

# DE-ICING TECHNOLOGY KUPRO



## De-icing Technology KUPRO

12. January 2021

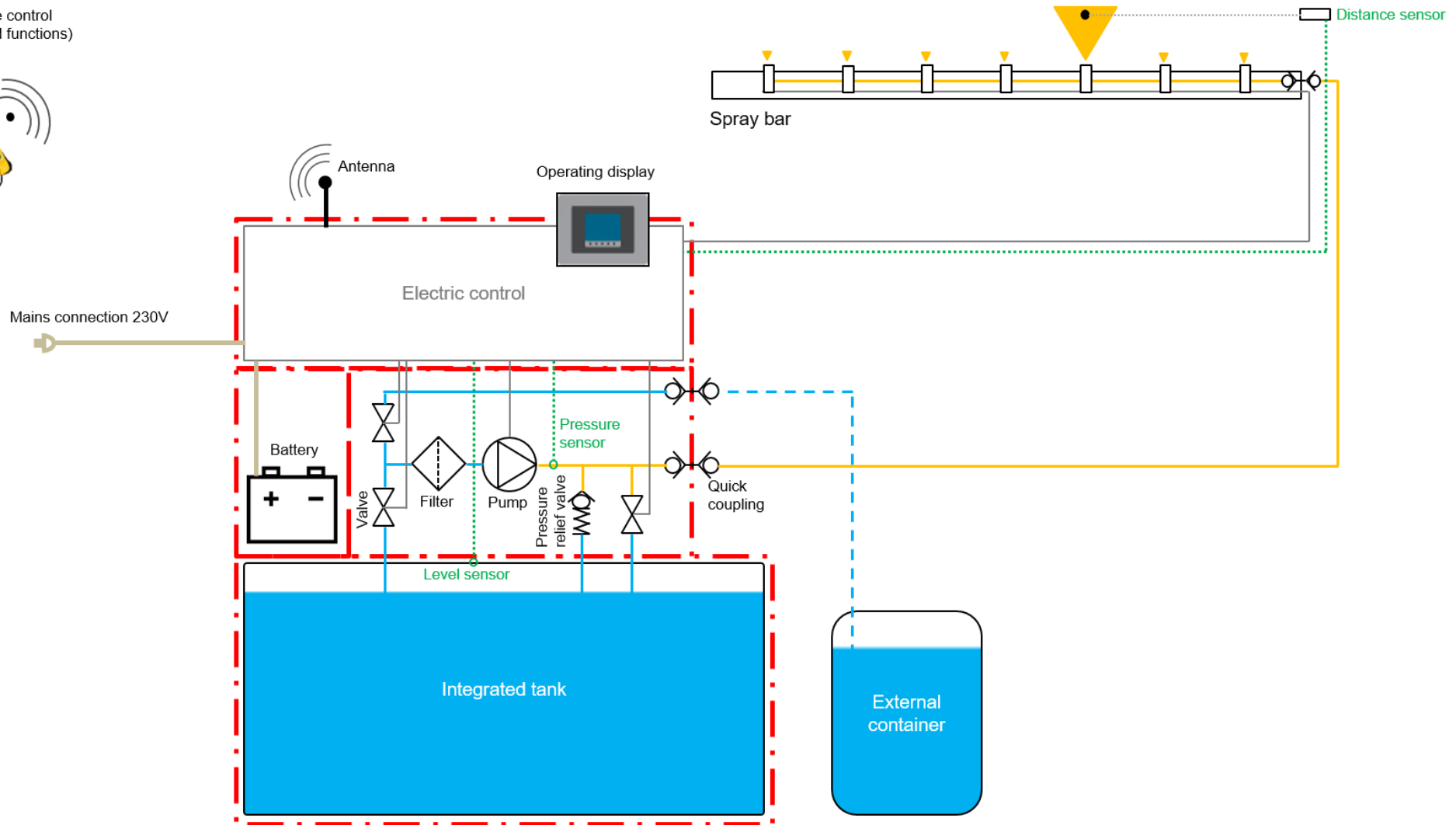
**Kummler+Matter**

# Design



# Schematic

Radio remote control  
(with reduced functions)



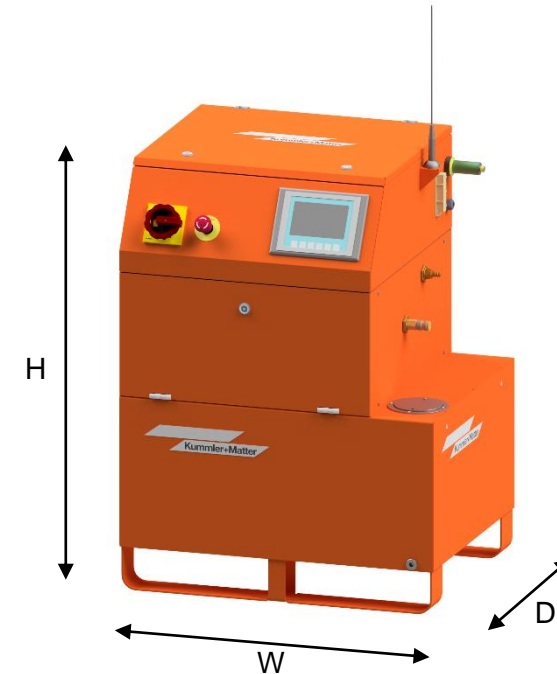


# Functional video



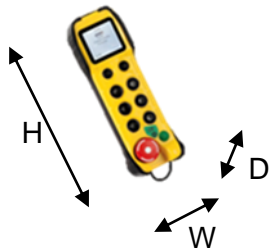
# Technical specifications (1/3)

Technical specifications Pump- and control unit		
<b>Size and weight</b>		
Width (W)	mm	750
Depth (D)	mm	600
Height (H)	mm	1000 (without antenna)
Weight (empty)	kg	~125
<b>Operating data</b>		
Working pressure	bar	0-9
Max. pressure	bar	10
<b>Power data</b>		
Line voltage	V	230 (50 Hz)
Power	W	ca. 200
<b>Optional battery pack</b>		
Battery duration	h	~10
Battery voltage	V	24
Weight	kg	~15

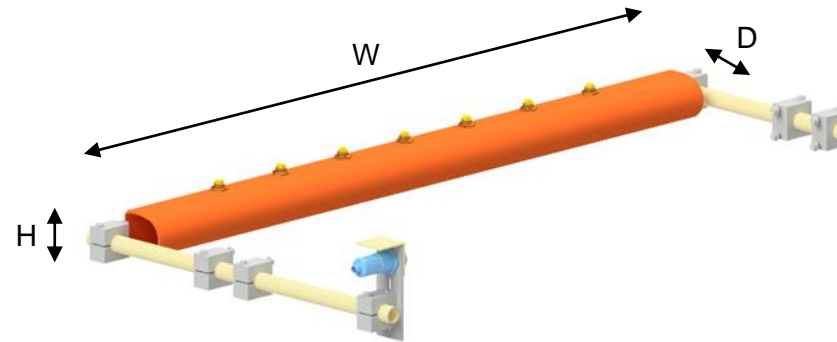


# Technical specifications (2/3)

Technical Specifications Radio Remote Control		
<b>Size and Weight</b>		
Width (W)	mm	75
Depth (D)	mm	50
Height (H)	mm	235
Weight	kg	0.485
<b>Operating Data</b>		
Battery life	h	~10
Charging time	h	~3
Range	m	up to 100

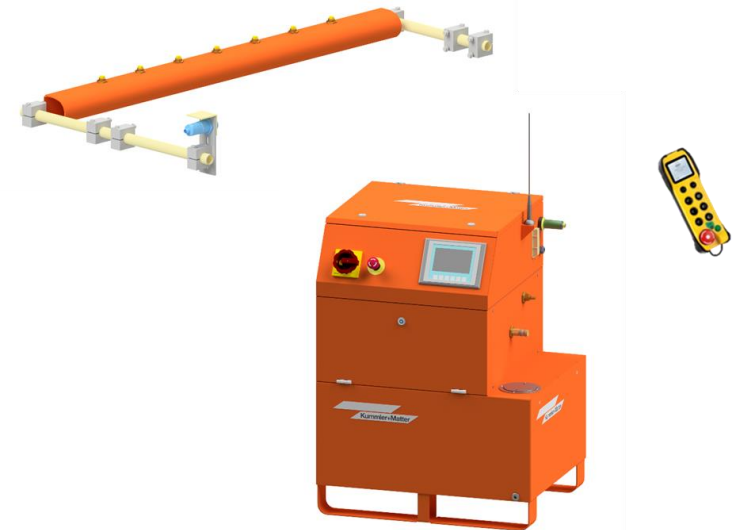


Technical Specifications Spray Unit		
<b>Size and Weight</b>		
Width (W)	mm	1100
Depth (D)	mm	65
Height (H)	mm	65
Weight (empty)	kg	~4
<b>Operating Data</b>		
Flow rate nozzle	l/min	0.35-0.6
Max. pressure	bar	10

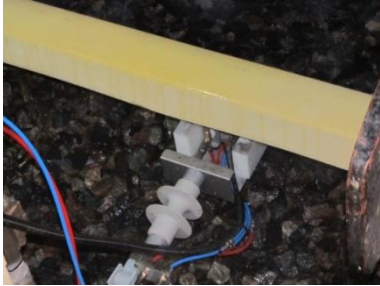


# Technical specifications (3/3)

Technical Specifications Operation		
<b>System Specifications</b>		
Catenary voltage	kV	up to 1.5
Operating speed	km/h	up to 65
Consumption spraying agent	l/km	~0.9-1.4 (depending on setting)
Operating temperature range	°C	-20° to +5°
<b>Noise Emission</b>		
Noise pressure level	dB(A)	< 70
<b>Operating fluid</b>		
De-icing fluid	-	ProFil Pro
Duration of effect	days	5-7 (depending on weather)



# References (1/2)



HKL  
Helsinki  
Finland

ProFil 3S  
(Special for 3. rail)  
Since 2011



BDWM  
Bremgarten  
Switzerland

ProFil 3v  
Since 2014



BLT  
Basel  
Switzerland

ProFil 3v  
Since 2015



NSTCM  
Nyon  
Switzerland

ProFil 3v  
Since 2016



TEC  
Charleroi  
Belgium

ProFil 3V  
Since 2017



Ferrovia  
Monte Generoso  
Switzerland

ProFil 3V  
Since 2017



# References (2/2)



RET  
Rotterdam  
Netherlands

ProFil 3V  
Since 2018



AVA  
Aarau  
Switzerland

PROFIL 1500V  
Since 2019



TTC  
Toronto  
Canada

PROFIL 1500V (2x)  
Since 2019



VGF  
Frankfurt  
Germany

KUPRO 1500V  
Since 2020

# Benefits

- ✓ Ideal for preventive conditioning of the contact wire against ice formation
  - Reduction of operating failure caused by ice
  - Reduction of material wear on contact wire and pantograph
- ✓ Non-aggressive de-icing of the contact wire
  - No scratching
  - No overheating of the contact wire
- ✓ Flexible use of the system in/on existing vehicles (e.g. maintenance vehicles, freight wagons or in a transportable container)
- ✓ Low weight of the spray unit
  - Enables the mounting directly to usual pantographs
- ✓ Economic consumption due to contact wire detection and individual nozzle control
- ✓ Self-sustaining operation of the system by battery (up to 10 hours)
- ✓ Software updates through remote maintenance possible
- ✓ Wireless control and monitoring of the system via radio remote control
- ✓ Large tank volume of about 130 liters
- ✓ Additional connection for suction from an external container (for spraying or refilling)
- ✓ Compact and robust design
- ✓ Simple and intuitive handling
- ✓ CE and UL certified



THANK YOU FOR YOUR  
ATTENTION



Name Vortragender  
Funktion

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**Kummler+Matter**