

Vapormatt | Profelis

Overview, technical specifications
and options



Vapormatt

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Overview

The unique Vapormatt Profelis is designed for wet blast surface treatment of wires, cables, round bars or various continuous products like bandsaw blades. This system will rinse and blow-off the product after blasting and will leave it with a clean reactive surface.

Key features include:

- High-quality, stainless-steel cabinet
- In-line wet blasting, cleaning & drying for high quality surface processing of all continuous wire, cable, and strip products
- Fully self-contained and ventilated unit with short line length suitable for location in existing process lines
- Can be configured to run left to right or right to left to suit existing production setup
- Automated load door for operator convenience and safety
- Simple to use and highly intuitive colour HMI for rapid set-up and operation
- Powerful multi-gun blast chamber for maximum cleaning efficiency, configurable to include additional blast guns depending on requirements
- S-tank filtration system to help keep running costs to a minimum by cleaning and recirculating water for rinsing.

Industries and applications

The unique design of the Profelis makes it particularly well suited to the surface finishing of wire, cable and strip products including:

Industries

- Bandsaw blades
- High voltage power cables
- Submarine communications cable
- High technology wire
- Wire for conform
- Spring wire
- Memory wire
- Carding wire

Applications

- High voltage cable surface cleaning to give a specific emissivity
- Submarine communications cable cleaning to create a reactive surface for outer layer bonding
- Wire cleaning to a specific surface roughness (Ra)
- Bandsaw blade cleaning to create a uniform reactive surface for coatings, honing teeth tips for durability and peening to prevent failure

Processing description

The Profelis is a well-designed, and solidly constructed in-line wet blast process system that will wet blast, rinse, and blow-off continuous products. The machine can accommodate up to 8 of Vapormatt's Ø10mm (0.39") or Ø12mm (0.47") nozzle Mk3 guns with each gun covering a specific segment of a continuous product like wire or cable. The system is designed to fit into existing process lines and is ruggedly constructed from non-corrosive materials compatible with the wet blast process.

One product can be processed at a time from Ø1mm (0.04") wire up to Ø54mm (2.13") via the Mk3 gun blast box. Alternatively, specifically designed blast gun manifolds for wider products, such as bandsaw blades can be arranged.

The process begins with the product being drawn through the system on a continuous feed basis with several subprocesses operating within.* The wet blasting stage consists of a chamber incorporating a specialised sump unit, high-volume blast pump and slurry mixing area. This stage processes the single line of continuous product as it is drawn past the one set of fixed blast guns. Degreaser or corrosion inhibitor additives can be incorporated into either the wet blast slurry or the rinse stage to further modify the surface properties of the product. The most common additives are detergent or rust inhibitors.

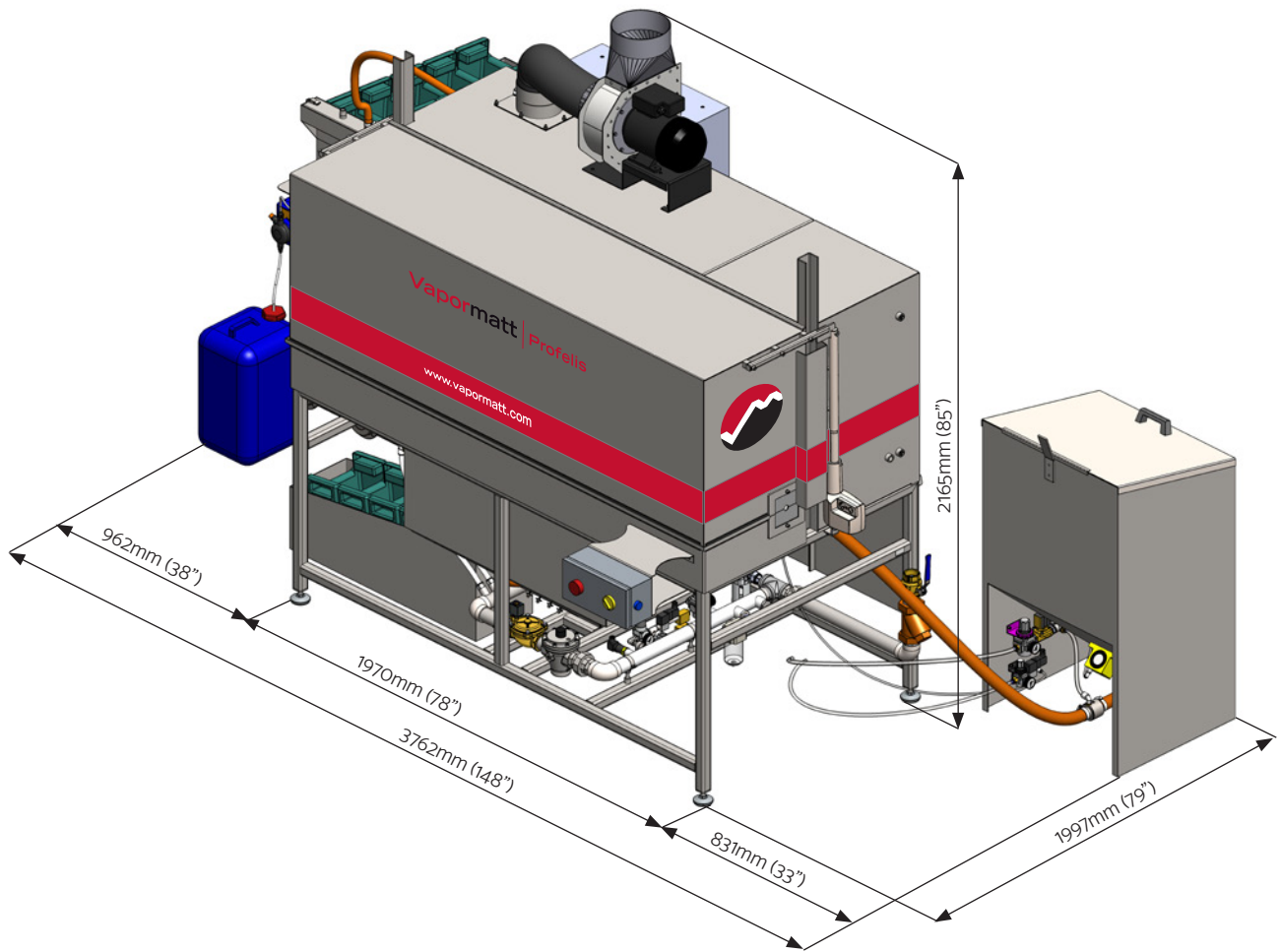
At the outlet of the blast chamber, a recirculated pre-rinse is carried out to remove most of the media from the product and return it to the sump. Further cleaning in the next stage is carried out with high-impact spoon jet nozzles fed from, optionally heated, recirculated water. Lastly, a circular air knife removes a majority of the water at the outlet of the rinse chamber (The product will not be totally dry on leaving the machine).

The process is completely contained within the watertight machine enclosure and all pressurised conduits carrying abrasive slurry are also contained within the main cabinet. The entire wet blast stage cabinet is ventilated to ensure the appropriate airflow within the equipment to avoid general atmospheric and product recontamination after processing.

When the machine is turned off, air will continue to be blown from the system for a period of up to 10s after the blast pump has stopped. This ensures the airlines remain clear from abrasive. To maintain optimum cleaning performance, the media will need replacing periodically, this can be automatic. The process waste is collected via a series of settling tanks.

Some spent additives require collecting, for example emulsifying degreasers. To facilitate this the machine would need a small flow to drain, or regular complete water change, and re-dosing with a degreaser as required.

*The mechanism for drawing the product through the Profelis system is not included, therefore correct tensioning of the product through the Profelis is the responsibility of the user.



Technical specification

The following features are included within the machine's basic specification.

Feature	Description
1	High-quality stainless-steel blast cabinet
2	4 or 8 x Ø10mm (0.39") nozzle Mk3 guns (other guns and arrangements can be accommodated)
3	Pre-rinse nozzles
4	HMI operator interface. All on screen instructions will be in English. Units will be metric.
5	50mm (2") VM slurry pump
6	Abrasive Slurry System in PU and rubber
7	Service and product threading access via up and over door
8	Wire entry height is between 950 - 1050mm (38 - 41")
9	Viewing window with wash bar
10	Pneumatic equipment is SMC

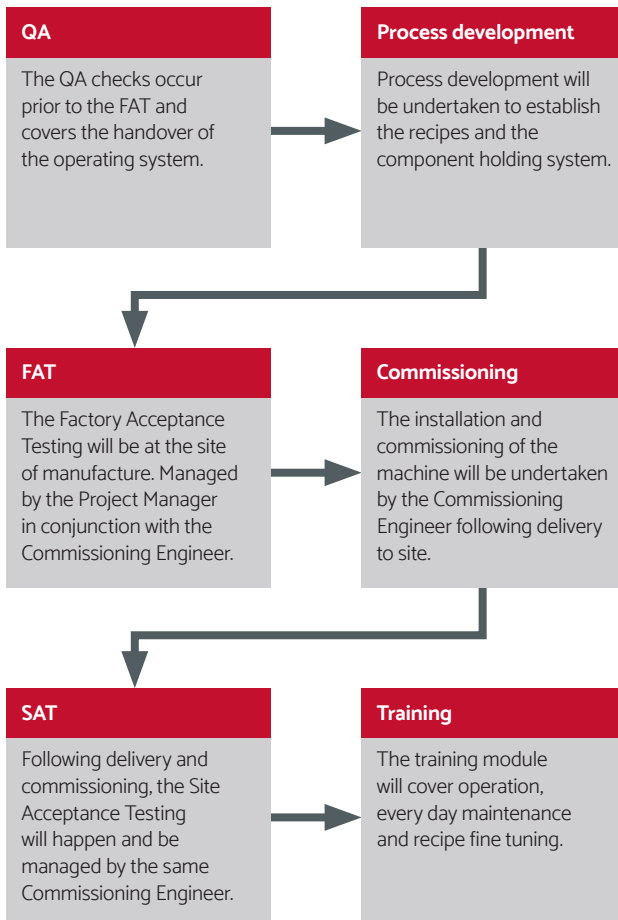
11	Hydrocyclones
12	S-tank filtration system and stainless-steel reservoir tank
13	Recirculated rinse water
14	Auto rinse nozzles in stainless steel enclosed rinse box
15	Auto air wipe
16	Manual rinse nozzle (recirculated water)
17	Abrasive dosing system
18	Chemical dosing
19	Forced centrifugal extraction unit to maintain a negative pressure within the machine. Exhaust needs ducting to the external atmosphere.
20	Electrical control panel with 24V DC machine control circuits

Optional items

The following features can be added on to the machine's basic specification.

Option	Cabinet enhancement
1	Translation of operation manual, HMI screen and labels in non-English.
2	A programmable ANDON status beacon allows the progress of production/process of the unattended machine to be monitored at a distance from the unit itself.
Option	Filtration and re-circulation
3	Automatic moving bed paper filter - 685mm (27") size unit
Option	Process functionality
4	2 x 4.5kW rinse tank immersion heater with thermostat
5	8 x Mk3 guns blast box (for wire diameters over 38 - 54mm (0.04 - 2.13") or increased productivity
6	Dual line: Two of 4 x Mk3 guns blast boxes (for wire diameters between 1 - 38mm (0.04 - 1.50")
7	Bandsaw gantry: 9 x Mk3 blast gun gantry (for blades up to 100mm (4") in height)
8	Cable vacuum drying unit with side channel blower assembly

Technical acceptance process



Services to be provided by the customer

The following services are required for the machine to be run correctly:

Service	Requirement
Electricity	Operating voltage: 400V AC 3 phase Frequency: 50/60Hz Load 30A The supply should be fitted with an RCCD
Air supply	Pressure 6 - 7 bar (90 - 100 psi) Consumption 9.6 Nm ³ /min (340 SCFM) (8 x Ø10mm (0.39") nozzles at 5.5 bar (80 psi)) or 14 Nm ³ /min (500 SCFM) (8 x Ø12mm nozzles (0.47)) at 5.5 bar (80psi) Connection Rp 1.5 (1.5" BSP) Quality ISO 8573-1: class 5.6.4
Water supply	For machine fill, top-up and rinsing Pressure 2 - 7 bar (30 - 100 psi) Volume 13 L/min (3 gpm) intermittent flow Connection Rp 0.5 (1/2" BSP) Drinking quality
Drainage	Floor level. The drain should incorporate a grit trap. Estimated flow: 9 L/min (2 gpm)
Vent or extraction	Forced air exhaust extraction unit fitted to maintain a negative pressure within the machine. Exhaust needs ducting to the external atmosphere
Foundations	A waterproof flat, level floor is required to take a point load of 500kg (1102lb) Machine weight (empty) = 2100kg (4630lb) Total machine weight (with water but no components) = 2600kg (5732lb) The weight is approximate and will be confirmed at shipping time.
Network	The machine runs on a closed Ethernet network, and connection to the internet is required prior to commissioning to allow program changes and machine diagnosis to be carried out. Vapormatt uses a dedicated platform for its remote access services, with connection methods being cellular, Wi-Fi and Ethernet. The machine is fitted with Vapormatt's preferred platform provider as standard.

Dedicated project management and the Vapormatt Promise

We always ensure our machines operate to the specification agreed upon the customer, that's the Vapormatt Promise.

To achieve this every customer is assigned a dedicated project leader from order to installation.

Project management includes our detailed technical acceptance process, see opposite, a key part of which is our factory acceptance testing (FAT). This is where the customer's wet blasting system is extensively tested, often with the actual components the customer will be regularly processing, before it leaves us.

Vapormatt support doesn't end there, our aftermarket support includes spares, servicing and Vapormatt 4.0, our Industry 4.0 solution, to ensure maximum production uptime.

Vapormatt, Robins Drive, Bridgwater, TA6 4DL, UK

t +44 (0) 1823 257976 e sales@vapormatt.com