Hydraulic oil filtration test on the SCHULER SMG press

1.Measurement

Date:	20.03.2014			
Place of measurement:	Line 2, press 3			
	Before installation of the DELTA TECHNOLOGY filter system			
Instrument:	PAMAS S 40			
Measurement modus:	Low pressure measurement			
Result:	**4µ-class**	**6µ-class**	**14µ-class**	
Atomic number ISO 4406	**18**	**16**	**13**	
Particle sized:				
from	130.000	32.000	4.000	according to ISO 4406
up to	250.000	64.000	8.000	according to ISO 4406
Average value (mathematical)	190.000	48.000	6.000	

2.Measurement

Date:	30.04.2014			
Place of measurement:	Line 2, press 3			
	After about 6 weeks of use of the DELTA TECHNOLOGY filter system on press 3			
Instrument:	PAMAS S 40			
Measurement modus:	Low pressure measurement			
Result:	**4µ-class**	**6µ-class**	**14µ-class**	
Atomic number ISO 4406	**12**	**10**	**7**	
Particle sized:				
from	2.000	500	64	according to ISO 4406
up to	4.000	1.000	130	according to ISO 4406

Average value (mathematical)	3.000	750	97

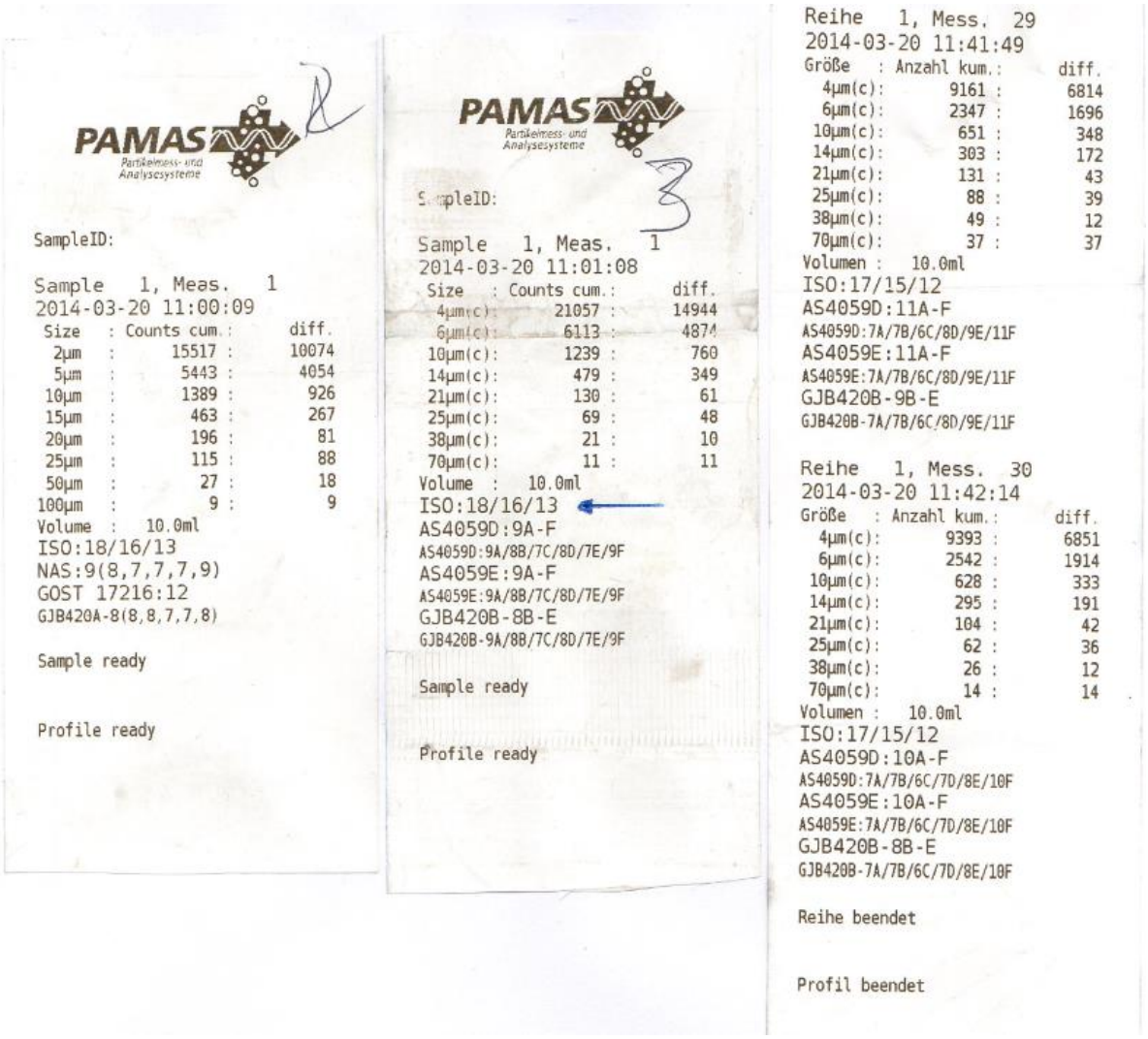
Change

Date: 30.04.2014

	4µ-class	6µ-class	14µ-class
1.measurement of average value	190000	48000	6000
2.measurement of average value	3000	750	97
Change	-187.000	-47.250	-5.903
	98.42 %	98.44 %	98.38 %

Measurement 20.03.2014 (with existing filters)

Press 2 Press 3 Press 4



PAMAS
Partikelmess- und Analysesysteme

SampleID:

Sample 1, Meas. 1
2014-03-20 11:00:09

Size	Counts cum.	diff.
2µm	15517	10074
5µm	5443	4054
10µm	1389	926
15µm	463	267
20µm	196	81
25µm	115	88
50µm	27	18
100µm	9	9

Volume : 10.0ml
ISO:18/16/13
NAS:9(8,7,7,7,9)
GOST 17216:12
GJB420A-8(8,8,7,7,8)

Sample ready

Profile ready

PAMAS
Partikelmess- und Analysesysteme

SampleID:

Sample 1, Meas. 1
2014-03-20 11:01:08

Size	Counts cum.	diff.
4µm(c):	21057	14944
6µm(c):	6113	4874
10µm(c):	1239	760
14µm(c):	479	349
21µm(c):	130	61
25µm(c):	69	48
38µm(c):	21	10
70µm(c):	11	11

Volume : 10.0ml
ISO:18/16/13
AS4059D:9A-F
AS4059D:9A/8B/7C/8D/7E/9F
AS4059E:9A-F
AS4059E:9A/8B/7C/8D/7E/9F
GJB420B-8B-E
GJB420B-9A/8B/7C/8D/7E/9F

Sample ready

Profile ready

Reihe 1, Mess. 29
2014-03-20 11:41:49

Größe	Anzahl kum.	diff.
4µm(c):	9161	6814
6µm(c):	2347	1696
10µm(c):	651	348
14µm(c):	303	172
21µm(c):	131	43
25µm(c):	88	39
38µm(c):	49	12
70µm(c):	37	37

Volumen : 10.0ml
ISO:17/15/12
AS4059D:11A-F
AS4059D:7A/7B/6C/8D/9E/11F
AS4059E:11A-F
AS4059E:7A/7B/6C/8D/9E/11F
GJB420B-9B-E
GJB420B-7A/7B/6C/8D/9E/11F

Reihe 1, Mess. 30
2014-03-20 11:42:14

Größe	Anzahl kum.	diff.
4µm(c):	9393	6851
6µm(c):	2542	1914
10µm(c):	628	333
14µm(c):	295	191
21µm(c):	104	42
25µm(c):	62	36
38µm(c):	26	12
70µm(c):	14	14

Volumen : 10.0ml
ISO:17/15/12
AS4059D:10A-F
AS4059D:7A/7B/6C/7D/8E/10F
AS4059E:10A-F
AS4059E:7A/7B/6C/7D/8E/10F
GJB420B-8B-E
GJB420B-7A/7B/6C/7D/8E/10F

Reihe beendet

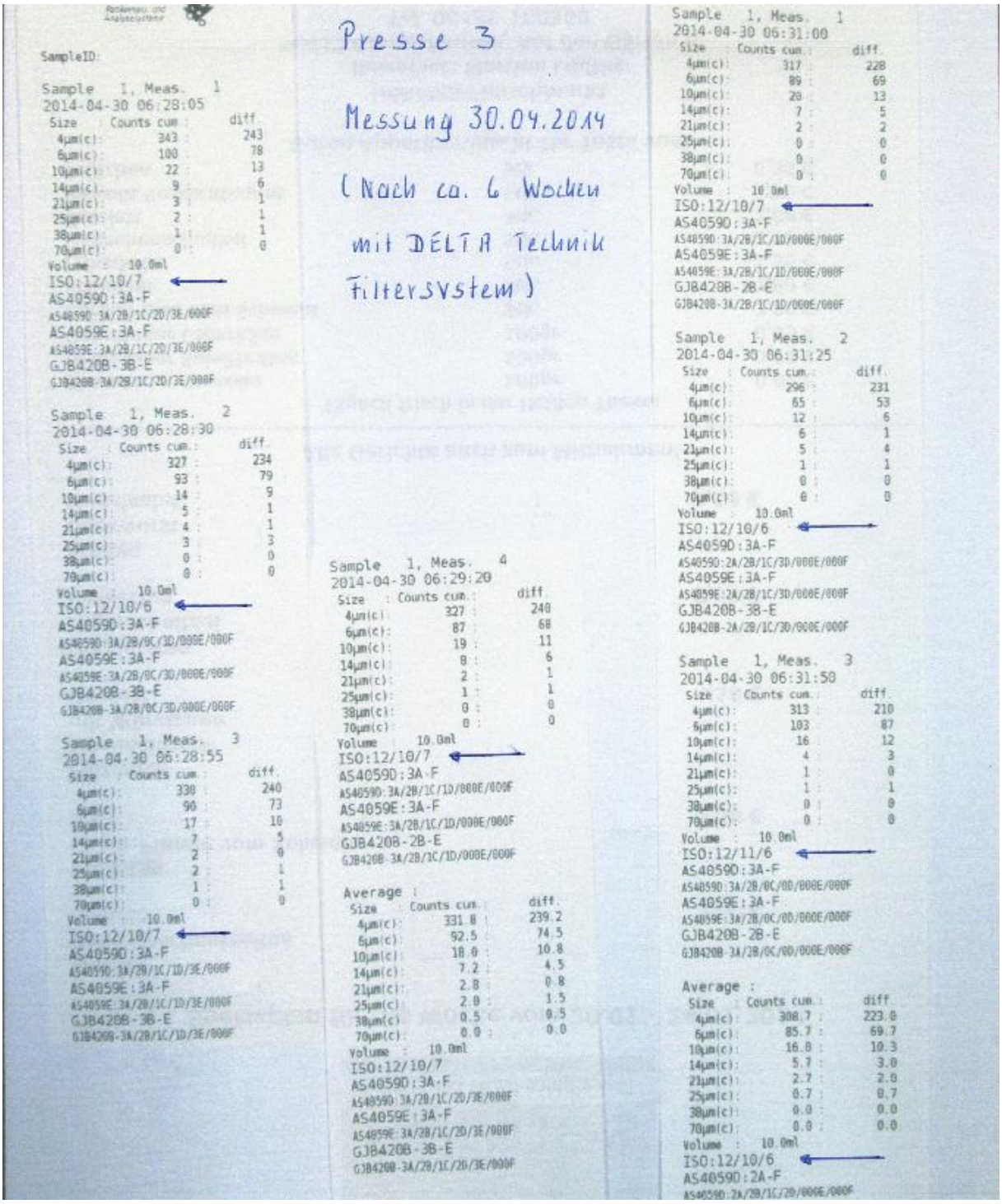
Profil beendet

Installation of DELTA TECHNOLOGY filter system in press 3

Oil sample Press 3

Measurement 30.04.2014

(After about 6 weeks with DELTA TECHNOLOGY filter system)



Presse 3

Messung 30.04.2014

(Nach ca. 6 Wochen mit DELTA Technik Filtersystem)

SampleID:

Sample 1, Meas. 1
2014-04-30 06:28:05

Size	Counts cum.	diff.
4µm(c):	343	243
6µm(c):	100	78
10µm(c):	22	13
14µm(c):	9	6
21µm(c):	3	1
25µm(c):	2	1
38µm(c):	1	1
70µm(c):	0	0

Volume : 10.0ml
ISO:12/10/7
AS4059D:3A-F
AS4059D:3A/2B/1C/2D/3E/000F
AS4059E:3A-F
AS4059E:3A/2B/1C/2D/3E/000F
GJB420B-3B-E
GJB420B-3A/2B/1C/2D/3E/000F

Sample 1, Meas. 2
2014-04-30 06:28:30

Size	Counts cum.	diff.
4µm(c):	327	234
6µm(c):	93	79
10µm(c):	14	9
14µm(c):	5	1
21µm(c):	4	1
25µm(c):	3	3
38µm(c):	0	0
70µm(c):	0	0

Volume : 10.0ml
ISO:12/10/6
AS4059D:3A-F
AS4059D:3A/2B/0C/3D/000E/000F
AS4059E:3A-F
AS4059E:3A/2B/0C/3D/000E/000F
GJB420B-3B-E
GJB420B-3A/2B/0C/3D/000E/000F

Sample 1, Meas. 3
2014-04-30 06:28:55

Size	Counts cum.	diff.
4µm(c):	330	240
6µm(c):	90	73
10µm(c):	17	10
14µm(c):	7	5
21µm(c):	2	0
25µm(c):	2	1
38µm(c):	1	1
70µm(c):	0	0

Volume : 10.0ml
ISO:12/10/7
AS4059D:3A-F
AS4059D:3A/2B/1C/1D/3E/000F
AS4059E:3A-F
AS4059E:3A/2B/1C/1D/3E/000F
GJB420B-3B-E
GJB420B-3A/2B/1C/1D/3E/000F

Sample 1, Meas. 4
2014-04-30 06:29:20

Size	Counts cum.	diff.
4µm(c):	327	240
6µm(c):	87	68
10µm(c):	19	11
14µm(c):	8	6
21µm(c):	2	1
25µm(c):	1	1
38µm(c):	0	0
70µm(c):	0	0

Volume : 10.0ml
ISO:12/10/7
AS4059D:3A-F
AS4059D:3A/2B/1C/1D/000E/000F
AS4059E:3A-F
AS4059E:3A/2B/1C/1D/000E/000F
GJB420B-2B-E
GJB420B-3A/2B/1C/1D/000E/000F

Average :

Size	Counts cum.	diff.
4µm(c):	331.8	239.2
6µm(c):	92.5	74.5
10µm(c):	18.0	10.8
14µm(c):	7.2	4.5
21µm(c):	2.8	0.8
25µm(c):	2.0	1.5
38µm(c):	0.5	0.5
70µm(c):	0.0	0.0

Volume : 10.0ml
ISO:12/10/7
AS4059D:3A-F
AS4059D:3A/2B/1C/2D/3E/000F
AS4059E:3A-F
AS4059E:3A/2B/1C/2D/3E/000F
GJB420B-3B-E
GJB420B-3A/2B/1C/2D/3E/000F

Sample 1, Meas. 1
2014-04-30 06:31:00

Size	Counts cum.	diff.
4µm(c):	317	228
6µm(c):	89	69
10µm(c):	20	13
14µm(c):	7	5
21µm(c):	2	2
25µm(c):	0	0
38µm(c):	0	0
70µm(c):	0	0

Volume : 10.0ml
ISO:12/10/7
AS4059D:3A-F
AS4059D:3A/2B/1C/1D/000E/000F
AS4059E:3A-F
AS4059E:3A/2B/1C/1D/000E/000F
GJB420B-2B-E
GJB420B-3A/2B/1C/1D/000E/000F

Sample 1, Meas. 2
2014-04-30 06:31:25

Size	Counts cum.	diff.
4µm(c):	296	231
6µm(c):	65	53
10µm(c):	12	6
14µm(c):	6	1
21µm(c):	5	4
25µm(c):	1	1
38µm(c):	0	0
70µm(c):	0	0

Volume : 10.0ml
ISO:12/10/6
AS4059D:3A-F
AS4059D:2A/2B/1C/3D/000E/000F
AS4059E:3A-F
AS4059E:2A/2B/1C/3D/000E/000F
GJB420B-3B-E
GJB420B-2A/2B/1C/3D/000E/000F

Sample 1, Meas. 3
2014-04-30 06:31:50

Size	Counts cum.	diff.
4µm(c):	313	210
6µm(c):	103	87
10µm(c):	16	12
14µm(c):	4	3
21µm(c):	1	0
25µm(c):	1	1
38µm(c):	0	0
70µm(c):	0	0

Volume : 10.0ml
ISO:12/11/6
AS4059D:3A-F
AS4059D:3A/2B/0C/0D/000E/000F
AS4059E:3A-F
AS4059E:3A/2B/0C/0D/000E/000F
GJB420B-2B-E
GJB420B-3A/2B/0C/0D/000E/000F

Average :

Size	Counts cum.	diff.
4µm(c):	308.7	223.0
6µm(c):	85.7	69.7
10µm(c):	16.0	10.3
14µm(c):	5.7	3.0
21µm(c):	2.7	2.0
25µm(c):	0.7	0.7
38µm(c):	0.0	0.0
70µm(c):	0.0	0.0

Volume : 10.0ml
ISO:12/10/6
AS4059D:2A-F
AS4059D:2A/2B/1C/2D/000E/000F

DELTA TECHNOLOGY
filter systems Ltd.

Purity classes according to ISO 4406

Number of particles in 100 ml oil | Atomic number | Average value | Respective
More than | up to and including | ISO 4406 | | improvement in %

Anzahl Partikel in 100 ml Öl		Ordnungszahl	Mittelwert	Jeweilige
Mehr als	bis einschließlich	ISO 4406		Verbesserung in %
250.000.000		> 28		
130.000.000	250.000.000	28	190.000.000	
64.000.000	130.000.000	27	97.000.000	48,9%
32.000.000	64.000.000	26	48.000.000	50,5%
16.000.000	32.000.000	25	24.000.000	50,0%
8.000.000	16.000.000	24	12.000.000	50,0%
4.000.000	8.000.000	23	6.000.000	50,0%
2.000.000	4.000.000	22	3.000.000	50,0%
1.000.000	2.000.000	21	1.500.000	50,0%
500.000	1.000.000	20	750.000	50,0%
250.000	500.000	19	375.000	50,0%
130.000	250.000	18	190.000	49,3%
64.000	130.000	17	97.000	48,9%
32.000	64.000	16	48.000	50,5%
16.000	32.000	15	24.000	50,0%
8.000	16.000	14	12.000	50,0%
4.000	8.000	13	6.000	50,0%
2.000	4.000	12	3.000	50,0%
1.000	2.000	11	1.500	50,0%
500	1.000	10	750	50,0%
250	500	9	375	50,0%
130	250	8	190	49,3%
64	130	7	97	48,9%
32	64	6	48	50,5%
16	32	5	24	50,0%
8	16	4	12	50,0%
4	8	3	6	50,0%
2	4	2	3	50,0%
1	2	1	2	50,0%
0	1	0	1	66,7%