

## Filtration of cutting oil, directly on the turning machine

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### Basic data

Oil:	BEKANOL Nirottec 8010, cutting oil
Viscosity at 40°C:	11 mm <sup>2</sup> /s
Flash point:	170°C
Sampling point:	Turning machine, directly on the inflow in front of the work piece
Oil volume on the machine:	about 500 liter
Place of measurement:	OelCheck-laboratory
Instrument:	OelCheck-laboratory particle counter
Measurement modus:	ISO 4406 (1999)

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### 1.Measurement: (before filtration)

Date:	18.06.2014			
Result:		<b>2μ-class</b>	<b>5μ-class</b>	<b>15μ-class</b>
<b>Atomic number ISO 4406 (1999)</b>		<b>N/A</b>	<b>24</b>	<b>17</b>
Number of particles:		24.352.800	9.841.420	97.535

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### 2.Measurement: (after filtration)

Date:	18.06.2014			
Ultra fine filter system:	DELTA TECHNOLOGY M 1401			
Filter element:	6524			
Filter duration:	about 10 hours			
Result:		<b>2μ-class</b>	<b>5μ-class</b>	<b>15μ-class</b>
<b>Atomic number ISO 4406 (1999)</b>		<b>N/A</b>	<b>19</b>	<b>13</b>

Number of particles:	1.659.930	481.198	6.716
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### Change

	<u>2<math>\mu</math>-class</u>	<u>5<math>\mu</math>-class</u>	<u>15<math>\mu</math>-class</u>
Before	24.352.800	9.841.420	97.535
After	1.659.930	481.198	6.716
Change, absolute	-22.692.870	-9.360.222	-90.819
Change, %	-93.18 %	-95.11 %	-93.11 %

## LABORATORY REPORT

Name of sample

Number of current sample

Machine type: No details  
Manufacturer: No details  
Name of the oil: No details

**Before**

Diagnosis on the microscopic particle count  
As agreed we have carried out a microscopic  
particle count.  
Dipl.-Ing. (FH) Klaus Turnwald

**Evaluation**

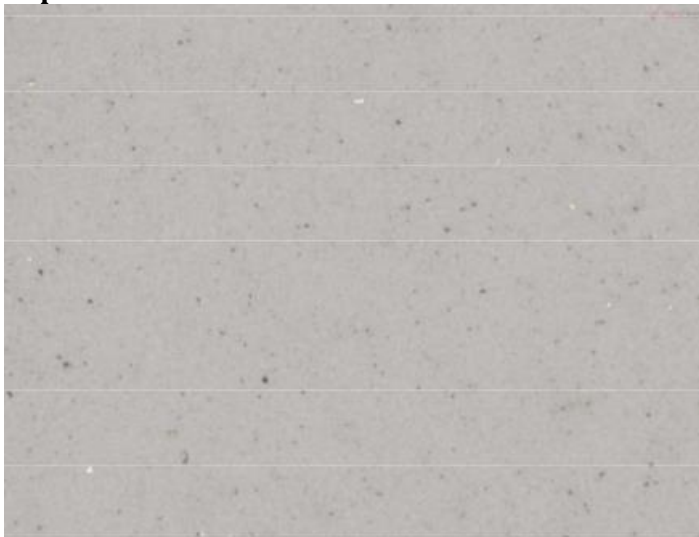
**unvalued**

ANALYSIS RESULTS	Current sample
LABORATORY NUMBER	8038264
Date of investigation	18.06.2014
Date of sampling	-
Date of last oil change	-
Refilling amount since change	-
Duration since change	-
Whole duration	-
Changing of oil	-

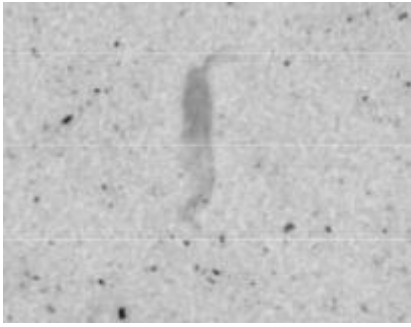
### Olympus particle analysis

Purity class	ISO 4406 (1999)	-/24/17
>5µm	Number/100ml	9841420
>15µm	Number/100ml	97535

**Representative section from the test membrane**



Largest particle



Test membrane



Description of the test methods and standards: [www.oelcheck.de](http://www.oelcheck.de)

# LABORATORY REPORT

Name of sample

Number of current sample

Machine type: No details  
Manufacturer: No details  
Name of the oil: No details

Detailed information on the microscopic particle count

## Before

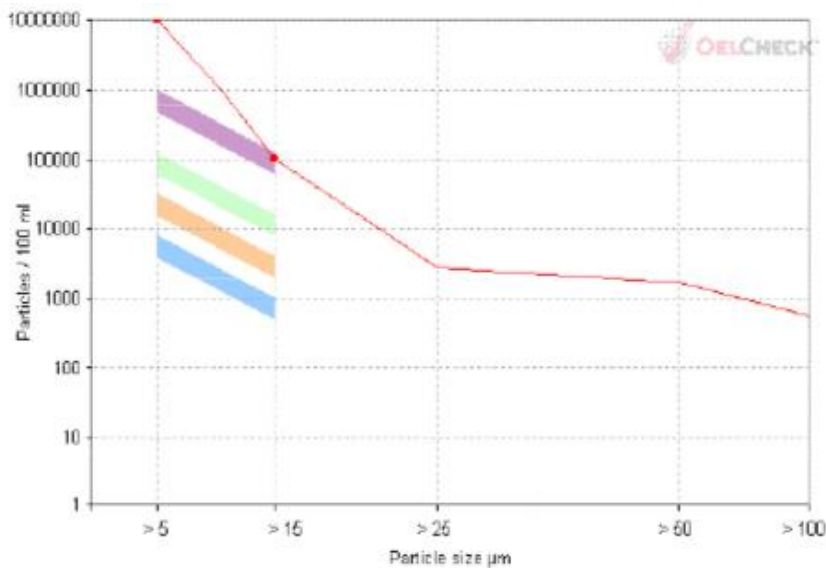
### Measurement results

Purity class	ISO 4406 (1999)	- /24/17
>2µm	Number/100ml	24352800
>5µm	Number/100ml	9841420
>10µm	Number/100ml	942303
>15µm	Number/100ml	97535
>25µm	Number/100ml	2665
>50µm	Number/100ml	1599
>100µm	Number/100ml	533
>150µm	Number/100ml	0
>250µm	Number/100ml	0
>500µm	Number/100ml	0
Weight increase of the filter	Weight-%	0.0032

### Analysis parameters

Filtrated volume	ml	3.0
Membrane fineness	µm	1.2
Enlargement		10
Detected area	mm <sup>2</sup>	78.552
Passed through area	mm <sup>2</sup>	1256.000

Particle distribution (determined microscopically)



## Typical purity classes

-  Planeten- / Stirnradgetriebe
-  Gleitlager in Turbinenanlagen
-  Proportionalventilhydraulik / Wälzlager Papiermaschinen
-  Servoventilhydraulik

**Planetary-/ spur gear**

**Plain bearings in turbine units**

**Proportional valve hydraulic / roller bearing paper machines**

**Servo valve hydraulic**

**Information: Recipient and allocation were blackened for reasons of security!  
Originals accessible**

## LABORATORY REPORT

Name of sample

Number of current sample

Machine type: No details  
Manufacturer: No details  
Name of the oil: No details

### Afterwards

Diagnosis on the microscopic particle count  
As agreed we have carried out a microscopic  
particle count.  
Dipl.-Ing. (FH) Klaus Turnwald

### Evaluation

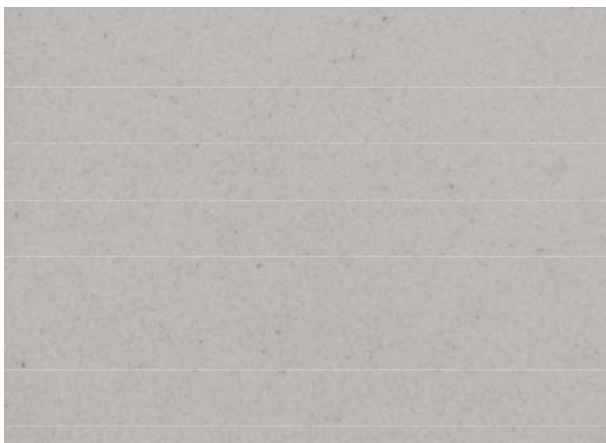
**unvalued**

ANALYSIS RESULTS	Current sample
LABORATORY NUMBER	8038263
Date of investigation	18.06.2014
Date of sampling	-
Date of last oil change	-
Refilling amount since change	-
Duration since change	-
Whole duration	-
Changing of oil	-

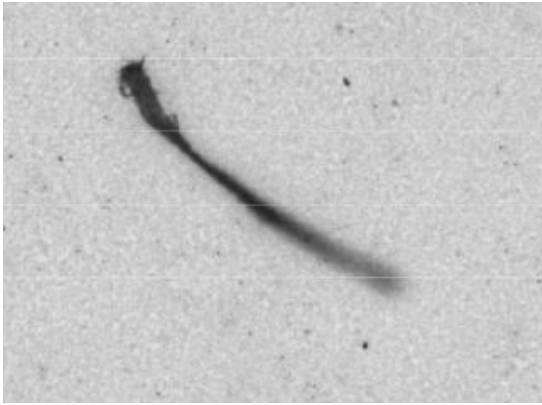
#### Olympus particle analysis

Purity class	ISO 4406 (1999)	-/19/13
>5µm	Number/100ml	481198
>15µm	Number/100ml	6716

Representative section from the test membrane



Largest particle



Test membrane





# LABORATORY REPORT

Name of sample

Number of current sample

Machine type: No details  
Manufacturer: No details  
Name of the oil: No details

## Afterwards

Detailed information on the microscopic particle count

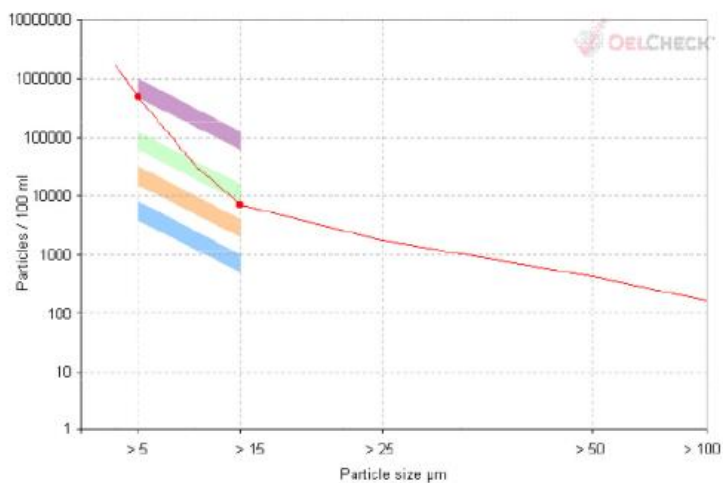
### Measurement results

Purity class	ISO 4406 (1999)	- /19/13
>2µm	Number/100ml	1659930
>5µm	Number/100ml	481198
>10µm	Number/100ml	32538
>15µm	Number/100ml	6716
>25µm	Number/100ml	1679
>50µm	Number/100ml	400
>100µm	Number/100ml	160
>150µm	Number/100ml	160
>250µm	Number/100ml	160
>500µm	Number/100ml	0
Weight increase of the filter	Weight-%	0.0040



### Analysis parameters

Filtrated volume	ml	20.0
Membrane fineness	µm	1.2
Enlargement		10
Detected area	mm <sup>2</sup>	78.552
Passed through area	mm <sup>2</sup>	1256.000

Particle distribution (determined microscopically)



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