



Oil Diagnostic Systems

PODS *Pro* PORTABLE OIL DIAGNOSTIC SYSTEM

- Online and bottle measurement
- Mobile and stationary operation
- Lab quality accuracy

The new generation of oil diagnostics



Messuhr: KM 81.5
 Kennzahl: L30N1 SW
 Ser.-nummer: 00081010
 25 FEB 2009 Art der Messung: FLÜSSIG
 / Art: 10 ml / Messung Durchfluss: 50 ml/min
 Volumen: 10 ml / Messung Öltemp: 53.4 C
 Viskosität: 10 mm²/s

Messname: Konsentration: Teilchen/ ml
 ISO Code: 20/18/16 (4p/6a/14p)

GRÜSSIN	MESS1	MESS2	MESS3	MITTELWERT
4. Öl	7019.40	7174.00	7174.00	7122.13
5. Öl	4985.90	4049.60	5024.40	4685.97
6. Öl	2202.80	2297.00	2151.70	2303.83
8. Öl	699.00	754.90	777.00	745.52
14. Öl	339.80	374.90	369.50	361.47
21. Öl	137.00	169.80	158.70	155.17
30. Öl	39.40	47.00	33.90	36.77
65. Öl	9.10	9.00	5.40	6.51

PODS Pro
 PORTABLE OIL DIAGNOSTIC SYSTEM

**ARGO
 HYTOS**

Mobile and stationary operation:
 Compressed air connection for laboratory measurement and gas bottle for field measurement

Online and bottle measurement:
 Bottle adapter for batch sampling and minimes connector for online measurement

PODS Pro PORTABLE OIL DIAGNOSTIC SYSTEM

PODS Pro is the new generation of portable oil-diagnostic instruments for simple, quick and reliable monitoring of oil cleanliness.

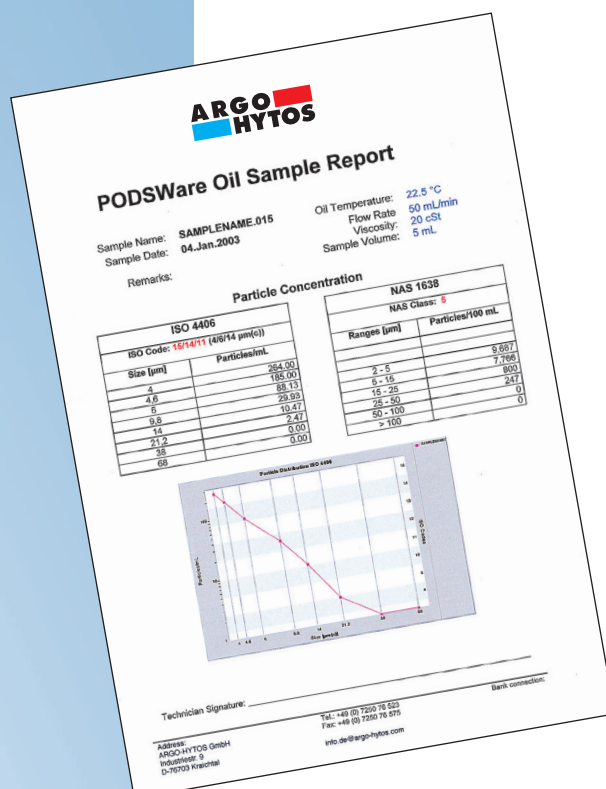
PODS Pro is based on many years of Know-how and represents the advanced version of PODS with newest technology. Many features were improved, thus PODS Pro is not only lighter than its predecessor, but also offers the classification according to SAE AS 4059.

Productive – Online & Bottle sample analysis by one instrument.
As before you can rely on PODS Pro even under severest operating conditions. The measurement results are reported simply, quickly and reliably. With PODS Pro you have the option to run online or bottle sample analysis with the same instrument.

Profitable – the PODS Pro Special:
The all-inclusive delivery program includes a robust rollerbox with all necessary accessories.
The ARGO-HYTOS software PODSWare sets new standards for service statistics and allows, for example, a detailed mapping of the machine life.

Proving – PODS Pro „live“
We would be happy to show you PODS Pro „live“. Simply ask for a noncommittal demonstration.

Rely on hightech oil diagnostic systems from ARGO-HYTOS.



Certificate for measurements according to the different standards. These certificates can be issued with individual labels.

Advantages at a glance



PODS Pro

PORTABLE OIL DIAGNOSTIC SYSTEM

1. Online and bottle sample analysis

With two turns of your hand, using the two fluid adapters in the all-inclusive delivery, PODS Pro is converted from a "Monitor" to a "Lab analyzer". In the online mode PODS Pro is connected directly to the hydraulic circuit via MinimesTM tubing and allows specific and continuous monitoring of the oil cleanliness.

2. Flexibility

Due to its lower weight PODS Pro can be easily carried to each location. For longer distance transport the rollerbox is used.

3. All-included delivery

PODS Pro is supplied with a very robust rollerbox, which is air- and water tight and contains all necessary accessories such as gas cartridges, power adapter, fluid adapters for online and bottle mode, handpump for oil sampling as well as clean sample bottles. The box is lockable and can be used for safe shipping to the ARGO-HYTOS Service Center, for instance for calibration.

4. Pressure range up to 420 bar

By direct measurement at system pressures up to 420 bar without bypassing, the risk of outgasing and bubble counting is drastically reduced.

5. High viscosity and high contamination

PODS Pro can measure particle contamination up to code 24 according to ISO 4406:1999. This is achieved by a sensor with a limit concentration of 90.000 particles/ml at 10 % optical coincidence and avoids time consuming and complicated dilution procedures. Another important advantage is its ability to measure oils with a viscosity up to 850 mm²/s.

6. Variable flow rate

PODS Pro automatically regulates the flow rate to an appropriate value between 15 and 50 ml/min, depending on the oil pressure and the viscosity. This feature makes it insensitive to variations in the hydraulic system during the measurement.

7. Controlled cleaning with ECOLINE

The oil service filter unit ECOLINE cleans oils up to a selected cleanliness class with PODS Pro. For this purpose ECOLINE pumps the oil over a filter. At the same time PODS Pro measures the cleanliness of the oil in front of the filter online and turns off ECOLINE when the target cleanliness class is reached. The cleanliness class is documented on a printout.

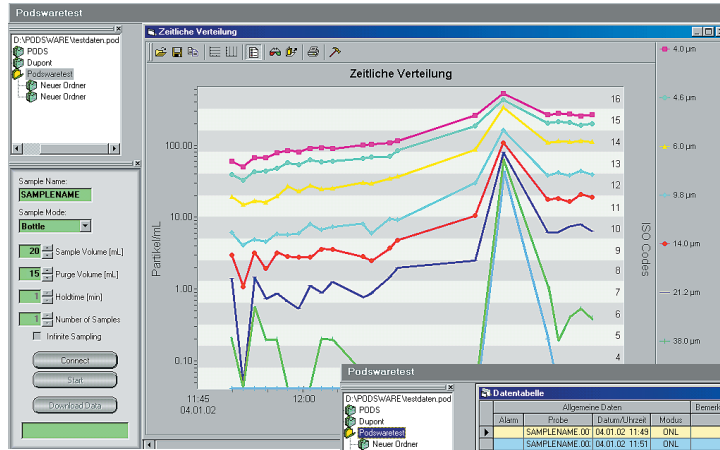
Software

PODSWare – A powerful software!

PODSWare as supplement to *PODS Pro* is a tool to record and evaluate the measured data in a comfortable manner.

Apart from this *PODS Pro* may be completely controlled from the control window of the software.

The *PODSWare* includes the following languages: German, English, French, Italian.



Starting and stopping measurements. Setting parameters and downloading stored data.

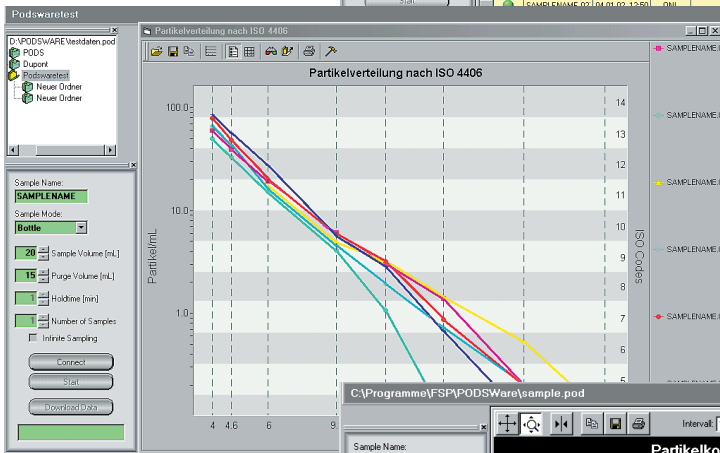
Graphical tracking of online measurements by time graphics.

Build-up of a data bank and linking of measurements to machines.

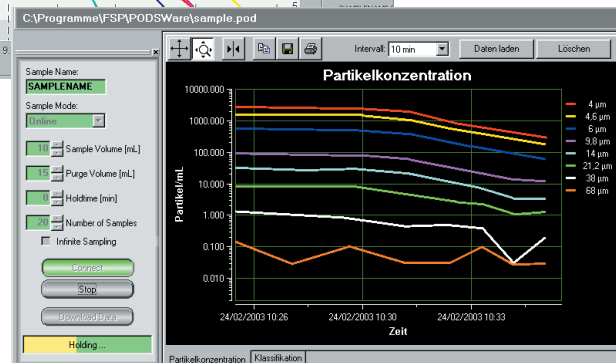
Historic review of the oil cleanliness.

Alarm	Filter	Datum/Uhrzeit	Modus	Bemerkungen	ISO 4406	kumulative Partikelkonzentration (P/N)						
						MTD > 4.0 µm	3.45 µm	3.0 µm	2.5 µm	2.14 µm	2.1 µm	2.0 µm
		13/11/9				6.067	3.930	3.527	3.070	3.000	14.000	2.000
		13/11/7				498	3.293	1.513	407	107.00	0.00	0.00
		13/11/9				6.673	4.313	1.633	493	32.00	147.00	53.00
		13/11/6				6.687	4.350	1.633	460	193.00	73.00	2.00
		13/12/9				7.873	4.807	2.007	587	32.00	87.00	2.00
		14/12/9				8.513	5.693	2.747	567	287.00	67.00	0.00
		14/12/9				8.113	5.320	2.347	600	28.00	53.00	0.00
		14/12/9				8.963	6.000	2.773	613	28.00	113.00	0.00
		14/12/9				9.333	5.907	2.487	673	353.00	87.00	2.00
		14/12/9				9.040	6.013	2.527	727	353.00	127.00	2.00
		14/12/9				10.018	6.619	3.049	797	295.00	79.00	7.00
		14/12/9				10.953	6.967	3.013	800	347.00	87.00	0.00
		14/12/9				10.913	7.100	3.473	953	373.00	147.00	0.00
		14/12/9				11.727	844	3.753	920	48.00	2.00	0.00
		15/14/11				264	1.185	0.813	2.993	1.147	247	0.00
		16/7/14				5.264	42.930	34.947	16.299	1.072	60.00	99.00
		15/14/11				2.688	2.026	1.100	3.867	176.00	607.00	07.00
		15/14/11				28.313	21.573	11.727	418	18.00	627.00	2.00
		15/14/11				27.827	20.867	11.307	3.867	1.667	727	4.00
		15/14/12				254	1.820	1.162	4.930	2.993	8.00	53.00
		15/14/11				26.627	19.813	1.132	39	192.00	64.00	4.00
		15/14/11				2.849	21.327	11.267	3.793	1.833	833	73.00
		15/14/11				2.896	2.186	11.433	3.527	1.147	427	0.00
		15/14/11				29.693	21.873	12.967	4.273	1.760	8.00	3.00
		15/14/11				28.407	21.293	1.178	3.793	1.713	52.00	4.00
		15/14/11				28.853	2.166	11.873	3.793	1.660	483	33.00
		15/14/11				29.847	22.753	11.970	4.347	1.760	52.00	2.00
		15/14/11				30.467	2.254	12.970	4.133	1.513	447	73.00
		16/14/11				3.254	249	14.113	408	1.483	483	2.00
		16/14/11				3.428	265	14.887	438	1.180	587	0.00

Particle concentration-size distribution.



Chronological review of the particle concentration.



Technical information

Detection	Light extinction								
Sensitivity	complies with Japanese Industry Standard (JIS-B-9925:1997)								
Size ranges	4 - 100 µm(c) (ISO-MTD)								
Size channels	4 - 100 µm(c) (ISO-MTD)								
	8 channels								
		1	2	3	4	5	6	7	8
	ISO-MTD sizes [µm (c)]	4	4,6	6	9,8	14	21,2	38	68
	ACFTD sizes [µm]	~1	2	~5	10	~15	25	~50	100
Flow rate	15 - 50 ml/min automatic regulation								
Calibration	ISO-MTD in oil (ISO 11171:1999)								
Cleanliness classification	ISO 4406; NAS 1638; MIL-STD-1246C; NAVAIR 01-1A17, SAE AS 4059								
Cleanliness classes	ISO 4406 code 1 to 24								
Concentration limit	90.000 particles/ml at 10 % optical coincidence								
Measurement results	Oil cleanliness classes (according to standard), concentration (particles/ml), viscosity (mm ² /s, cSt or SUS), temperature								
Light source	Laser diode								
Counting efficiency	By JIS-B-9925:1997								
Wetted materials	Stainless steel, sapphire, aluminium, Aflaz™, PTFE								
Fluid pressure	0,5 - 420 bar								
Temperature	0 - 90°C oil at 25°C ambient; 0 - 50° C ambient; 5 - 40° C housing								
Relative humidity	20 - 85 % non-condensing, up to 98 % when stored								
Viscosity	2 - 424 mm ² /s particle counting with viscosity measurement								
Material compatibility	Mineral oils, Skydrol™, environmentally compatible pressure fluids and phosphate esters								
Pressure medium	CO ₂ liquid (1 cartridge for about 60 oil samples), or pressurized shop air								
Sample bottles	100 ml								
System properties	Metal housing / Carry handle and shoulder strap / Universal power adapter/charger (90 - 240 VAC) Built-in thermal printer / LCD-display and keyboard / Memory for 500 samples / RS232C-interface Tube connector for filtered and dry pressurized shop air / Exchangeable CO ₂ -gas cartridges, refillable, 100 g filling NiMH-battery, computer controlled recharging for extended battery life Digitaloutput 0-5VDC / < 20 mA, potential-free output 0-5VDC / Online-adapter with Minimes™ tubing M16x2								
Operating modes	Bottle sample analysis (4 - 7 bar); online-analysis (0,5 - 420 bar); Monitoring of ECOLINE UMP-045 by ARGO-HYTOS								
Software (optional)	PODSWare for download, storage and management of PODS Pro data under Windows 9X/Me/2000 and XP								
Weight	8,5 kg								
Dimensions	(B x H x T) 330 x 350 x 200 mm								