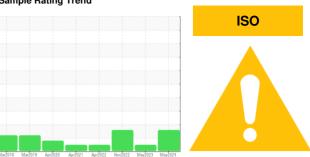


# **OIL ANALYSIS REPORT**

Sample Rating Trend



Machine Id

# KAESER AS 30 5944576 (S/N 1397)

Component Compressor

KAESER SIGMA (OEM) M-460 (--- GAL)

## **DIAGNOSIS**

### Recommendation

We recommend you service the filters on this component. Resample at the next service interval to monitor.

All component wear rates are normal.

### Contamination

There is a high amount of particulates present in the oil.

### **Fluid Condition**

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

Client Info			Mar2018 I	Mar2019 Apr2020 Apr20	21 Aprź022 Nov2022 May2023	May2024	
Client Info	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age   hrs	Sample Number		Client Info		KCPA017224	KCP53922	KCP47936D
Oil Age	Sample Date		Client Info		07 May 2024	03 May 2023	15 Nov 2022
Coli   Changed   Changed   Changed   ABNORMAL   NORMAL   ABNORMAL   NORMAL   ABNORMAL   NORMAL   ABNORMAL   NORMAL   ABNORMAL   NORMAL   NORMAL	Machine Age	hrs	Client Info		10276	7196	5757
MEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >50         0         0         <1	Oil Age	hrs	Client Info		0	3000	1733
WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >50         0         0         <1	Oil Changed		Client Info		N/A	Changed	Changed
Pron	Sample Status				ABNORMAL	NORMAL	ABNORMAL
Chromium         ppm         ASTM D5185m         >10         0         0         0           Nickel         ppm         ASTM D5185m         >3         0         0         0           Titanium         ppm         ASTM D5185m         >3         0         0         0           Silver         ppm         ASTM D5185m         >22         0         0         0           Aluminum         ppm         ASTM D5185m         >10         0         0         0           Lead         ppm         ASTM D5185m         >10         0         0         0           Copper         ppm         ASTM D5185m         >10         <1	WEAR METALS		method	limit/base	current	history1	history2
Nickel ppm ASTM D5185m >3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Iron	ppm	ASTM D5185m	>50	0	0	<1
Titanium ppm ASTM D5185m >3 0 0 0 0 0  Silver ppm ASTM D5185m >2 0 0 0 0 0  Aluminum ppm ASTM D5185m >10 0 0 0  Copper ppm ASTM D5185m >10 0 0 0  Copper ppm ASTM D5185m >50 14 9 15  Tin ppm ASTM D5185m >10 0 0 0  Cadmium ppm ASTM D5185m >10 0 0 0  Vanadium ppm ASTM D5185m >10 0 0 0  Cadmium ppm ASTM D5185m 0 0 0 0 0  ADDITIVES method limit/base current history1 history2  Boron ppm ASTM D5185m 0 0 0 0 0  Barium ppm ASTM D5185m 0 0 0 0 0  Barium ppm ASTM D5185m 0 0 0 0 0 0  Manganese ppm ASTM D5185m 1 0 0 0 0 0  Manganese ppm ASTM D5185m 1 0 0 0 0 0 0  Magnesium ppm ASTM D5185m 1 0 0 0 0 0 0  Calcium ppm ASTM D5185m 0 2 0 0 0 0  Sulfur ppm ASTM D5185m 0 2 2 0 23  Zinc ppm ASTM D5185m 0 2 2 0 23  Zinc ppm ASTM D5185m 0 0 9 2 2  Sulfur ppm ASTM D5185m 0 2 0 0 9 2  Sulfur ppm ASTM D5185m 0 0 0 9 2  Sulfur ppm ASTM D5185m 0 0 0 9 2  Foliation ppm ASTM D5185m 0 0 0 9 2  Sulfur ppm ASTM D5185m 0 0 0 9 2  Sulfur ppm ASTM D5185m 0 0 0 9 9 2  Foliation ppm ASTM D5185m 0 0 0 9 9 2  Sulfur ppm ASTM D5185m 0 0 0 9 9 2  Sulfur ppm ASTM D5185m 0 0 0 9 9 2  Foliation ppm ASTM D5185m 0 0 0 9 9 2  Sulfur ppm ASTM D5185m 0 0 0 9 9 2  Foliation ppm ASTM D5185m 0 0 0 9 9 2  Sulfur ppm ASTM D5185m 0 0 0 9 9 2  Sulfuc ppm ASTM D5185m 0 0 0 9 9 2  Foliation ppm ASTM D5185m 0 0 0 9 9 2  Foliation ppm ASTM D5185m 0 0 0 9 9 2  Foliation ppm ASTM D5185m 0 0 0 9 9 2  Foliation ppm ASTM D5185m 0 0 0 9 9 2  Foliation ppm ASTM D5185m 0 0 0 0 9 9 9.7  FLUID CLEANLINESS method limit/base current history1 history2  Particles >4µm ASTM D7647 >40 0 1557 23	Chromium	ppm	ASTM D5185m	>10	0	0	0
Silver	Nickel	ppm	ASTM D5185m	>3	0	0	0
Aluminum ppm ASTM D5185m >10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Titanium	ppm	ASTM D5185m	>3	0	0	0
Lead         ppm         ASTM D5185m         >10         0         0         0           Copper         ppm         ASTM D5185m         >50         14         9         15           Tin         ppm         ASTM D5185m         >0         -1         0         0           Vanadium         ppm         ASTM D5185m         0         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0         0           Boron         ppm         ASTM D5185m         0         0         0         0           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         0         0         0           Magnesium         ppm         ASTM D5185m         0         0         0         0           Magnesium         ppm         ASTM D5185m         1         0         0         0           Calcium         ppm         ASTM D5185m         0         4         0         0           Phosphorus         ppm         ASTM D5185m         0         2         0         23	Silver	ppm	ASTM D5185m	>2	0	0	0
Copper         ppm         ASTM D5185m         >50         14         9         15           Tin         ppm         ASTM D5185m         >10         <1	Aluminum	ppm	ASTM D5185m	>10	0	0	0
Tin	Lead	ppm	ASTM D5185m	>10	0	0	0
Vanadium         ppm         ASTM D5185m         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         0         0         0           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         0         0         0           Magnesium         ppm         ASTM D5185m         1         0         0         0           Magnesium         ppm         ASTM D5185m         100         0         15         7           Calcium         ppm         ASTM D5185m         0         4         0         0           Phosphorus         ppm         ASTM D5185m         0         2         0         23           Zinc         ppm         ASTM D5185m         0         2         0         23           Sulfur         ppm         ASTM D5185m         23500         20634         20847         21664	Copper	ppm	ASTM D5185m	>50	14	9	15
Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         0         0         0           Barium         ppm         ASTM D5185m         90         0         0         0           Molybdenum         ppm         ASTM D5185m         0         0         0         0           Magnesium         ppm         ASTM D5185m         100         0         15         7           Calcium         ppm         ASTM D5185m         0         4         0         0           Phosphorus         ppm         ASTM D5185m         0         2         0         23           Zinc         ppm         ASTM D5185m         0         2         0         23           Zinc         ppm         ASTM D5185m         23500         20634         20847         21664           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         <1         0         <	Tin	ppm	ASTM D5185m	>10	<1	0	0
ADDITIVES	Vanadium	ppm	ASTM D5185m		0	0	0
Boron ppm ASTM D5185m 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Cadmium	ppm	ASTM D5185m		0	0	0
Barium         ppm         ASTM D5185m         90         0         0         0           Molybdenum         ppm         ASTM D5185m         0         0         0         0           Magnesium         ppm         ASTM D5185m         1         0         0         0           Magnesium         ppm         ASTM D5185m         100         0         155         7           Calcium         ppm         ASTM D5185m         0         4         0         0           Phosphorus         ppm         ASTM D5185m         0         2         0         23           Zinc         ppm         ASTM D5185m         0         0         9         2           Sulfur         ppm         ASTM D5185m         23500         20634         20847         21664           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         <1         0         <1           Sodium         ppm         ASTM D5185m         >20         0         2         0           Water         %         ASTM D6304         >0.05         0.003<	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         0         0         0         0           Manganese         ppm         ASTM D5185m         1         0         0           Magnesium         ppm         ASTM D5185m         100         0         15         7           Calcium         ppm         ASTM D5185m         0         4         0         0           Phosphorus         ppm         ASTM D5185m         0         2         0         23           Zinc         ppm         ASTM D5185m         0         0         9         2           Sulfur         ppm         ASTM D5185m         0         0         9         2           Sulfur         ppm         ASTM D5185m         23500         20634         20847         21664           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         <1         0         <1           Sodium         ppm         ASTM D5185m         >20         0         2         0           Water         %         ASTM D5185m         >20         0         0         0<	Boron	ppm	ASTM D5185m	0	0	0	0
Manganese         ppm         ASTM D5185m         1         0         0           Magnesium         ppm         ASTM D5185m         100         0         15         7           Calcium         ppm         ASTM D5185m         0         4         0         0           Phosphorus         ppm         ASTM D5185m         0         2         0         23           Zinc         ppm         ASTM D5185m         0         0         9         2           Sulfur         ppm         ASTM D5185m         23500         20634         20847         21664           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         <1	Barium	ppm	ASTM D5185m	90	0	0	0
Magnesium         ppm         ASTM D5185m         100         0         15         7           Calcium         ppm         ASTM D5185m         0         4         0         0           Phosphorus         ppm         ASTM D5185m         0         2         0         23           Zinc         ppm         ASTM D5185m         0         0         9         2           Sulfur         ppm         ASTM D5185m         23500         20634         20847         21664           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         <1         0         <1           Sodium         ppm         ASTM D5185m         >20         0         2         0           Vater         %         ASTM D5185m         >20         0         2         0           Water         %         ASTM D5185m         >20         0         2         0           Water         %         ASTM D6185m         >20         0         2         0           Particles >4µm         ASTM D6304         >500         29         136.9 <t< td=""><td>Molybdenum</td><td>ppm</td><td>ASTM D5185m</td><td>0</td><th>0</th><td>0</td><td>0</td></t<>	Molybdenum	ppm	ASTM D5185m	0	0	0	0
Calcium         ppm         ASTM D5185m         0         4         0         0           Phosphorus         ppm         ASTM D5185m         0         2         0         23           Zinc         ppm         ASTM D5185m         0         0         9         2           Sulfur         ppm         ASTM D5185m         23500         20634         20847         21664           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         <1	Manganese	ppm	ASTM D5185m		1	0	0
Phosphorus         ppm         ASTM D5185m         0         2         0         23           Zinc         ppm         ASTM D5185m         0         0         9         2           Sulfur         ppm         ASTM D5185m         23500         20634         20847         21664           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         <1         0         <1           Sodium         ppm         ASTM D5185m         >20         0         2         0           Potassium         ppm         ASTM D5185m         >20         0         2         0           Water         %         ASTM D5185m         >20         0         0         0         0           FLUID CLEANLINESS         method         limit/base         current	Magnesium	ppm	ASTM D5185m	100	0	15	7
Zinc         ppm         ASTM D5185m         0         0         9         2           Sulfur         ppm         ASTM D5185m         23500         20634         20847         21664           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         <1         0         <1           Sodium         ppm         ASTM D5185m         >20         0         2         0           Potassium         ppm         ASTM D5185m         >20         0         2         0           Water         %         ASTM D5185m         >20         0         0         0         0           Particles >4µm         ASTM D6304         >500         29         136.9         99.7         11330           Particles >4µm         ASTM D7647         >1300         7711	Calcium	ppm	ASTM D5185m	0	4	0	0
Sulfur         ppm         ASTM D5185m         23500         20634         20847         21664           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         <1	Phosphorus	ppm	ASTM D5185m	0	2	0	23
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         <1	Zinc	ppm	ASTM D5185m	0	0	9	2
Silicon         ppm         ASTM D5185m         >25         <1         0         <1           Sodium         ppm         ASTM D5185m         <21         2         2           Potassium         ppm         ASTM D5185m         >20         0         2         0           Water         %         ASTM D6304         >0.05         0.003         0.013         0.009           ppm Water         ppm         ASTM D6304         >500         29         136.9         99.7           FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4μm         ASTM D7647         >1300         ↑ 7711         351         ↑ 3932           Particles >6μm         ASTM D7647         >80         ↑ 557         23         ↑ 544           Particles >21μm         ASTM D7647         >20         ↑ 115         6         ↑ 152           Particles >38μm         ASTM D7647         >3         0         0         0           Particles >71μm         ASTM D7647         >3         0         0         0           Oil Cleanliness         ISO 4406 (c)         >/17/13         ♠ 22/20/16         18/16/12         ♠	Sulfur	ppm	ASTM D5185m	23500	20634	20847	21664
Sodium   ppm   ASTM D5185m   <1   2   2   2	CONTAMINANTS	<b>;</b>	method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         0         2         0           Water         %         ASTM D6304         >0.05         0.003         0.013         0.009           ppm Water         ppm         ASTM D6304         >500         29         136.9         99.7           FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4μm         ASTM D7647         21527         1354         11330           Particles >6μm         ASTM D7647         >1300         7711         351         3932           Particles >14μm         ASTM D7647         >80         557         23         544           Particles >21μm         ASTM D7647         >20         115         6         152           Particles >38μm         ASTM D7647         >4         2         0         4           Particles >71μm         ASTM D7647         >3         0         0         0           Oil Cleanliness         ISO 4406 (c)         >/17/13         22/20/16         18/16/12         21/19/16           FLUID DEGRADATION         method         limit/base         current         history1         history2 <td>Silicon</td> <td>ppm</td> <td>ASTM D5185m</td> <td>&gt;25</td> <th>&lt;1</th> <td>0</td> <td>&lt;1</td>	Silicon	ppm	ASTM D5185m	>25	<1	0	<1
Water         %         ASTM D6304         >0.05         0.003         0.013         0.009           ppm Water         ppm ASTM D6304         >500         29         136.9         99.7           FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4μm         ASTM D7647         21527         1354         11330           Particles >6μm         ASTM D7647         >1300         7711         351         △ 3932           Particles >14μm         ASTM D7647         >80         △ 557         23         △ 544           Particles >21μm         ASTM D7647         >20         △ 115         6         △ 152           Particles >38μm         ASTM D7647         >4         2         0         4           Particles >71μm         ASTM D7647         >3         0         0         0           Oil Cleanliness         ISO 4406 (c)         >/17/13         △ 22/20/16         18/16/12         △ 21/19/16           FLUID DEGRADATION         method         limit/base         current         history1         history2	Sodium	ppm	ASTM D5185m		<1	2	2
ppm Water         ppm ASTM D6304         >500         29         136.9         99.7           FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4μm         ASTM D7647         21527         1354         11330           Particles >6μm         ASTM D7647         >1300         7711         351         △ 3932           Particles >14μm         ASTM D7647         >80         △ 557         23         △ 544           Particles >21μm         ASTM D7647         >20         △ 115         6         △ 152           Particles >38μm         ASTM D7647         >4         2         0         4           Particles >71μm         ASTM D7647         >3         0         0         0           Oil Cleanliness         ISO 4406 (c)         >/17/13         △ 22/20/16         18/16/12         △ 21/19/16           FLUID DEGRADATION         method         limit/base         current         history1         history2	Potassium	ppm	ASTM D5185m	>20	0	2	0
FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4μm         ASTM D7647         21527         1354         11330           Particles >6μm         ASTM D7647         >1300         7711         351         3932           Particles >14μm         ASTM D7647         >80         557         23         544           Particles >21μm         ASTM D7647         >20         115         6         152           Particles >38μm         ASTM D7647         >4         2         0         4           Particles >71μm         ASTM D7647         >3         0         0         0           Oil Cleanliness         ISO 4406 (c)         >/17/13         22/20/16         18/16/12         21/19/16           FLUID DEGRADATION         method         limit/base         current         history1         history2	Water	%	ASTM D6304	>0.05	0.003	0.013	0.009
Particles >4μm       ASTM D7647       21527       1354       11330         Particles >6μm       ASTM D7647       >1300       7711       351       3932         Particles >14μm       ASTM D7647       >80       557       23       544         Particles >21μm       ASTM D7647       >20       115       6       152         Particles >38μm       ASTM D7647       >4       2       0       4         Particles >71μm       ASTM D7647       >3       0       0       0         Oil Cleanliness       ISO 4406 (c)       >/17/13       22/20/16       18/16/12       21/19/16         FLUID DEGRADATION       method       limit/base       current       history1       history2	ppm Water	ppm	ASTM D6304	>500	29	136.9	99.7
Particles >6μm       ASTM D7647       >1300       7711       351       3932         Particles >14μm       ASTM D7647       >80       557       23       544         Particles >21μm       ASTM D7647       >20       115       6       152         Particles >38μm       ASTM D7647       >4       2       0       4         Particles >71μm       ASTM D7647       >3       0       0       0         Oil Cleanliness       ISO 4406 (c)       >/17/13       22/20/16       18/16/12       21/19/16         FLUID DEGRADATION       method       limit/base       current       history1       history2	FLUID CLEANLIN	IESS	method	limit/base	current	history1	history2
Particles >14μm       ASTM D7647       >80       ▲ 557       23       ▲ 544         Particles >21μm       ASTM D7647       >20       ▲ 115       6       ▲ 152         Particles >38μm       ASTM D7647       >4       2       0       4         Particles >71μm       ASTM D7647       >3       0       0       0         Oil Cleanliness       ISO 4406 (c)       >/17/13       ▲ 22/20/16       18/16/12       ▲ 21/19/16         FLUID DEGRADATION       method       limit/base       current       history1       history2	Particles >4µm		ASTM D7647		21527	1354	11330
Particles >21μm         ASTM D7647         >20         Δ 115         6         Δ 152           Particles >38μm         ASTM D7647         >4         2         0         4           Particles >71μm         ASTM D7647         >3         0         0         0           Oil Cleanliness         ISO 4406 (c)         >/17/13         Δ 22/20/16         18/16/12         Δ 21/19/16           FLUID DEGRADATION         method         limit/base         current         history1         history2	Particles >6µm		ASTM D7647	>1300	<u> 7711</u>	351	<b>▲</b> 3932
Particles >38μm         ASTM D7647         >4         2         0         4           Particles >71μm         ASTM D7647         >3         0         0         0           Oil Cleanliness         ISO 4406 (c)         >/17/13         Δ 22/20/16         18/16/12         Δ 21/19/16           FLUID DEGRADATION         method         limit/base         current         history1         history2	Particles >14μm		ASTM D7647	>80	<b>557</b>	23	<b>△</b> 544
Particles >71μm         ASTM D7647         >3         0         0         0           Oil Cleanliness         ISO 4406 (c)         >/17/13         Δ 22/20/16         18/16/12         Δ 21/19/16           FLUID DEGRADATION         method         limit/base         current         history1         history2	Particles >21µm		ASTM D7647	>20	<u> </u>	6	<u>▲</u> 152
Oil Cleanliness         ISO 4406 (c)         >/17/13         ▲ 22/20/16         18/16/12         ▲ 21/19/16           FLUID DEGRADATION         method         limit/base         current         history1         history2	Particles >38µm		ASTM D7647	>4	2	0	4
FLUID DEGRADATION method limit/base current history1 history2	Particles >71µm		ASTM D7647	>3	0	0	0
•	Oil Cleanliness		ISO 4406 (c)	>/17/13	<b>22/20/16</b>	18/16/12	<b>2</b> 1/19/16
Acid Number (AN) mg KOH/g ASTM D8045 1.0 0.466 0.36 0.37	FLUID DEGRADA	ATION	method	limit/base	current	history1	history2
	Acid Number (AN)	mg KOH/g	ASTM D8045	1.0	0.466	0.36	0.37



## OIL ANALYSIS REPORT







Certificate 12367

Laboratory

Sample No.

Lab Number

: KCPA017224 : 06177115

Unique Number: 11023168

Received : 13 May 2024 **Tested** Diagnosed Test Package : IND 2 ( Additional Tests: KF, PrtCount )

: 14 May 2024

: 14 May 2024 - Don Baldridge

101 GOFORTH RD FORT WORTH, TX US 76126 Contact: Service Manager

To discuss this sample report, contact Customer Service at 1-800-237-1369.  $^st$  - 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)

T:

F: