PP-M

FIRE TRUCKS, FIXED OR SEMI-FIXED INSTALLED



Italian Fire Brigades
FIREMIKS 450-1-2-3-PP-F



Jomala FB Åland, Finland
FIREMKS 1800-0,3-0,6-1-PP-F



Pertamina, Indonesia
4 x FIREMIKS 8000-3-GP-F

MARINE AND OFFSHORE INSTALLATIONS



Singapore Marine Littoral Vessel

46 FIREMIKS-units, 2400-1-GP-F-BRZ and 300-1-PP-F-BRZ



Swedish Marine

Visby-class Corvette 3 x FIREMIKS 1200-3-GP-F

EXAMPLES OF AREAS TO BE PROTECTED USING FIREMIKS WATER DRIVEN VOLUMETRIC PUMP PROPORTIONER

Tank farms, Petrochemical industry, Harbor Jetties, Pump rooms, Warehouses, Waste incineration, Tunnel protection, etc.

I. e. anywhere where there is a requirement for proportioning system to protect highly flammable material with Class B foam or other fire-fighting additives.

FIREMIKS is well suited for the new more viscous SFFF (non-Newtonian) fluor-free concentrates.

Furthermore, FIREMIKS is suitable for dosing Class A foam or wetting agents with for example 0,3-0,6-1% to fight bush and forest fires.

Custom dosing rates and flow ranges are available.



4. SELECTING PUMP TYPE

FIREMIKS WATER DRIVEN VOLUMETRIC PUMP PROPORTIONERS FOR FIRE FIGHTING

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PISTON PUMP MODELS

FIREMIKS PISTON PUMP = VARIABLE VISCOSITY PUMP PROPORTIONER

- Our FIREMIKS provided with an accurate and precise Piston Pump (-PP) are particularly suited for use in systems with a wide flow range, for example sprinkler systems.
- Our Piston pump models are classified as **VARIABLE VISCOSITY PUMP PROPORTIONER** by FM approval. They handle viscosities from 1 cP up to 7288 cP (shear rate 5/s) incl. non-Newtonian concentrates.
- *Important when working with high viscosity Non-Newtonian foam is to have a delivery hose/pipe with the following parameters: one size larger than pump inlet, max 2,5 meter length and a gravity feed of min. 0,5 meter.*



GEAR PUMP MODELS

FIREMIKS GEAR PUMP TYPE

- A sturdy pump with minimum maintenance.
- Our FIREMIKS provided with a Gear pump (-GP) is particularly suited for working in the higher end of a systems maximum flow rate, such as deluge installations and full flow monitors.
- **Gear pumps are also very suited for high and very high - up to at least 8000 cP (30 rpm, spindle #4) viscosity concentrates, incl SFFF Fluor-free foams.**





5. FLOW AND PROPORTIONING OPTIONS

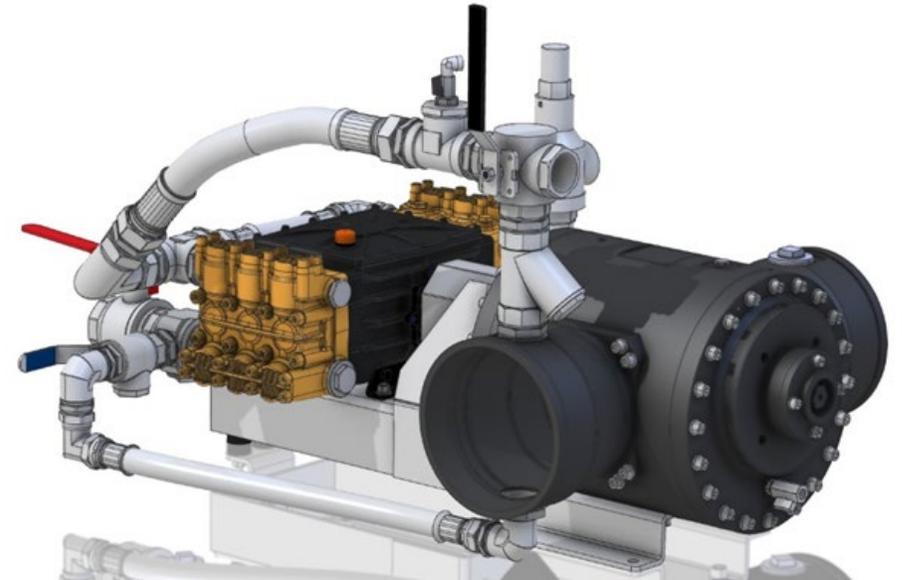
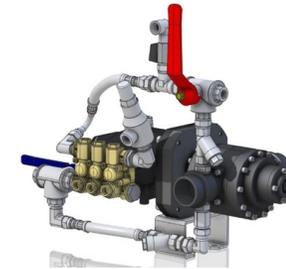
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FLOW SIZE OPTIONS

A WIDE RANGE OF MODELS WITH DIFFERENT FLOW SIZES

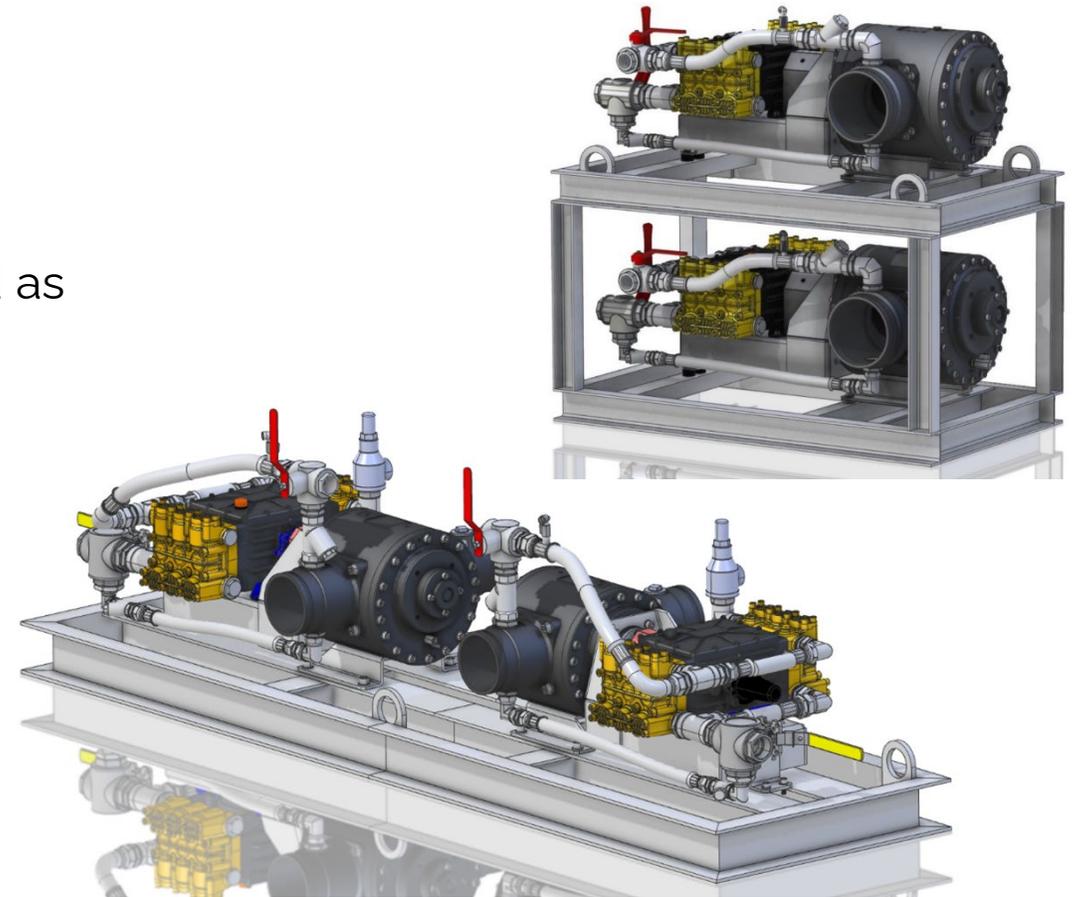
- Our smallest model has a flow range of **50-200 lpm**.
- Our largest single model has a max flow of **10000 lpm** discharge flow for deluge systems.
- In-between these two sizes we offer models with the following max flows: **450, 600, 800, 1000, 1200, 1800, 2400, 3200, 4500, 6000, 8000 lpm**.
- We may also on a customer request produce adapted flow sizes, as for example 300 lpm, 6500 lpm, etc.



FLOW SIZE OPTIONS

PARALLEL INSTALLATIONS FOR LARGER FLOWS

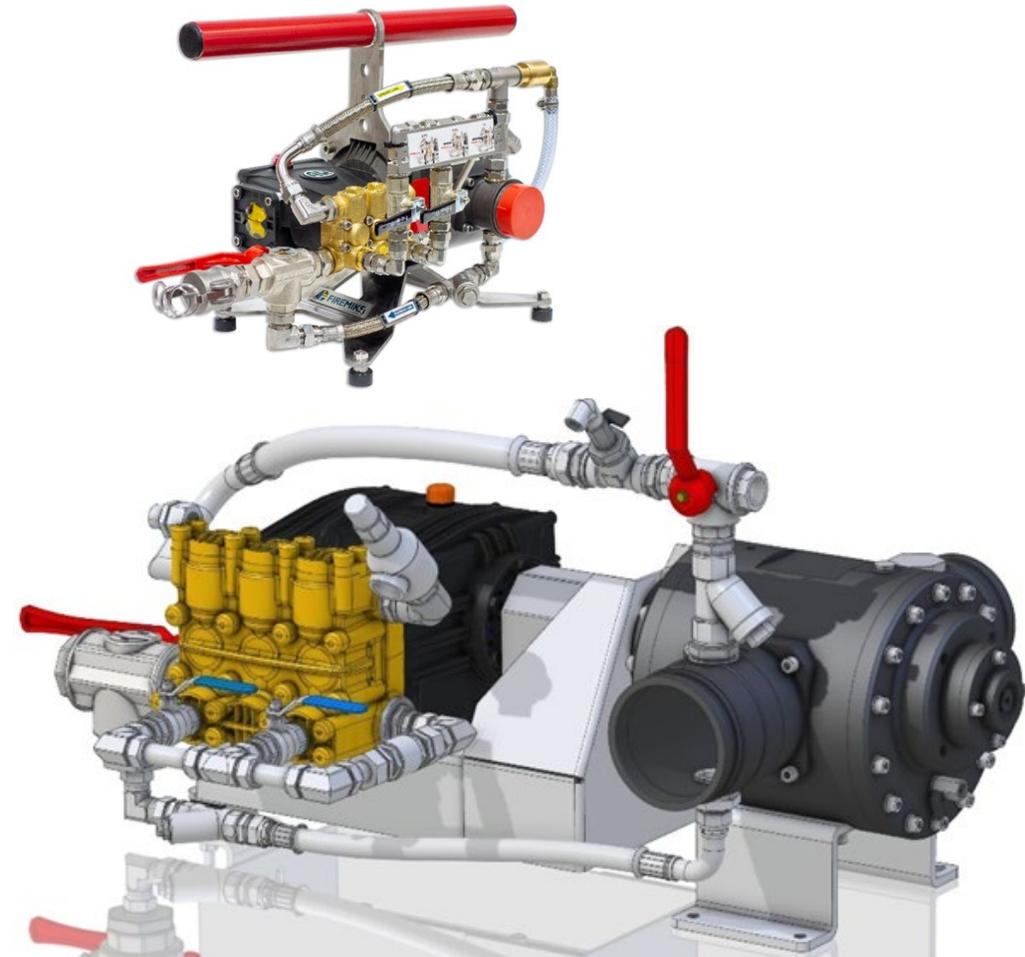
- To achieve larger flows, up to **20000 lpm**, we offer parallel installed FIREMIKS, on a base skid or mounted as "double-deckers"
- Our three standard models are for:
 - 12000 lpm (2 x 6000 lpm)**
 - 16000 lpm (2 x 8000 lpm)**
 - 20000 lpm (2 x 10000 lpm)**
- It is of course also possible to install three (or more) units in parallel to achieve even higher flows.



PROPORTIONING OPTIONS

A WIDE RANGE OF PROPORTIONING OPTIONS

- For fixed proportioning we offer **1%** and **3%** as standard.
- For selectable proportioning we offer **0,3-0,6-1%** and **1-2-3%**. For selected flow sizes also **0,5-1-3%**.
- On special customer requests we can supply other fixed proportioning rates, as for example **0,1%, 0,3% 0,5%, 2,75% and 6%**.
- All options above is offered in the piston pump series, apart from 3% and 6% which is also offered as gear pump models.





6. VERIFYING DOSING RATE ACCORDING TO EN 13565-1, NFPA 11, FM 5130

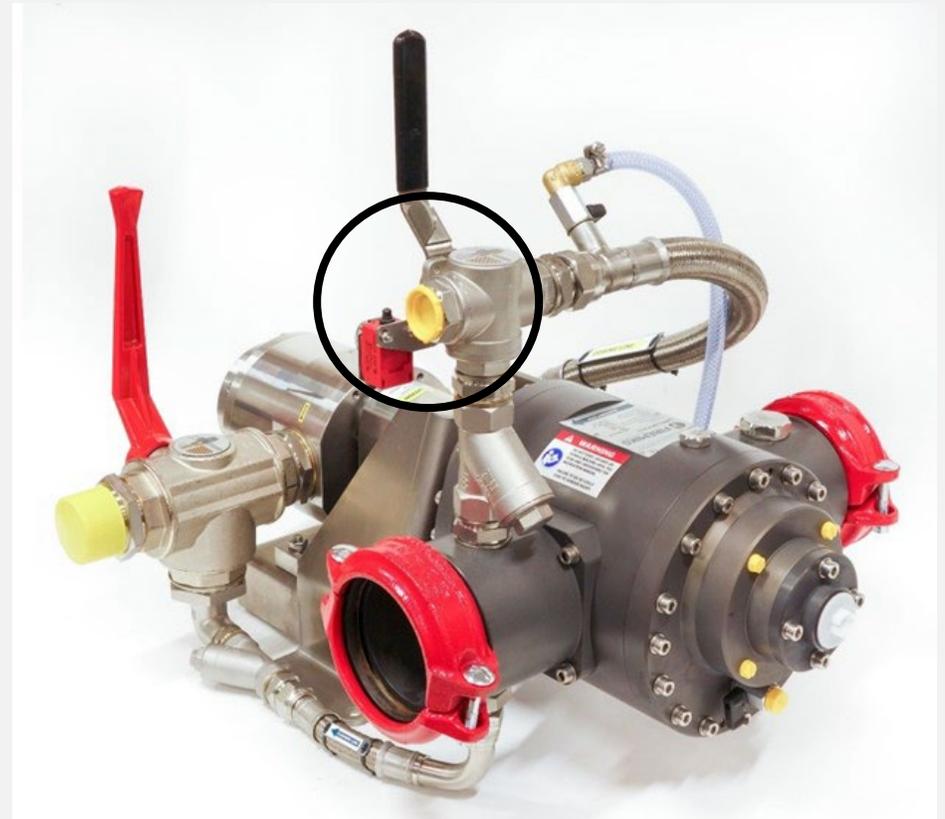
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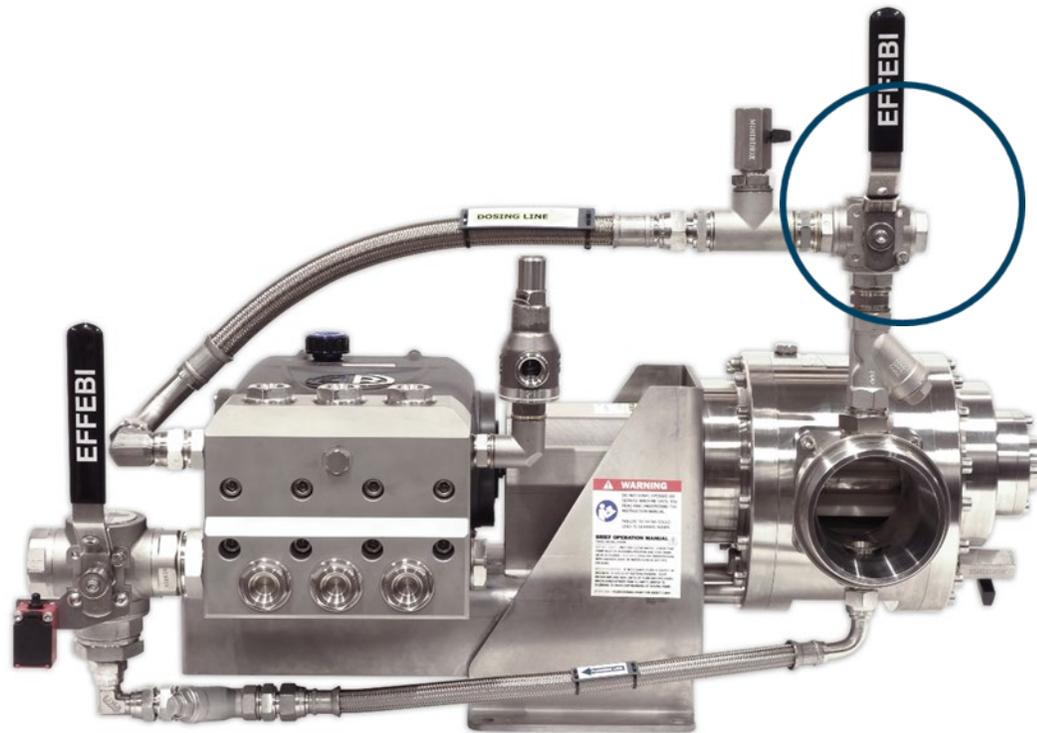
OPTIONAL DOSING/RETURN VALVE

ALL MODELS MAY BE ORDERED WITH AN OPTIONAL DOSING/RETURN VALVE (DRV)

- This Dosing/Return valve (DRV) directs the concentrate back to the tank and allows for easy recurring dosing testing of the system, without generating foam solution.
- This gives substantial savings over many years. No consumption of concentrate and no cost for cleaning or destruction of the solution after the test.



VERIFYING DOSING RATE WITH DRV



Verify dosing rate = Verify the correct volumetric function of the water motor and dosing pump independently by measuring:

- 1) With a flow meter, the water flow through the water motor.
- 2) With a flow meter, the concentrate flow in return line pumped by the dosing pump.

And calculate to this formula, in accordance with EN 13565-1, NFPA 11, FM 5130

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

COMPLETE DOSING RATE TEST SYSTEM

With a Complete Dosing Rate Test System according to EN 13565-1, NFPA 11, FM 5130. it is easy to verify the dosing rate.

It consist of two Electromagnetic Flow meters; one for Water flow and one for Concentrate flow.

The **Concentrate flow meter** is supplied as a kit complete with flanges and partly preassembled with following accessories: **Concentrate testing line**, a **Damped pressure gauge**, a **Pressure regulating valve** to simulate the water system pressure and a **Discharge hose for concentrate back to tank**.

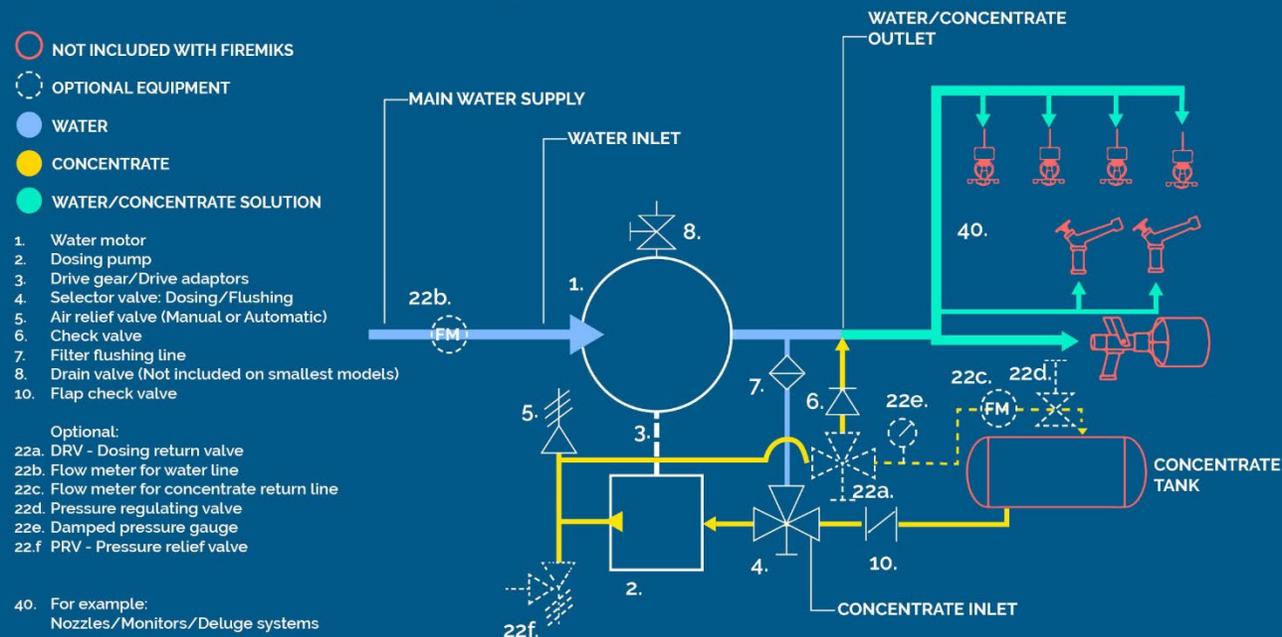
This allows for easy recurring dosing testing of the system, giving substantial savings over many years.



COMPLETE DOSING TEST SYSTEM – FLOW CHART

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





7. FACTORS IN RELATION TO THE CURRENT TRANSITION TO SFFF FOAMS

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CURRENT TRANSITION TO SFFF FOAM

THE TRANSITION FROM AFF TO FLUOR-FREE FOAM IS A COMPLICATED TASK

- This important transition consist of a series of factors that must be considered.
Firemiks focus on one important factor in this long chain; Obtaining the correct dosing rate. Our firm aim it to simplify this factor; by offering the following:
- A sturdy volumetric water driven volumetric proportioner, giving correct dosing rate within the approved tolerances, **for a wide range of viscosities and in a wide flow and pressure windows.**
- With Dosing/Return valve you may regularly test your system, and the new SFFF concentrate, to confirm that dosing rate remains correct, without consuming any concentrate.

CURRENT TRANSITION TO SFFF FOAM

FIREMIKS PISTON PUMP TYPE = VARIABLE VISCOSITY PUMP PROPORTIONER

- The new SFFF concentrates comes in a wide range of viscosities, FIREMIKS piston pump models are classified as **VARIABLE VISCOSITY PUMP PROPORTIONERS by FM Approval**, they handle different concentrates in the wide viscosity range of 1 – up to 7288 cP, (Shear rate 5/s).
- This means: No need to exchange or re-calibrate proportioning system if a change of concentrate is made after the FIREMIKS unit is installed.
- Minimal system downtime if changing to another concentrate/viscosity for any reason.
- Reliable proportioning even if the concentrate changes viscosity due to aging, temperature fluctuations, etc.

CURRENT TRANSITION TO SFFF FOAM

SOME MORE IMPORTANT FACTORS IN DEALING WITH NON-NEWTONIAN CONCENTRATES

- If concentrate viscosity is **above** around the FM-approved shear rate curves we can offer our Gear pump models, which has proven to work very well up to, at least, around 8.000 cP (30 rpm spindle #4).
- Concentrate used is stored in **atmospheric tanks. This makes it easy to inspect, check level, and take samples of concentrate.** No pressure tank is needed as with Bladder tanks.
- Flexibility to have different types of concentrate connected to one FIREMIKS, opened one at a time, if faced with various fire hazards.
- In summary we offer **a tolerant system dealing with both calculated and unpredictable changes, without losing the main purpose of the system; the correct dosing rate within the approved tolerances.** *(As long as these changes are within the specification in unit data sheet)*



8. FM-APPROVED LINE OF FIREMIKS

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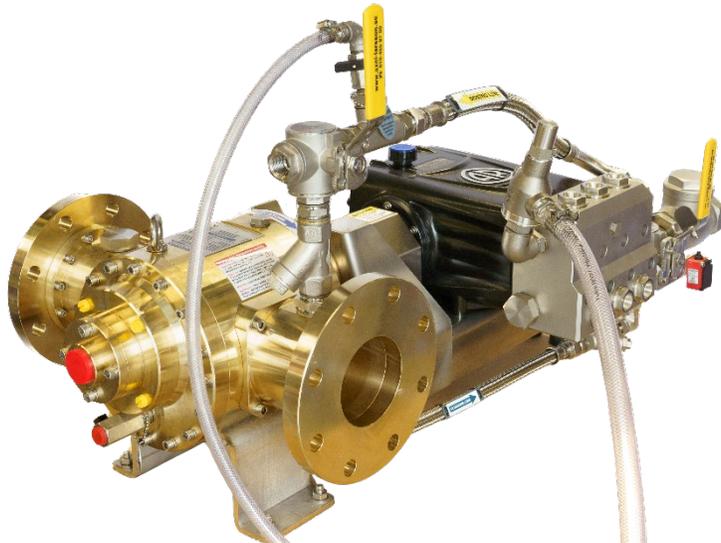


FM-APPROVED LINE OF FIREMIKS



FM approval (Approval standard: 5130 - May 2021)

- We have obtained FM approval for 18 of our models, in seven flow sizes: 450, 800, 1800, 2400 4000, 6000 and 8000 lpm with 3% dosing rate. For viscosities below or aligned to below list, including SFFF concentrates.

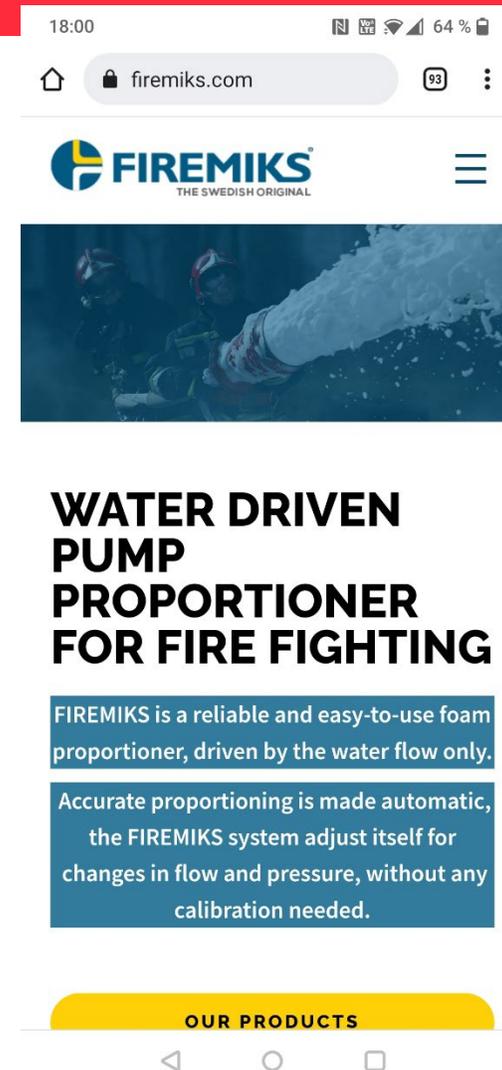


Shear rate 1/s	Viscosity (cP)		
	450 & 800	1800, 2400 & 4000	6000 & 8000
5	3934	6422	7288
10	2141	3545	3942
20	1157	1945	2110
50	529	882	959
100	302	497	533
600	80	128	132

FIREMIKS WEBSITE, LINKEDIN, FACEBOOK, INSTAGRAM

FIREMIKS SOCIAL MEDIA

- In our website www.firemiks.com you will find the essence of our marketing, references, distributors around the world, etc.
- You may follow us on our official **Firemiks LinkedIn** page, you will see references, important information, short videos, participating on exhibitions, etc.
- We also add interesting information, references etc. on **Facebook, Instagram and YouTube**.





Thank you for attending this presentation!

FIREMIKS – Powerful Proportioning

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