

STAGE 

ENGINE EMISSIONS

NOW AVAILABLE ACROSS
OUR FULL RANGE OF
DEWATERING PUMPS

EEPP

PUMPS

FOR WHERE IT REALLY MATTERS

OVER 140 YEARS' EXPERIENCE

SPP PUMPS HAS LED THE DESIGN AND MANUFACTURE OF CENTRIFUGAL PUMPS AND ENGINEERED PUMPING SOLUTIONS FOR OVER 140 YEARS.

1875 - 1878

Founded in 1875, a British Engineer bought the patent rights of the Pulsometer Pump from an American, Thomas Hall. "The Pulsometer Engineering Company Ltd" was born.

From this came the birth of the Company as it is known today.

1901

The Company moved from London to new premises in Reading, UK and expanded rapidly.

1961

Pulsometer Engineering joined Sigmund Pumps of Gateshead making one of the largest pump companies in Europe, known as Sigmund Pulsometer Pumps, SPP for short.

1986

SPP Pumps acquired Henry Sykes plc adding the famous 'Sykes' pumps to its range. The Sykes facility was completely redeveloped and in 1987 all manufacturing was moved to Coleford, in the West of England, where it is today.

1989

After a brief period of ownership by the Braithewaite Group, SPP Pumps was acquired by the TBG group in 1989 as part of Sterling Fluid Systems.

2003 - PRESENT

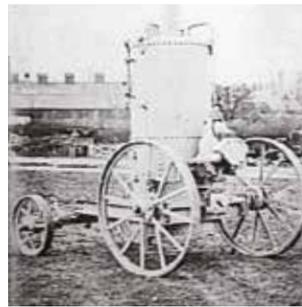
SPP Pumps was acquired by Kirloskar Brothers Ltd, in 2003. SPP Pumps launched the hydraulic driven fire water pump, to extend the product portfolio of well proven vertical lineshaft and submersible fire pumps, thus offering all configurations and drive options.

The Pulsometer
PATENT
STEAM PUMP.
WILL PUMP ALMOST ANYTHING.
NO OIL, TALLOW, OR PACKING.
NOISELESS.
MANY THOUSANDS
NO SKILLED ATTENDANCE REQUIRED.
WILL WORK SUSPENDED ON A CHAIN
NO EXHAUST.
IN USE.

REDUCED PRICES

Capacity (Gals. per Min.)	Price (£)
10	10 0/0
15	15 0/0
20	20 0/0
25	25 0/0
30	30 0/0
35	35 0/0
40	40 0/0
45	45 0/0
50	50 0/0
55	55 0/0
60	60 0/0
65	65 0/0
70	70 0/0
75	75 0/0
80	80 0/0
85	85 0/0
90	90 0/0
95	95 0/0
100	100 0/0

PULSOMETER ENGINEERING CO., LD., KING CROSS BRANWICKS, LONDON, S.W.
2 & 3 St. JOHN STREET, LONDON, E.C.



SPP continues to evolve...



THE HEALTH EFFECTS OF ULTRAFINE PARTICLES



The World Health Organisation has classified Diesel Engine Exhaust as a possible cause of increased risk of serious respiratory conditions in humans.

STAGE I emissions regulations were introduced to reduce the number and size of harmful particles expelled into the atmosphere by Non-Road Mobile Machinery through the inclusion of emission reduction technology into their engines.

Here we explain what the changes mean, how they will affect users of this equipment, how we are introducing new technologies to meet the latest legislation and how this will improve the air quality on our planet.



WHAT IS THE DIFFERENCE BETWEEN STAGE V AND PREVIOUS EU EMISSIONS STANDARDS?

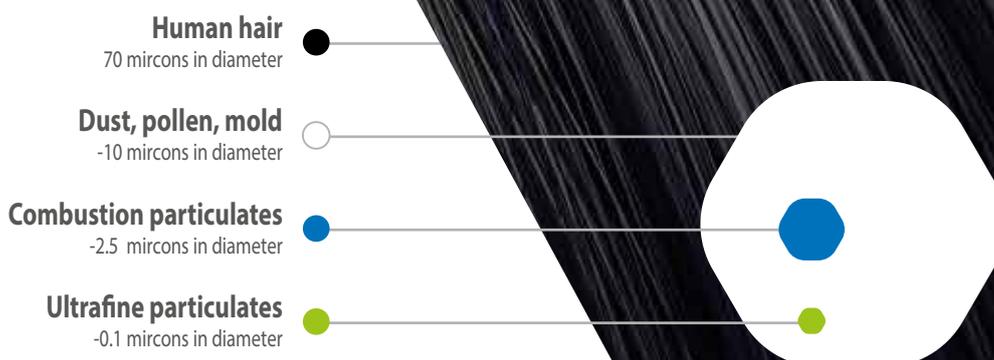
Previous emissions regulations were a combination of 28 separate complex and outdated national laws which have been amended 8 times since 1997.

STAGE V Emission Regulations tighten the limits on carbon monoxide, nitrogen oxides and hydrocarbons, as well as the mass of particulate matter (diesel soot) and the number of particles emitted to the atmosphere by Non-Road Mobile Machinery (NRMM) engines in the 19 to 560 kW power band.

They create a predictable and stable regulatory framework for working towards cleaner air and aligning US and EU regulations, allowing the two nations to compete on a fairer footing.

COMPARISON OF PARTICULATE SIZE

The average human hair is about 70 microns in diameter - making it 700 times larger than the largest ultrafine particulates.



PREPARING FOR CHANGE

The incomplete combustion of diesel fuel results in soot, nitrates and sulphates, organic chemicals, metals and carbon debris generating particulate matter shown to be a major contributing factor to serious respiratory conditions.

The European Commission **STAGE V** regulations stipulate new permitted emission limits which should reduce gas expelled by NRMM. These pollutants include carbon monoxide, total hydrocarbons (HC), nitrogen oxides (NO_x), and particulate matter (PM).

These limits will apply to all Non-Road Mobile Machinery (NRMM) and will come into force at the end of 2021.

KEY TERMS EXPLAINED BELOW:

PM (PARTICULATE MATTER)

A major factor contributing to serious respiratory conditions. Particulate matter from exhaust emissions is the result of incomplete combustion of diesel fuel and is made up of soot, nitrates and sulphates, organic chemicals, metals and carbon debris.

HC (HYDROCARBONS)

Hydrocarbons impact both human health and the environment. Hydrocarbons are toxic, inhibiting photosynthesis in plants, and can cause eye and lung irritations in humans. They also increase CO₂ levels that contribute to the greenhouse effect, accelerating climate change.

NO_x (NITROGEN OXIDES)

When nitrogen oxides react with water within the atmosphere, it creates nitric acid, often referred to as acid rain.

O³ (OZONE)

Whilst critical to the planet when in the right place, O³ can cause respiratory conditions in humans when high levels of O³ are present at ground level, often creating smog. O³ is formed when NO_x and HC are exposed to sunlight.

STAGE V STRATEGY

OUR PRODUCTS

HIGH FLOW PUMPS

Offering superior performance, high flow capability and higher head characteristics, the XF High Flow design provides durable pumps for numerous applications.



HIGH HEAD PUMPS

Manufactured with hard wearing materials, HH and XH High Head pumps offer excellent performance for most applications including solids handling.



MEDIUM HEAD OPEN SET PUMPS

Allowing users to specify the level of technology required, Autoprime medium head open set pumps offer the chance to create a lower cost pump package for general purpose applications.



Q-SERIES PUMPS

Deployed in hundreds of locations in the UK and overseas, Q-Series pumps provide contractors with a highly compact, readily transportable, very robust dewatering solution. Available with or without a noise-attenuating canopy, all pumps offer a low environmental footprint.

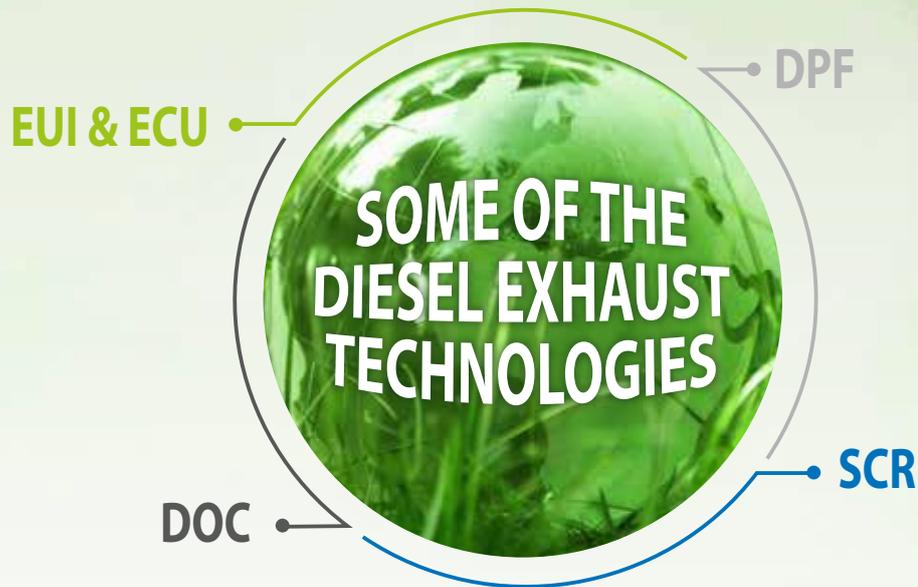
For more information regarding any of the above products, please contact: dewatering@sppumps.com

The introduction of STAGE V emission regulations requires NRMM manufacturers to include emission reduction technology in their products. The greater the maximum engine power, the more extensive the emissions technology required.



THIS GRAPH ILLUSTRATES HOW EMISSION CONTROL TECHNOLOGY CHANGES ACCORDING TO THE ENGINE POWER RANGE.

DIESEL EXHAUST TECHNOLOGY



DEF Diesel Exhaust Fluid

DEF is synthetic urea combined with de-ionised water and used in the Selective Catalytic Reduction (SCR) process. Here, the DEF reacts with NO_x in the exhaust, converting pollutants into nitrogen, water and tiny amounts of carbon dioxide, which are less harmful to the atmosphere.

Several brands of DEF already exist. Such as AdBlue®, BlueHDI, BlueTec and FLENDs (Final Low Emission New Diesel System).

DOC Diesel Oxidation Catalyst

The Diesel Oxidation Catalyst (DOC) is a flow-through device where exhaust gases come into contact with materials that oxidise unburned hydrocarbons, reducing carbon monoxide.

DPF Diesel Particulate Filter

The Diesel Particulate Filter (DPF) captures particulate matter from the exhaust stream. When passive regeneration takes place, the trapped particulate matter oxidises.

DPF Regeneration

Diesel Particulate Filter Regeneration is a cleaning process that uses exhaust heat to remove captured particulate matter in the DPF.

EGR Exhaust Gas Recirculation

Exhaust Gas Recirculation (EGR) reduces oxygen levels in the cylinder, making combustion temperatures lower, which results in fewer emissions and particulates. It does this by introducing exhaust gas back into the manifold and mixing it with incoming fresh air.

EUI & ECU Electronic Unit fuel Injector and Engine Control Unit

Electronic control of the fuel injection timing enables precise control of the start, duration and end of the injection process, optimising combustion.

SCR Selective Catalytic Reduction

Selective Catalytic Reduction is an emission control technology system that injects DEF through a special catalyst into the exhaust stream of a diesel engine. The Diesel Exhaust Fluid combines with nitrogen oxides to produce environmentally friendly nitrogen, water and tiny amounts of carbon dioxide.

VGT Variable Geometry Turbocharger

A VGT varies the exhaust pressure according to the load and speed to deliver proper Exhaust Gas Recirculation flow.

VVA Variable Valve Actuation

By controlling the timing of the closure of the intake valve, a later closure can reduce the effective compression ratio, for lower temperatures and, in turn, lower NO_x.



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