Info Marine Sp. z o.o.

ul. J. Kamrowskiego 16
81-603 GDYNIA, Poland
tel. +48 58 620 56 64
fax. +48 58 627 89 31
www.info-marine.com

Vibration diagnostic report **6309-2024**		
Project: **CMA CGM Montmartre** IMO no: **9839155** Ordered by: **CMA CGM**	Date of measurement: **2024-05-25 - 2024-06-15**	Place of measurement: **During normal operation**

Measurement condition

Measurements were taken during normal operating condition.

Results presentation

Measured values are presented in the table below. Each machine if applicable is separated for driver (el. motor, diesel engine, etc.) and driven unit (pump, compressor, etc.) *First and second columns* of the table consist PMS number and name of the equipment. *Third column* contains the highest value of vibration velocity measured on the equipment in all measurement points. *Fourth column* contains ISO classification limit. *Fifth column* contains additional readings of enveloped value of acceleration, which is helpful in detection of early stage of bearing wear. *Sixth column* contains vibration trend values if previous results are available from the same source. *Seventh column* contains remarks and suggestions based on the analysis of vibration signal. This column can be taken as the final conclusion about machine condition. If cell is empty, it means that there is no existing problem or defect shown in vibration signal.

Vibration standards

Following standards may applied for assessment:

ISO 10816-3	Mechanical vibration — Evaluation of machine vibration by measurements on non-rotating parts — Part 3: Industrial machines with nominal power above 15 kW and nominal speeds between 120 r/min and 15 000 r/min when measured in situ
ISO 10816-6	Mechanical vibration - Evaluation of machine vibration by measurements on nonrotating parts - Part 6: Reciprocating machines with power ratings above 100 kW
ISO 10816-7	Mechanical vibration — Evaluation of machine vibration by measurements on non-rotating parts — Part 7: Rotodynamic pumps for industrial applications, including measurements on rotating shafts
ISO 20816-1	Mechanical vibration — Measurement and evaluation of machine vibration — Part 1: General guidelines
VDI 3836	Measurement and evaluation of mechanical vibration of screw-type compressors and Roots blowers Addition to DIN ISO 10816-3

Legend according to vibration class

Cl. A	Newly commissioned
Cl. B	Unrestricted
Cl. C	Restricted long-term operation
Cl. D	High probability of damage, action required
Cl. D	Vibrations over the limits but actions are not required.

V. I	Unrestricted
V. II	Restricted long-term operation
V. III	High probability of damage, action required

V. III Vibrations over the limits but actions are not required.

Results

In table are presented only readings with max. RMS results for each device equipment:

PMS	Machine name	Velocity RMS (mm/s) Max	ISO standard	Bearing Envelope 0-Peak (m/s2) Max	Trend Velocity RMS (mm/s) Max	Remarks and suggestions
MAJOR MACHINERY						
Main propulsion						
-	Main engine	11.0(VSG)	Cl. B	-		
-	Main engine turbocharger no1	3.853	Cl. B	-		
-	Main engine turbocharger no2	2.328	Cl. B	-		
-	Main engine turbocharger no3	5.170	Cl. C	-		
ME LO pumps						
713.004.81	ME LO pump no1 el. motor	1.940	Cl. B	18.214		Please advise if work recommended in report 4369-2022 was performed: 1. Bearings should be replaced. **2. Next measurement including pump needs to be done 50 RHs after performing work (please send with feedback).**
713.004.01	ME LO pump no1	0.731	Cl. A	13.926		
LT cooling FW pumps						
-	LT cooling fresh water pump no2 el. motor	3.702	Cl. C	7.960		
-	LT cooling fresh water pump no2	1.559	Cl. A	7.456		
ME Scavenger CFW pumps						
-	ME scavenger CFW pump no2 el. motor	4.181	Cl. C	6.139		
-	ME scavenger CFW pump no2	1.348	Cl. A	2.954		
Main CSW pumps						
721.001.81	Main CSW pump no1 el. motor	37.517	Cl. D	4.376	 Last value: 2022-09-06 **3.382**	Please advise if work recommended in report 4369-2022 was performed: 1. DE bearing should be replaced. Visible very high vibrations generated by environment. 1. All bolts responsible for stiffness of structure should be checked/retightened. **2. Next measurement including pump needs to be done 50 RHs after performing work (please send with feedback).**
721.001.01	Main CSW pump no1	11.056	Cl. D	4.640	 Last value: 2022-09-06 **0.780**	1. All bolts responsible for stiffness of structure should be checked/retightened. **2. Next measurement should be done after performing work (please send with feedback).**

721.001.82	Main CSW pump no2 el. motor	13.073	Cl. D	5.945	 Last value: 2022-09-05 **3.649**	1. All bolts responsible for stiffness of structure should be checked/retightened. **2. Next measurement should be done after performing work (please send with feedback). Including pump.**
721.001.02	Main CSW pump no2	6.432	Cl. C	3.641		
721.001.83	Main CSW pump no3 el. motor	12.463	Cl. D	10.483	 Last value: 2022-09-04 **4.525**	1. All bolts responsible for stiffness of structure should be checked/retightened. **2. Next measurement should be done after performing work (please send with feedback). Including pump.**
721.001.03	Main CSW pump no3	5.982	Cl. B	4.658		
ME FO supply pumps						
-	ME FO feeder pump no1 el. motor	4.339	Cl. C	12.385		High envelope on NDE bearing. **Next measurement should be done up to week 29. Including pump.**
-	ME FO feeder pump no1	2.998	Cl. C	12.337		
-	ME FO feeder pump no2 el. motor	3.906	Cl. C	5.390		Visible early signals of bearing wear. **Next measurement should be done up to week 29. Including pump.**
-	ME FO feeder pump no2	3.797	Cl. C	21.009		
-	ME FO booster pump no1 el. motor	4.773	**Cl. D**	2.408	 Last value: 2022-09-04 **6.764**	High signal only in one point and main signal is related with environment. No signs of deterioration. Next measurement should be done according to regular interval.
-	ME FO booster pump no1	5.085	**Cl. D**	6.804	 Last value: 2022-09-04 **2.474**	Main signal is related with environment. No signs of deterioration. Next measurement should be done according to regular interval.
-	ME FO booster pump no2 el. motor	6.664	**Cl. D**	12.282	 Last value: 2022-09-05 **2.516**	Trend increased and main signal is related with environment and operation of the pump. No signs of deterioration. Next measurement should be done with pump.
-	ME FO booster pump no2	5.628	**Cl. D**	43.681	 Last value: 2022-09-05 **3.146**	Very high acceleration signal. Working parameters of pump should be inspected. **Next measurement should be done up to week 29. Including el. motor.**

AE FO supply pumps						
-	AE FO feeder pump no1 el. motor	31.243	Cl. D	0.578	 Last value: 2022-09-04 **4.408**	Very high signal coming from environment. 1. All bolts responsible for stiffness of structure should be checked/retightened. **2. Next measurement should be done after performing work (please send with feedback).**
-	AE FO feeder pump no1	16.207	Cl. D	3.052	 Last value: 2022-09-04 **3.080**	
-	AE FO feeder pump no2 el. motor	22.384	Cl. D	2.224	 Last value: 2022-09-05 **3.095**	Very high signal coming from environment. 1. All bolts responsible for stiffness of structure should be checked/retightened. 2. Next measurement should be done after performing work (please send with feedback).
-	AE FO feeder pump no2	15.114	Cl. D	3.659	 Last value: 2022-09-05 **1.687**	
-	AE FO booster pump no1 el. motor	7.594	**Cl. D**	3.109	 Last value: 2022-09-04 **3.028**	Trend increased and main signal is related with environment. No signs of deterioration. Next measurement should be done according to regular interval.
-	AE FO booster pump no1	7.052	**Cl. D**	21.256	 Last value: 2022-09-04 **4.955**	
-	AE FO booster pump no2 el. motor	9.704	**Cl. D**	4.332	 Last value: 2022-09-05 **2.332**	Trend increased and main signal is related with environment. No signs of deterioration. **Next measurement should be done up to week 29 to monitor the trend.**
-	AE FO booster pump no2	6.452	Cl. D	12.912	 Last value: 2022-09-05 **2.951**	

EX zone -Boge compressors						
-	Boge compressor no2 el. motor	2.840	V. I	4.836		
-	Boge compressor no2 gear part	4.845	V. I	10.624		
-	Boge compressor no2 stage 3	11.641	V. I	19.648		
-	Boge compressor no2 stage 1	2.615	V. I	17.811		
-	Boge compressor no2 stage 2	4.409	V. I	32.766		
Purifiers						
-	ME LO purifier no2 el. motor	4.716	Cl. C	1.768		
-	AE LO purifier no1 el. motor	2.753	Cl. B	0.612		
-	AE LO purifier no3 el. motor	3.465	Cl. C	22.500		
Rest of machinery						
Provision Refrigeration Compressors						
-	Provision refrigeration compressor no1 el. motor	3.562	Cl. B	1.602		
-	Provision refrigeration compressor no1	5.207	Cl. B	3.792		
-	Provision refrigeration compressor no2 el. motor	4.459	Cl. B	2.859		
-	Provision refrigeration compressor no2	3.965	Cl. B	4.263		
FW Generator Ejector pumps						
-	FW generator ejector pump el. motor	8.491	**Cl. D**	4.760	Last value: 2022-11-16 **7.057**	Trend slightly increased. and main signal is related with environment. No signs of deterioration. Next measurement should be done according to regular interval.
-	FW generator ejector pump	2.188	Cl. A	4.393		
AE LO purifier feed pumps						
-	AE LO purifier feed pump no1 el. motor	3.690	Cl. C	0.220		
-	AE LO purifier feed pump no3 el. motor	7.402	**Cl. D**	0.956	Last value: 2022-09-04 **2.157**	Trend increased. High signal only in one point and main signal is related with environment. No signs of deterioration. Next measurement should be done according to regular interval.
ME HT Jacket pumps						
-	Main Engine HT cooling fresh water pump no2 el. motor	3.814	Cl. C	4.289		Visible early signal of bearing wear. **Next measurement should be done up to week 29. Including pump.**
-	Main Engine HT cooling fresh water pump no2	1.046	Cl. A	1.524		
ME pilot fuel pump (on ME)						
-	ME pilot fuel pump (on ME) el. motor	6.601	**Cl. D**	12.871	Last value: 2022-09-04 **2.373**	Trend increased and main signal is related with environment. No signs of deterioration. Next measurement should be done according to regular interval.

ME pilot fuel pump (purif room)						
-	ME pilot fuel pump (purifier room) no1 el. motor	2.986	Cl. C	0.818		
-	ME pilot fuel pump (purifier room) no1	4.122	Cl. C	5.100		
-	ME pilot fuel pump (purifier room) no2 el. motor	2.926	Cl. C	0.371		
-	ME pilot fuel pump (purifier room) no2	2.833	Cl. C	2.295		
AE pilot pumps						
-	AE1 pilot pump no1 el. motor	9.873	Cl. D	8.156	Last value: 2022-09-04 **2.790**	1. All bolts responsible for stiffness of structure should be checked/retightened. 2. Condition of coupling should be checked. **3. Next measurement should be done after performing work (please send with feedback).**
-	AE1 pilot pump no1	5.420	Cl. D	39.784	Last value: 2022-09-04 **2.382**	
-	AE1 pilot pump no2 el. motor	2.177	Cl. B	3.648		
-	AE1 pilot pump no2	2.888	Cl. C	6.223		

Trend results:

Whenever new results are increased more than 5% of previous measurements

Whenever new results are in range plus / minus 5% of previous measurements

Whenever new results are reduced more than 5% of previous measurements

Measurement equipment:

Technical data	
Maker:	Pruftechnik
Type:	VibXpert EX
Serial number:	51011
Measuring range:	1.6Hz-17kHz
Indication error:	± 3%

Equipment is calibrated, certificate for verification - if required.

Ship type: Container Ship	**Main dimensions:** Length(b.p).....399,90 m Breadth(B.).....61,30 m
Sea depth: Least twice times greater than Vessel draught	
Measurement method: According to standard ISO 10816 : - procedure No. 2 Measurement report	

Summary

Next measurements should be done in three month period to obtain trend value for each equipment, in some cases even one month period is preferable.

This report is prepared in good faith based on measurement diagnostic done on available running rotary machine and documentation submitted.

Prepared by:
Service Engineer
Nagoor Basha Kalluri

Approved by:
Patryk Brząkała
mob: 00971 523540138