

# **OIL ANALYSIS REPORT**

SAMPLE INCODMATION

Sample Rating Trend



Aachine Id 2758344 (S/N 1086)

#### Component Compressor Fluid KAESER SIGMA (OEM) M-460 (--- GAL)

## DIAGNOSIS

#### Recommendation

No corrective action is recommended at this time. The filter change at the time of sampling has been noted. Resample at the next service interval to monitor. We were unable to perform a particle count due to a high concentration of particles present in this sample.

#### Wear

All component wear rates are normal.

#### Contamination

Moderate concentration of visible dirt/debris present in the oil.

## Fluid Condition

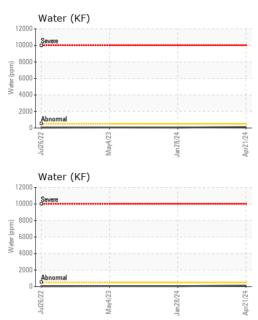
The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

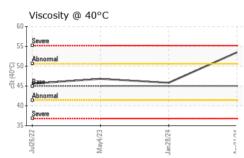
Sample NumberClient InfoKCPA012789KCPA003415KCPA002828Sample DateClient Info21 Apr 202428 Jan 202404 May 2023Machine AgehrsClient Info000Oil AgeLient InfoNC ChangedN/AN/ASample StatusClient InfoNC ChangedN/AABNORMALWEAR METALSmethodImmuseNorte AndN/AABNORMALIronppmASTM 05165>50001ChromiumppmASTM 05165>50001NickelppmASTM 05165>50001SilverppmASTM 05165>501111LeadppmASTM 05165>101111CopperppmASTM 05165>101111VanadiumppmASTM 05165>101100ADDITIVESmethodImit/basecurrontNiktory100ADITIVESmethodSitt 0516510<13210MaganeseppmASTM 05165100<13210May adumppmASTM 0516510<1322MandanppmASTM 0516510<1321MandanppmASTM 0516510<1322Mandanppm	SAMPLE INFORM	<b>IATION</b>	method	limit/base	current	history1	history2
Machine Age   hrs   Client Info   138016   136112   129778     Oil Age   irrs   Client Info   0   0   0   0     Sample Status   a   imit/base   current   NixA   N/A     WEAR METALS   method   limit/base   current   history1   history2     Iron   ppm   ASTM D5185m   >50   0   0   1     Nickel   ppm   ASTM D5185m   >30   1   <1   <1     Titanium   ppm   ASTM D5185m   >32   <1   0   0     Silver   ppm   ASTM D5185m   >32   <1   <1   1     Cadadium   ppm   ASTM D5185m   >30   1   <1   1     Cadadium   ppm   ASTM D5185m   >10   1   <1   0     Cadamium   ppm   ASTM D5185m   0   0   0   0     ADDITIVES   method   limit/base   current   history1   hi	Sample Number		Client Info		KCPA012789	KCPA003415	KCPA002828
Oil Age   hrs   Client Info   Not Changed   N/A   N/A     Sample Status   I   Image   Not Changed   N/A   N/A     WEAR METALS   method   limit/base   current   history1   history2     Iron   ppm   ASTM 05185m   >50   0   0   1     Othormium   ppm   ASTM 05185m   >30   1   <1   <1     Nickel   ppm   ASTM 05185m   >30   1   <1   0   <1     Auminum   ppm   ASTM 05185m   >10   2   <1   1   <1   0     Auminum   ppm   ASTM 05185m   >10   1   <1   <1   <1     Copper   ppm   ASTM 05185m   >10   1   <1   <1   <1     Vanadium   ppm   ASTM 05185m   >10   1   <1   <1   <1   <1   <1   <1   <1   <1   <1   <1   <1   <1   <1   <1 <th>Sample Date</th> <th></th> <th>Client Info</th> <th></th> <th>21 Apr 2024</th> <th>28 Jan 2024</th> <th>04 May 2023</th>	Sample Date		Client Info		21 Apr 2024	28 Jan 2024	04 May 2023
Oil Changed Sample Status   Client Info   Not Changd ABNORMAL   N/A   N/A     WEAR METALS   method   limit/base   current   history1   history2     Iron   ppm   ASTM D5185m   >50   0   0   1     Chromium   ppm   ASTM D5185m   >30   -1   <1   <1     Nickel   ppm   ASTM D5185m   >33   -1   <1   <1     Intanium   ppm   ASTM D5185m   >33   <1   <1   <1     Aluminum   ppm   ASTM D5185m   >30   2   <1   0   0     Aluminum   ppm   ASTM D5185m   >10   1   2   1   1     Lead   ppm   ASTM D5185m   >10   1   <1   0   0     Vanadium   ppm   ASTM D5185m   >10   1   <1   0     Adminum   ppm   ASTM D5185m   0   1   <1   0     Admium   ppm   ASTM D5185m	Machine Age	hrs	Client Info		138016	136112	129778
Sample Status   Imate of the image of the im	Oil Age	hrs	Client Info		0	0	0
WEAR METALS   method   limit/base   current   history1   history2     Iron   ppm   ASTM D5185m   >50   0   0   1     Nickel   ppm   ASTM D5185m   >3   1   <1   <1     Nickel   ppm   ASTM D5185m   >3   <1   0   0     Silver   ppm   ASTM D5185m   >2   <1   1   0     Aluminum   ppm   ASTM D5185m   >10   1   2   1   1     Lead   ppm   ASTM D5185m   >10   1   1   <1   0     Vanadium   ppm   ASTM D5185m   >10   1   1   <1   0     Adminum   ppm   ASTM D5185m   0   0   0   0   0     Adminum   ppm   ASTM D5185m   0   1   <1   0   0     Manganese   ppm   ASTM D5185m   0   3   <1   0   0   0   0 <t< th=""><th>Oil Changed</th><th></th><th>Client Info</th><th></th><th>Not Changd</th><th>N/A</th><th>N/A</th></t<>	Oil Changed		Client Info		Not Changd	N/A	N/A
Iron   ppm   ASTM D5185m   >50   0   0   1     Nickel   ppm   ASTM D5185m   >30   -1   0   <1     Nickel   ppm   ASTM D5185m   >3   1   <1   <1     Titanium   ppm   ASTM D5185m   >3   <1   0   0     Silver   ppm   ASTM D5185m   >10   2   <1   1   0     Aluminum   ppm   ASTM D5185m   >10   1   2   1   0     Copper   ppm   ASTM D5185m   >50   9   8   4   1     Vanadium   ppm   ASTM D5185m   >50   9   8   4   1   0     ADDITIVES   method   limit/base   current   history1   history2     Boron   ppm   ASTM D5185m   0   1   <1   0     Magnaese   ppm   ASTM D5185m   0   1   <1   0     Manganesium   ppm <th>Sample Status</th> <th></th> <th></th> <th></th> <th></th> <th>NORMAL</th> <th>ABNORMAL</th>	Sample Status					NORMAL	ABNORMAL
Chromium   ppm   ASTM D5185m   >10   <1	WEAR METALS		method	limit/base	current	history1	history2
Nickel   ppm   ASTM D5185m   >3   1   <1	Iron	ppm	ASTM D5185m	>50	0	0	1
Titanium   ppm   ASTM D5185m   >3   <1	Chromium	ppm	ASTM D5185m	>10	<1	0	<1
Silver   ppm   ASTM D5185m   >2   <1	Nickel	ppm	ASTM D5185m	>3	1	<1	<1
Aluminum   ppm   ASTM D5185m   >10   2   <1	Titanium	ppm	ASTM D5185m	>3	<1	0	0
Lead   ppm   ASTM D5185m   >10   1   2   1     Copper   ppm   ASTM D5185m   >50   9   8   4     Tin   ppm   ASTM D5185m   >10   1   1   <1	Silver	ppm	ASTM D5185m	>2	<1	<1	0
Copper   ppm   ASTM D5185m   >50   9   8   4     Tin   ppm   ASTM D5185m   >10   1   1   <1     Vanadium   ppm   ASTM D5185m   >10   1   1   <1     Cadmium   ppm   ASTM D5185m   <1   0   0     ADDITIVES   method   limit/base   current   history1   history2     Boron   ppm   ASTM D5185m   0   0   0   0     Malganesian   ppm   ASTM D5185m   0   1   <1   0     Magnesian   ppm   ASTM D5185m   0   1   <1   0     Magnesian   ppm   ASTM D5185m   0   2   0   0     Calcium   ppm   ASTM D5185m   0   2   0   0     Sulfur   ppm   ASTM D5185m   0   2   0   0     Sulfur   ppm   ASTM D5185m   25   1   <1   <1	Aluminum	ppm	ASTM D5185m	>10	2	<1	1
Tin ppm ASTM D5185m >10 1 1 <1	Lead	ppm	ASTM D5185m	>10	1	2	1
Vanadium   ppm   ASTM D5185m   <1	Copper	ppm	ASTM D5185m	>50	9	8	4
Cadmium   ppm   ASTM D5185m   <1	Tin	ppm	ASTM D5185m	>10	1	1	<1
ADDITIVES   method   limit/base   current   history1   history2     Boron   ppm   ASTM D5185m   0   0   0   0     Barium   ppm   ASTM D5185m   90   <1   0   0     Molybdenum   ppm   ASTM D5185m   0   1   <1   0     Magnesee   ppm   ASTM D5185m   100   <1   3   2     Calcium   ppm   ASTM D5185m   100   <1   3   2     Calcium   ppm   ASTM D5185m   100   3   <1   0     Phosphorus   ppm   ASTM D5185m   0   2   0   0     Sulfur   ppm   ASTM D5185m   23500   20759   16002   20974     CONTAMINANTS   method   limit/base   current   history1   history2     Silicon   ppm   ASTM D5185m   20   1   4   2     Vater   ppm   ASTM D6185m   20   1	Vanadium	ppm	ASTM D5185m		<1	0	0
Boron   ppm   ASTM D5185m   0   0   0   0     Barium   ppm   ASTM D5185m   90   <1	Cadmium	ppm	ASTM D5185m		<1	<1	0
Barium   ppm   ASTM D5185m   90   <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum   ppm   ASTM D5185m   0   1   <1	Boron	ppm	ASTM D5185m	0	0	0	0
Marganese   ppm   ASTM D5185m   <1	Barium	ppm	ASTM D5185m	90	<1	0	0
Magnesium   ppm   ASTM D5185m   100   <1	Molybdenum	ppm	ASTM D5185m	0	1	<1	0
Calcium   ppm   ASTM D5185m   0   3   <1	Manganese	ppm	ASTM D5185m		<1	2	<1
Phosphorus   ppm   ASTM D5185m   0   2   0   0     Zinc   ppm   ASTM D5185m   0   0   0   0   0     Sulfur   ppm   ASTM D5185m   23500   20759   16002   20974     CONTAMINANTS   method   limit/base   current   history1   history2     Silicon   ppm   ASTM D5185m   >25   1   <1	Magnesium	ppm	ASTM D5185m	100	<1	3	2
Zinc   ppm   ASTM D5185m   0   0   0   0   0     Sulfur   ppm   ASTM D5185m   23500   20759   16002   20974     CONTAMINANTS   method   limit/base   current   history1   history2     Silicon   ppm   ASTM D5185m   >25   1   <1   <1     Sodium   ppm   ASTM D5185m   >25   1   <1   <1     Sodium   ppm   ASTM D5185m   >20   1   4   2     Potassium   ppm   ASTM D6304   >0.05   0.013   0.004   0.005     ppm Water   ppm   ASTM D6304   >500   135   50   59.7     FLUID CLEANLINESS   method   limit/base   current   history1   history2     Particles >4µm   ASTM D7647   =   1849   36929     Particles >6µm   ASTM D7647   >80   =   177   173     Particles >21µm   ASTM D7647   >20   =	Calcium	ppm	ASTM D5185m	0	3	<1	0
SulfurppmASTM D5185m23500207591600220974CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>251<1<1SodiumppmASTM D5185m>20142PotassiumppmASTM D6304>0.050.0130.0040.005ppm Water%ASTM D6304>5001355059.7FLUID CLEANLINESSmethodlimit/basecurrenthistory1history2Particles >4µmASTM D7647>1300184936929Particles >6µmASTM D7647>130017173Particles >14µmASTM D7647>20435Particles >21µmASTM D7647>2002Particles >38µmASTM D7647>300Oli CleanlinessISO 4406 (c)>/17/1318/16/1122/20/15FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2	Phosphorus	ppm	ASTM D5185m	0	2	0	0
CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>251<1<1SodiumppmASTM D5185m>20142PotassiumppmASTM D5185m>20142Water%ASTM D6304>0.050.0130.0040.005ppm WaterppmASTM D6304>5001355059.7FLUID CLEANLINESSmethodlimit/basecurrenthistory1history2Particles >4µmASTM D7647184936929Particles >6µmASTM D7647>13003657553Particles >6µmASTM D7647>8017173Particles >38µmASTM D7647>20435Particles >38µmASTM D7647>300Ol CleanlinessISO 4406 (c)>/17/1318/16/1122/20/15FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2	Zinc	ppm	ASTM D5185m	0	0	0	0
Silicon ppm ASTM D5185m >25 1 <1 <1   Sodium ppm ASTM D5185m 0 2 2   Potassium ppm ASTM D5185m >20 1 4 2   Water % ASTM D6304 >0.05 0.013 0.004 0.005   ppm Water ppm ASTM D6304 >500 135 50 59.7   FLUID CLEANLINESS method limit/base current history1 history2   Particles >4µm ASTM D7647 >1300  1849 36929   Particles >6µm ASTM D7647 >80  17 173   Particles >14µm ASTM D7647 >20  44 35   Particles >21µm ASTM D7647 >20  44 35   Particles >38µm ASTM D7647 >4  0 2   Particles >71µm ASTM D7647 >3  0 0 0   Oil Cleanliness ISO 4406 (c) >/17/13  18/16/11 22/20/15	Sulfur	ppm	ASTM D5185m	23500	20759	16002	20974
Sodium   ppm   ASTM D5185m   0   2   2     Potassium   ppm   ASTM D5185m   >20   1   4   2     Water   %   ASTM D6304   >0.05   0.013   0.004   0.005     ppm Water   ppm   ASTM D6304   >500   135   50   59.7     FLUID CLEANLINESS   method   limit/base   current   history1   history2     Particles >4µm   ASTM D7647    1849   36929     Particles >6µm   ASTM D7647   >1300    1849   36929     Particles >6µm   ASTM D7647   >80    17   173     Particles >14µm   ASTM D7647   >80    17   173     Particles >21µm   ASTM D7647   >20    0   2     Particles >38µm   ASTM D7647   >3    0   2     Particles >71µm   ASTM D7647   >3    0   0     OI Cleanliness <td< th=""><th>CONTAMINANTS</th><th></th><th>method</th><th>limit/base</th><th>current</th><th>history1</th><th>history2</th></td<>	CONTAMINANTS		method	limit/base	current	history1	history2
Potassium   ppm   ASTM D5185m   >20   1   4   2     Water   %   ASTM D6304   >0.05   0.013   0.004   0.005     ppm Water   ppm   ASTM D6304   >500   135   50   59.7     FLUID CLEANLINESS   method   limit/base   current   history1   history2     Particles >4µm   ASTM D7647    1849   36929     Particles >6µm   ASTM D7647   >1300    3655   7553     Particles >14µm   ASTM D7647   >80    17   173     Particles >21µm   ASTM D7647   >20    44   35     Particles >38µm   ASTM D7647   >20    44   35     Particles >38µm   ASTM D7647   >4    0   2     Particles >71µm   ASTM D7647   >3    0   0     Oil Cleanliness   ISO 4406 (c)   >/17/13    18/16/11   22/20/15     FLUI		ppm		>25			
Water % ASTM D6304 >0.05 0.013 0.004 0.005   ppm Water ppm ASTM D6304 >500 135 50 59.7   FLUID CLEANLINESS method limit/base current history1 history2   Particles >4µm ASTM D7647  1849 36929   Particles >6µm ASTM D7647 >1300  365 7553   Particles >14µm ASTM D7647 >80  17 173   Particles >21µm ASTM D7647 >20  4 35   Particles >38µm ASTM D7647 >4  0 2   Particles >38µm ASTM D7647 >3  0 2   Particles >71µm ASTM D7647 >3  0 0   Oil Cleanliness ISO 4406 (c) >/17/13  18/16/11 22/20/15   FLUID DEGRADATION method limit/base current history1 history2		ppm			0		
ppm Water   ppm   ASTM D6304   >500   135   50   59.7     FLUID CLEANLINESS   method   limit/base   current   history1   history2     Particles >4µm   ASTM D7647    1849   36929     Particles >6µm   ASTM D7647   >1300    365   ▲ 7553     Particles >14µm   ASTM D7647   >80    17   ▲ 173     Particles >21µm   ASTM D7647   >20    44   ▲ 35     Particles >38µm   ASTM D7647   >4    0   2     Particles >71µm   ASTM D7647   >3    0   0     Oil Cleanliness   ISO 4406 (c)   >/17/13    18/16/11   ▲ 22/20/15     FLUID DEGRADATION   method   limit/base   current   history1   history2							
FLUID CLEANLINESSmethodlimit/basecurrenthistory1history2Particles >4µmASTM D7647184936929Particles >6µmASTM D7647>13003657553Particles >14µmASTM D7647>8017173Particles >21µmASTM D7647>204435Particles >38µmASTM D7647>402Particles >71µmASTM D7647>318/16/1122/20/15FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2		%					
Particles >4μm ASTM D7647  1849 36929   Particles >6μm ASTM D7647 >1300  365 7553   Particles >14μm ASTM D7647 >80  17 ▲ 173   Particles >21μm ASTM D7647 >20  4 35   Particles >21μm ASTM D7647 >20  4 35   Particles >38μm ASTM D7647 >4  0 2   Particles >71μm ASTM D7647 >3  0 0   Oil Cleanliness ISO 4406 (c) >/17/13  18/16/11 22/20/15   FLUID DEGRADATION method limit/base current history1 history2	ppm Water	ppm	ASTM D6304	>500	135	50	59.7
Particles >6μm ASTM D7647 >1300  365 ▲ 7553   Particles >14μm ASTM D7647 >80  17 ▲ 173   Particles >21μm ASTM D7647 >20  4 ▲ 35   Particles >38μm ASTM D7647 >4  0 2   Particles >38μm ASTM D7647 >3  0 0   Oil Cleanliness ISO 4406 (c) >/17/13  18/16/11 ▲ 22/20/15   FLUID DEGRADATION method limit/base current history1 history2	FLUID CLEANLIN	IESS	method	limit/base	current	history1	history2
Particles >14μm ASTM D7647 >80  17 ▲ 173   Particles >21μm ASTM D7647 >20  4 ▲ 35   Particles >38μm ASTM D7647 >4  0 2   Particles >71μm ASTM D7647 >3  0 0   Oil Cleanliness ISO 4406 (c) >/17/13  18/16/11 ▲ 22/20/15   FLUID DEGRADATION method limit/base current history1 history2							
Particles >21 μm   ASTM D7647   >20    4   ▲ 35     Particles >38μm   ASTM D7647   >4    0   2     Particles >71μm   ASTM D7647   >3    0   0     Oil Cleanliness   ISO 4406 (c)   >/17/13    18/16/11   ▲ 22/20/15     FLUID DEGRADATION   method   limit/base   current   history1   history2	Particles >6µm			>1300		365	<u> </u>
Particles >38μm   ASTM D7647   >4    0   2     Particles >71μm   ASTM D7647   >3    0   0     Oil Cleanliness   ISO 4406 (c)   >/17/13    18/16/11   22/20/15     FLUID DEGRADATION   method   limit/base   current   history1   history2							
Particles >71μm   ASTM D7647   >3    0   0     Oil Cleanliness   ISO 4406 (c)   >/17/13    18/16/11   22/20/15     FLUID DEGRADATION   method   limit/base   current   history1   history2							
Oil Cleanliness ISO 4406 (c) >/17/13  18/16/11 ▲ 22/20/15   FLUID DEGRADATION method limit/base current history1 history2							
FLUID DEGRADATION method limit/base current history1 history2	-						0
	Oil Cleanliness		ISO 4406 (c)	>/17/13		18/16/11	<b>A</b> 22/20/15
Acid Number (AN)   mg KOH/g   ASTM D8045   1.0   0.61   0.42   0.44	FLUID DEGRADA	TION	method	limit/base	current	history1	history2
	Acid Number (AN)	mg KOH/g	ASTM D8045	1.0	0.61	0.42	0.44

Contact/Location: SEAN NEVOLI - STRSAN Page 1 of 2



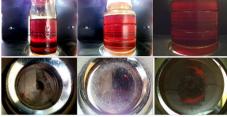
# **OIL ANALYSIS REPORT**



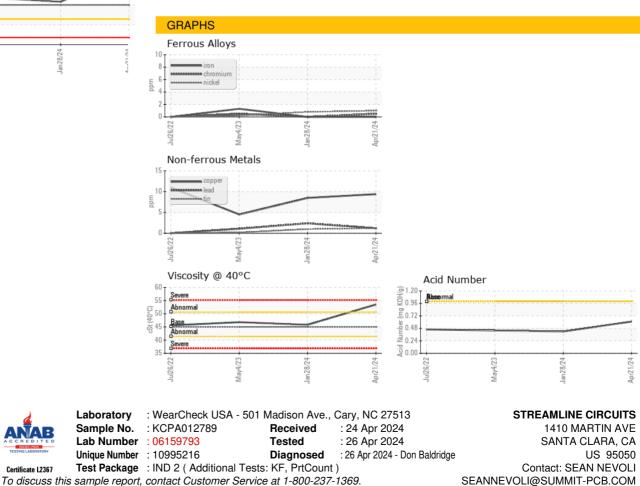


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	LIGHT	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	A MODER	NONE	LIGHT
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.05	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPER	<b>FIES</b>	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	45	53.5	45.8	46.8
SAMPLE IMAGES		method	limit/base	current	history1	history2

Color



Bottom



\* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Certificate 12367

Contact/Location: SEAN NEVOLI - STRSAN

Т:

F: