



# FIRST FOR DIAGNOSIS

Filtertechnik's award winning Particle Pal range displays live cleanliness readings for particulate (ISO/NAS/SAE) and water (PPM) for fuels and oils



The Particle Pal displays instant cleanliness readings for both particulate (ISO/NAS/SAE) and water (PPM) in fuels and oils.

## Extensively specified into:

- /// Marine
- /// Plant equipment Hire
- /// Telecommunications
- /// Automotive Industry
- /// Rail

## INTRODUCTION

The Particle Pal is a self-contained system, complete with integral pump and controlled flow rate. An upgrade from the original Particle Pal now incorporates a WMS500 sensor that measures absolute water content (PPM) in diesel fuel, hydraulic oils, silicon oils and bio oils.

Powerful trending software will allow for data to be displayed in graphical format for real-time trend analysis. The Particle Pal will identify the cleanliness code of the fuel or oil, which will alert to the need for corrective action. It can draw from oil stored in tanks or from sample bottles. Fluid samples are analysed quickly and accurately, thereby minimising the frequency of laboratory analysis.

## FEATURES

- Incorporates latest laser particle counting technology
- Alerts to the presence of diesel bug in oils and fuels
- Real time detection of solid contamination and moisture
- Real time PPM measurement of water
- Real time graphic display via software
- Laptop connectivity for data transfer
- Archive creation via Excel
- Re-chargeable battery
- Output of absolute water content in ppm
- Calibrated against a Karl Fisher titration (ASTM D1533)

## BENEFITS

- Live ISO, NAS and SAE results
- Compact, lightweight unit with robust casing
- Sample direct from fuel tank, sample bottle, fuel polishing cabinet or oil reservoir
- Accurately measures the quality of oils in real time
- Accurate, repeatable and consistent results
- Own branding available

## FUEL MONITORING

Modern fuels with ever increasing biofuel percentages, have created several challenges to industry in recent years. Fuel blends are highly hygroscopic which enables them to absorb greater amounts of moisture. This in turn leads to higher levels of microbiological activity which are seriously troublesome to fuel systems.

## OIL TESTING

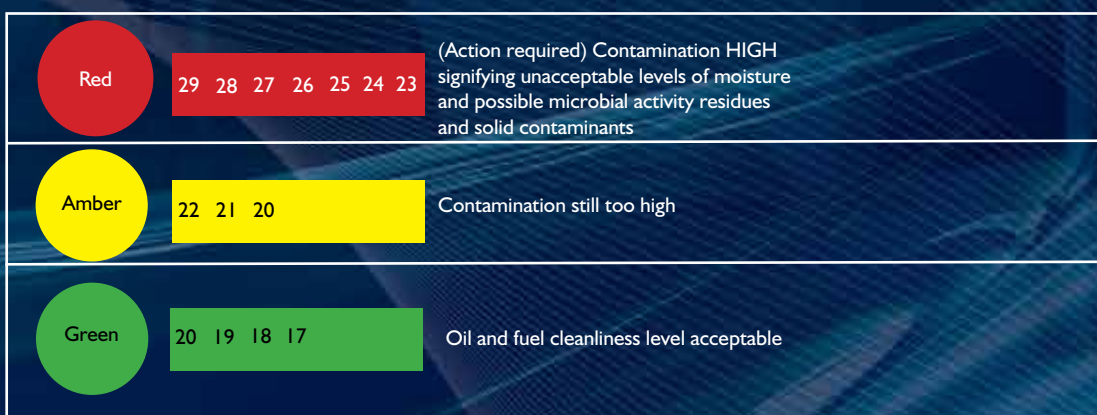
In Hydraulic and Lubrication systems, real time cleanliness data can prevent serious system failure and component damage. By trending oil cleanliness in real time, the necessary protection can be put in place to protect sensitive components. Samples can be taken directly from the reservoir of fluid power systems or from a oil sample taken from the system.

## HYDRAULIC SPECIFICATION FOR FLUID POWER COMPONENT CLEANLINESS

Element	Type	ISO Code 4406
Pump	Piston (slow speed, in line)	22/20/16
	Piston (high speed, variable)	17/15/13
	Gear	19/17/15
	Vane	18/16/14
Valve	Directional	20/18/15
	Pressure Control	19/17/14
	Flow Control	19/17/14
	Check Valve	20/18/15
	Cartridge Valve	20/18/15
	Proportional	18/16/13
	Servo valve	16/18/15
Motor	Axial Piston	18/16/13
	Radial Piston	19/17/13
	Gear	20/18/15
	Vane	19/17/14
Actuator		20/18/15
Station Nozzle	World Wide Fuel Charter Cleanliness standard for fuel delivered	18/16/13
EN590 Fuel		18/16/13

**PLEASE NOTE THAT THE TYPICAL CLEANLINESS OF NEW HYDRAULIC OIL FROM A MANUFACTURER IS 20/18/15**

What do Particle counts mean and how can they be interpreted into oil and fuel cleanliness



With diesel the maximum recommended allowable water content level is 200ppm. When high water content is present, a series of problems may occur:

- Fuel oxidation
- Formation of paraffin and asphalt long chain polymers
- Microbial growth and associated contamination
- Additive depletion
- Acid formations
- Gel formations

## FS900 I -WMS-500

### TECHNICAL SPECIFICATION

Case	HPX® high performance resin construction with press & pull latches and durable soft-grip handles.
Dimensions	360mm (W) x 290mm (D) x 170mm (H)
Weight	5.5kg
Battery Type	Lithium Ion
Run time	Up to 6hrs dependent upon fluid viscosity
Charge time	5hrs
Principles of Measurement	Laser-based sensor uses light blocking (extinction) technology for particle detection; particles passing through an optical flow cell, block an amount of laser light proportional to the size of the particle. The “shadows” are registered by an optical receiver and the information processed and displayed on a bright red LED
Modes of Operation	Tank sampling Bottle sampling (minimum sample 100ml) High pressure feed samples option
Displayed information	Fluid cleanliness to ISO4406 (4u, 6u, 14u, 21u), SAE 4059, NAS1638 Fluid Temperature User programmable cleanliness level alarm Water content in particles per million (PPM)
Information update time	2min (or selectable through software)
Software	PC based software for trending, logging and analysis. Log to .csv for easy transfer to Excel
PC Connection	USB (B type connection)
Viscosity Range	1 –424 cst
Fluid Compatibility	Diesel & mineral oils
Fluid Temperature	-10...50°C (diesel) -10...60°C (oils)
Environmental:	Lid closed: IP67 (un-certificated) Lid open: IP54 (un-certificated)
Ambient Temperature	-40...85°C
Maximum Humidity	97% relative humidity, non condensing
Supplied	2 metre suction tube fitted with 80 MESH strainer (6mm OD) 2 metre discharge tube (6mm OD) Battery charger (UK 3 pin plug) PC software USB data transfer cable Manual
Certification	PC900I factory calibration certificate CE declaration
Verification frequency	12 months recommended
PC requirements	Windows XP, Vista, Windows 7, 8 & 10 with USB port