H2 500

CREATING A CLEANER, SAFER, HEALTHIER WORLD.

Envir path PTY LTD

GREEN MACHINES™
From Tennant Company

Benefits of Hydrogen

Hydrogen is the cleanest fuel. It is a zero-emissions fuel, produced from green, renewable resources. No other by-products are formed but clean water.

Zero–emission power

Hydrogen fuel cells (HFCs) produce no harmful emissions. the only by-products are heat and water, making our hydrogen fuel cells a zero-emission, sustainable power source.

Improved Efficiency

Hydrogen fuel cell technology has proven itself against tough conditions, including cold environments and weather environments like hurricanes, deserts, and winter storms, and the hard-working business environments.

Robust Reliability

According to tests hydrogen fuel cells are generally between 40- 60% energy efficient. This range compares to the typical internal combustion engine of a car which is about 25% energy efficient.

Highly Sustainable

Fuel cells save money. They eliminate the need to change, charge, and manage batteries. The units run longer than batteries and can be fueled in as little as minutes, reducing vehicle and personnel downtime.

Sweeper features

Environmentally Friendly

The GM 500H2 is our most environmentally friendly sweeper yet, using Hydrogen, the 500H2 is the ultimate in clean air sweeping!

Re-fuelling Options

The first option is a cartridge system with H2-PODS, this allows an exchangeable cylinder to be used. Second option using a fixed Hydrogen tank, this will allow the use of standard Hydrogen refueling stations.

Flexibility

The 500H2 gives even more options and flexibility to the customer, which will allow them to meet their environmental commitments locally and nationally.

Innovative Power Supply

The GM 500H2 is our most environmentally friendly sweeper yet, using Hydrogen, the 500H2 is the ultimate in clean air sweeping!

Silent Operation

Both machines from the 500 series are silent during operation.

Swappable

Owners of the predecessor GM 500ze do not have to buy a new Green Machine. They

Flexible refuelling options

With all the possibilities of the GM 500H2, there are no more excuses not go green even if the city does not have the hydrogen refuelling infrastructure.

Cartridge System H2 - Pod

Since Green Machines always finds unique ways to offer solutions, we created the 500 H2- POD. This flexible system is the first in the world that offers the end user to move to hydrogen without having hydrogen infrastructure in place. This flexible system allows you to use the machine wherever you prefer. Simply swap the H2-POD with a new one and you're good to go again.

The 500H2with fixed tank.

The fixed tank could be addressed as the standard machine.
This sweeper will be used by end-users who have an H2-infrastructure in place. They can quickly refuel in matter of minutes and pay the lowest price for their refueled hydrogen. The machine itself has the longest runtime due to its large tanks. All these ingredients allow the end user to use the machine 24-7.

The future is finally here

The world's first-ever hydrogen fuel cell sweeper, 100% powered by hydrogen. The fuel cell converts oxygen and hydrogen into electricity that powers the sweeper and the only by-product of its usage is clean water.

500H2

GREEN MACHINES

The Maintenance free twin cyclones, create a cyclonic action that filters out the smallest of dust particles, allowing the clean air to be discharged to atmosphere and the captured dust to be contained in the hopper.

Enhanced safety thanks to panoramic view

Cartridge system H2 Pod

Two independently operated brushes enable efficient sweeping, even around obstacles.

Hydrogen Fixed Tank

GREEN MACHINES 500H2

MODEL: 500 H2

MACHINE DIMENSIONS – WORK MODE (BRUSHES IN)

Max Width – Work Mode (over brush plates)	1.105 mtrs (44 ins)
Width over Body	1.2 mtrs (47 ins)
Max Length (including brushes)	3.330 mtrs (131 ins)
Length over Body	2.765 mtrs (109 ins)
Max Height (excluding folding beacon)	1.98 mtrs (78 ins)
Wheel Base	1.38 mtrs (54.3 ins)
Minimum swept width	1.20 mtrs (47.2 ins)
Max swept width	1.80 mtrs (72")
Brush Diameter	650 mm (25.5 ins)

MACHINE DIMENSIONS – WORK MODE (BRUSHES OUT)

Max Width (Brush tip to Brush tip)	1.900 mtrs (74.8 ins)
Max Length (including brushes)	3.330 mtrs (131 ins)
Max Height (excluding folding beacon)	1.98 mtrs (78 ins)
Wheel Base	1.38 mtrs (54.3 ins)
Max Hopper Dump (Unload) Height	1.4 mtrs (55.1 ins)

TRACK & INSIDE TRACK DIMENSIONS

Rear Wheels Inside Track (inner wheel to inner wheel)	845 mm (33.8 ins)
Rear Wheels Track (center of wheel to center of wheel)	1,000 mm (37.6 ins)

TURNING CIRCLE

Kerb to kerb	5.5 m diam (2.75 m rad)
Over brushes	7.1 m diam (3.55 m rad)

VEHICLE WEIGHTS

Front Axle unladen	935 kg(2060 lbs)
Front Axle Max Weight	1,020 kg (2248 lbs)
Rear Axle unladen	1,035 kg (2281 lbs)
Rear Axle Max Weight	1,385 kg (3052 lbs)
Max Total Permissible Wht (GVW)	2,325 kg (5124 lbs)
Foot Print	3.0 kg/cm2

MAXIMUM HILL CLIMB

20%

VEHICLE SPEEDS

Forward Travel Mode (Transit)	25 km/h max (15.6 mph)
Reverse	6 km/h max (4 mph)
Forward Sweep (Brushes down)	12 km/h max (7.5 mph)
Forward Travel Mode (Work Mode) (Brushes Up)	16 km/h max (10 mph)
Reverse	6 km/h max (4 mph)

HOPPER

Capacity	1.269 cu mtr Gross / 0.744 cu mtr Net
System Compaction Ratio	2:1
Clearance for tipping	1.4 mtrs (55 ins)

NOISE

Inside Cab with Fan at 2400 rpm	76 dB(A)
Drive By Noise (sweeping)	74 dB(A) @7m
Drive By Noise (Transit)	59 d(BA)
Sound Power Reading 99dB(A) 2000/14EC	Equates to 74 dB(A) at 7 mtrs

WHOLE BODY VIBRATION

IHand Arm	0.48 m/s2 (Limit is 2.5 m/s2)
Whole Body	0.14 m/s2 (Limit is 0.5 m/s2)

Levels comply with Machinery Safety Directive 98/37/EC

STEERING SYSTEM

Gear type pump (1.1cc/rev) tandem driven with Aux pump off variable speed auxiliary electric motor

Open center Hydrostatic steering unit incorporating PRV & cylinder protection valves

DRIVE SYSTEM

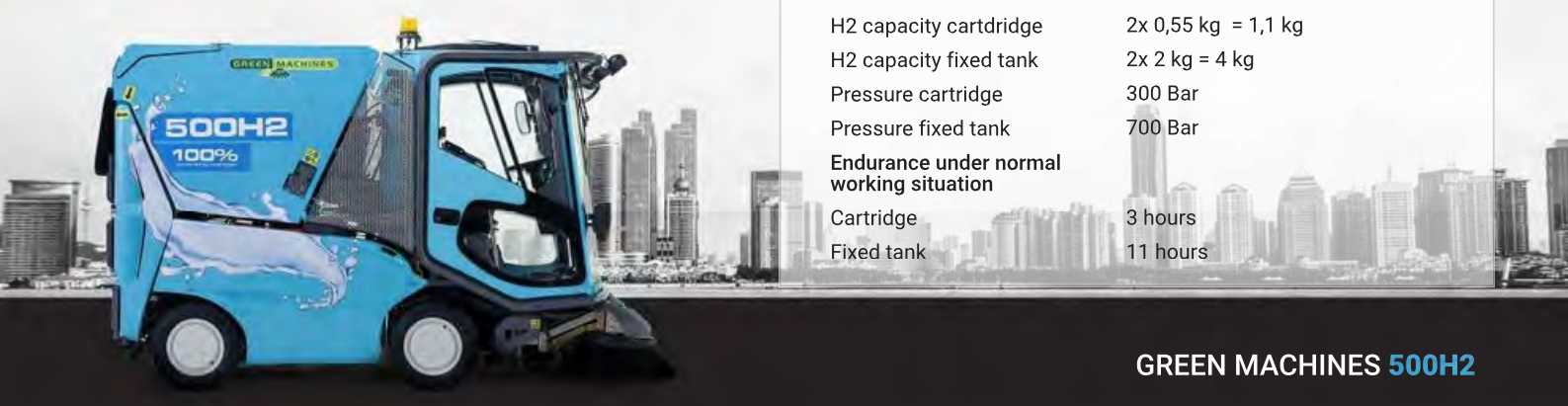
Motor	3 Phase AC motors with vector control DC/AC invertors – through rear differential axle
Rear Axle	Double reduction beam axle with limited slip differential and 18:1 reduction with coil

POWER SOURCE

Power system	Fuel Cell
Fuel cell Type	PEM (Proton Exchange membrane)
Power	15 kW

H2 TANKS

H2 capacity cartdridge	2x 0,55 kg = 1,1 kg
H2 capacity fixed tank	2x 2 kg = 4 kg
Pressure cartridge	300 Bar
Pressure fixed tank	700 Bar
Endurance under normal working situation	
Cartridge	3 hours
Fixed tank	11 hours



GREEN MACHINES 500H2

MODEL: 500 H2

HYDRAULICS

Oil Specification	Bio-degradable OECD 70% HFDU68
Hydraulic Tank Capacity	16 lts (4.2 US Gals)
Brush Motor – max speed	105 rpm
Auxiliary System Max Pressures	Max pressure – 210 bar

SUCTION FAN PERFORMANCE

Suction Fan – max RPM	2800 rpm
Maximum Flow Maximum Pressure	3600 m3/h (1m3/sec) 33 mbar

NOZZLE & SUCTION TUBE DIMENSIONS

Nozzle Dimensions Suction Tube	520 mm wide x 90 mm high (21" w x 4" H) 175 mm (7")

BRAKES

Front and Rear Brakes	Knott 230x50 hydro servo with manual adjust
Brake Fluid Type	DOT 4 – SAE J 1703 DOT 4

TIRES

Size	155/70 R12C – 8Ply – Tires on 4.5J rims –
Max Loading	750 kg (1650 lbs)
Tire Pressure	6.5 bar (94 psi)
Tire Footprint Loadings (At GVW) Wheel	3,40 kg/square centimeter (at GVW); 48.3 psi (3.32 bar)

WATER SYSTEM

Tank Capacity	121 lts (31 US Gals)
Max system Pressure	8 bar (118 psi)
Cloudmaker Flow Rate	15 lt/hr (3.95 US Gals)

PRESSURE WASHER

Electro/Hydraulic driven high pressure piston pump

Water Flow	9 lts/min (2.32 US Gals)
Max Water Pressure	90 bar (1323 psi)

END OF LIFE ENVIRONMENTAL VALUE

Recycling -mass content

Stainless steel – Machine structure – Chassis frame, Access panels, Bumper, Hopper Components, Fasteners	370 kg
Ferrous – Cast iron & mild steel, Axles, Suspension, Running Gear, Hyd. Cylinders, Brush Gear, Suction Nozzle, Wheels	410 kg
Lead -Battery – lead-acid automotive type lead content	7 kg
Aluminium – door panels 17 kg; Hopper 195 kg; Cab 100 kg; Hyd. Manifolds 12 kg; Battery boxes & enclosures	130 kg = 454 kg total excl batt cells
Copper – Cables, Busbars. Motors, Invertors	230 kg
Polyethylene – reservoirs/covers	70 kg
Polyurethane – wear plates/bushings	10 kg
ABS mouldings	15 kg
Polypropylene – Covers 10 kg; Brushes (2 off) Disc 3.5 kg; Bristles (new) 3.2 kg; Bristles (worn – estimated)	1.2 kg
Glass	40 kg
Rubber – (Tires, Hydraulic hoses)	70 kg
Fabrics – Seat, noise absorption matting	30 kg
Glass Reinforced Polyester	40 kg
Gross Recyclables = 2,100 kg, kerb weight = 2,300 kg therefore recyclable % = 91% (75 kg removed for Operator wht.)	

WARRANTY

Please refer to your local Green Machines Dealer for information.

www.greenmachines.com