

Services & Solutions

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Equity

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69/30-32 หมู่ 4 ถ.ลำลูกกาฝั่งตะวันออก
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Vibration measurement

Report

Plant : Blue Scope Steel

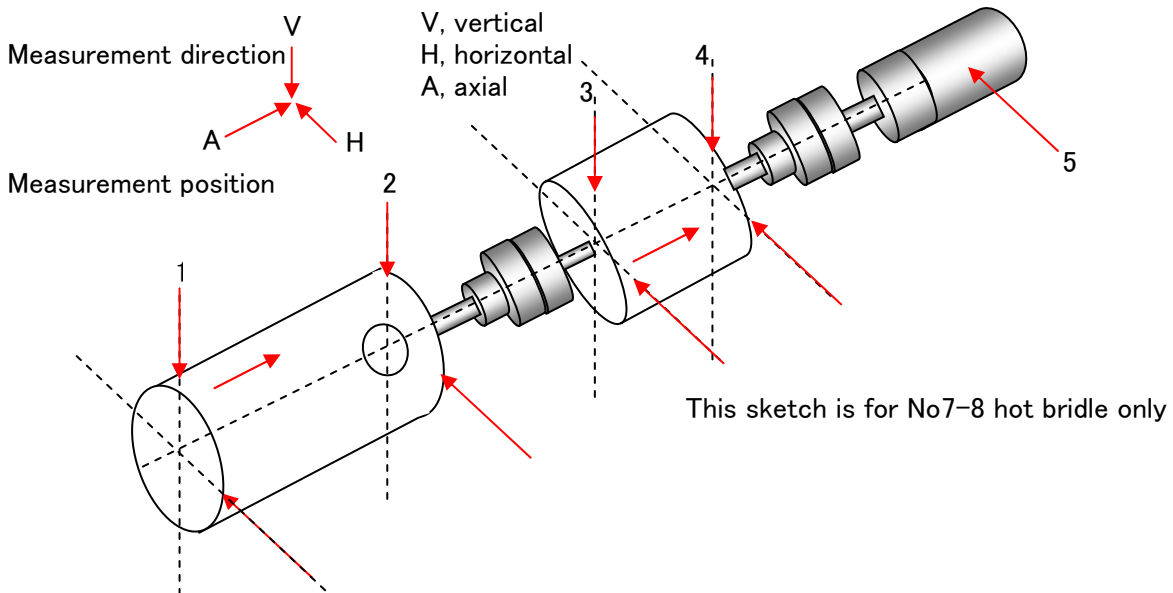
Equipment : No 7 hot bridal

Vibration measurement was carried out on 10 Feb 2005 and 17 Feb 2005 respectively

7 units as per the list below, vibration measurement was made as pre-measurement.
 3 units as per the list below, vibration measurement was made as post-measurement.

Item	Pre-measurement	Post-measurement
1	DFF, Z1/2 fan	
2	DFF, Z3 fan	DFF, Z3 fan
3	RTS waste gas fan	RTS waste gas fan
4	Pot ventilation fan	
5	DFF post combustion fan	
6	No 7 hot bridle	
7	No 8 hot bridle	No 8 hot bridle

Vibration measurement point



All measurement values are in "RMS"

Indication frequency in spectrum is deviate \pm 100 rpm due to the digital processing

Measurement point

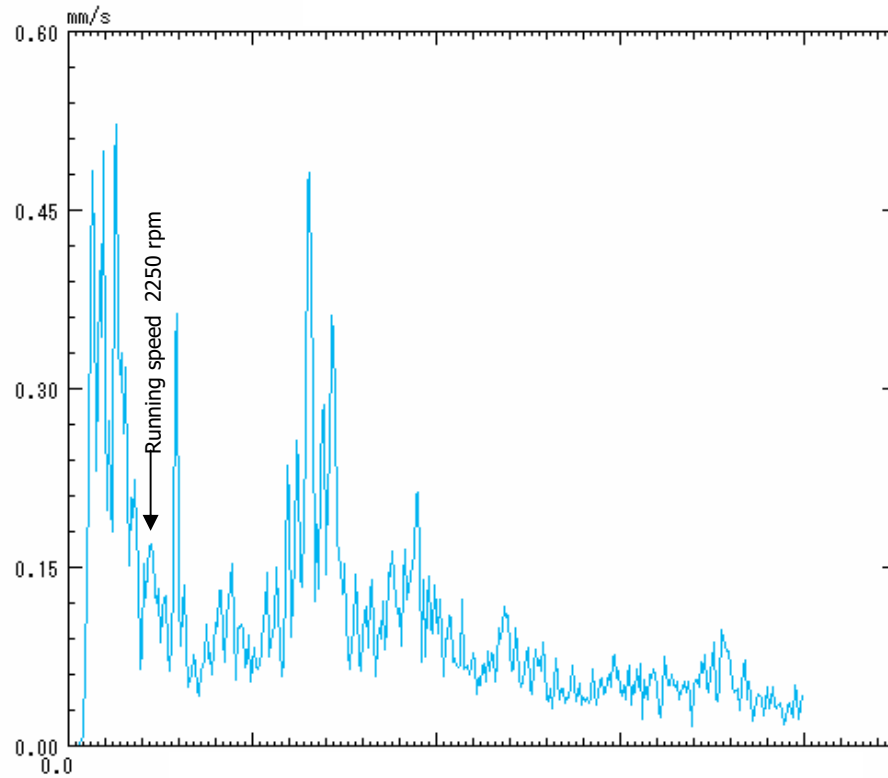
- X** X X position
- X **X** X direction
- X X **X** Type of vibration measurement

- A, acceleration (in g) to measure high frequency e.g. bearing noise, gear mesh frequency
- V, velocity (in mm/sec) to measure low frequency e.g. unbalance, misalignment,
- E, acceleration(in gE) in Envelop to detect bearing condition (SKF technic)
- W, wave form (in A or V mode) (time domain) to measure gear teeth /load condition

Plant Name	Machine Name	Point Name	Direction	Type
BST-1	No-7	No-7-1VV	V	V
Date / Time	Frequency	Line	Note	
2005/02/10 16:38:40	250	400		

As found

Running vibration is very low, the ceiling signal is higher than the running speed.
It is no possible to focus on the running speed.
Since the running speed vibration is very low, it indicated that the machine has a good health.

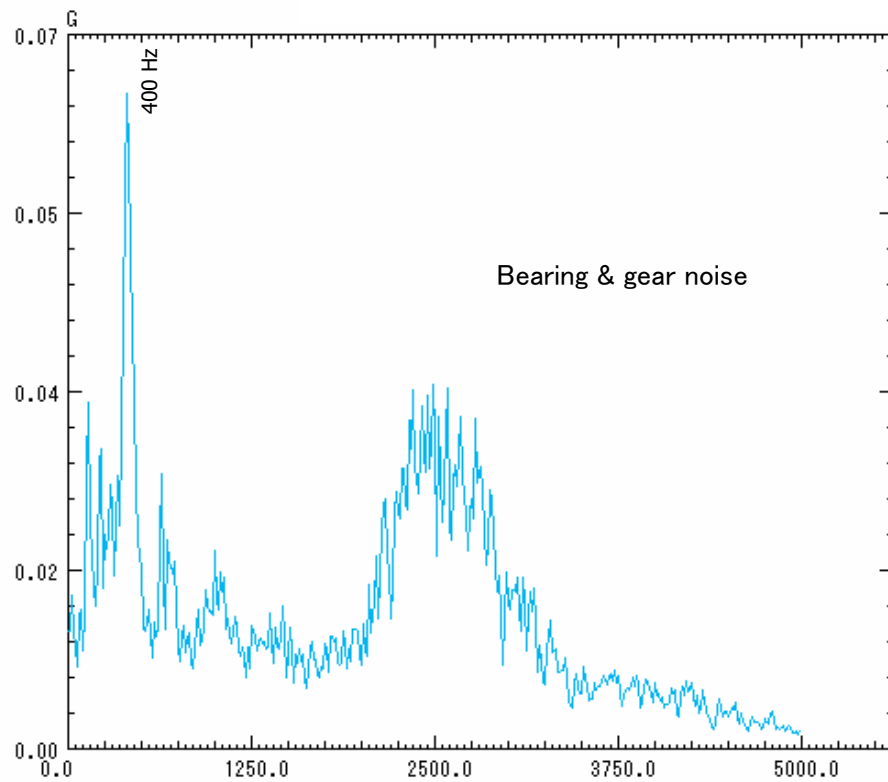


Plant Name	Machine Name	Point Name	Direction	Type
BST-1	No-7	No-7-1VA	V	A
Date / Time	Frequency	Line	Note	
2005/02/10 16:39:41	5000	400		

As found

Overall high frequency vibration of 0.12 G indicates good bearing condition

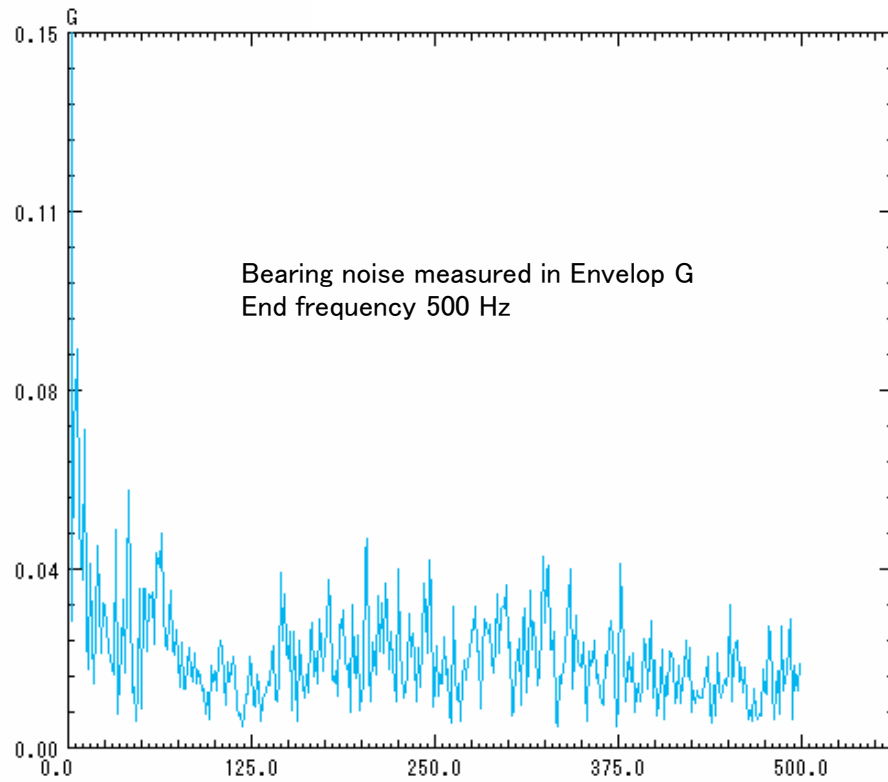
At freq 400Hz, it is suspected to be brush frequency.



Plant Name	Machine Name	Point Name	Direction	Type
BST-1	No-7	No-7-1VE	V	E2
Date / Time	Frequency	Line	Note	
2005/02/10 16:40:20	500	800		

As found

Overall bearing noise of 0.12 gE indicates good bearing condition.

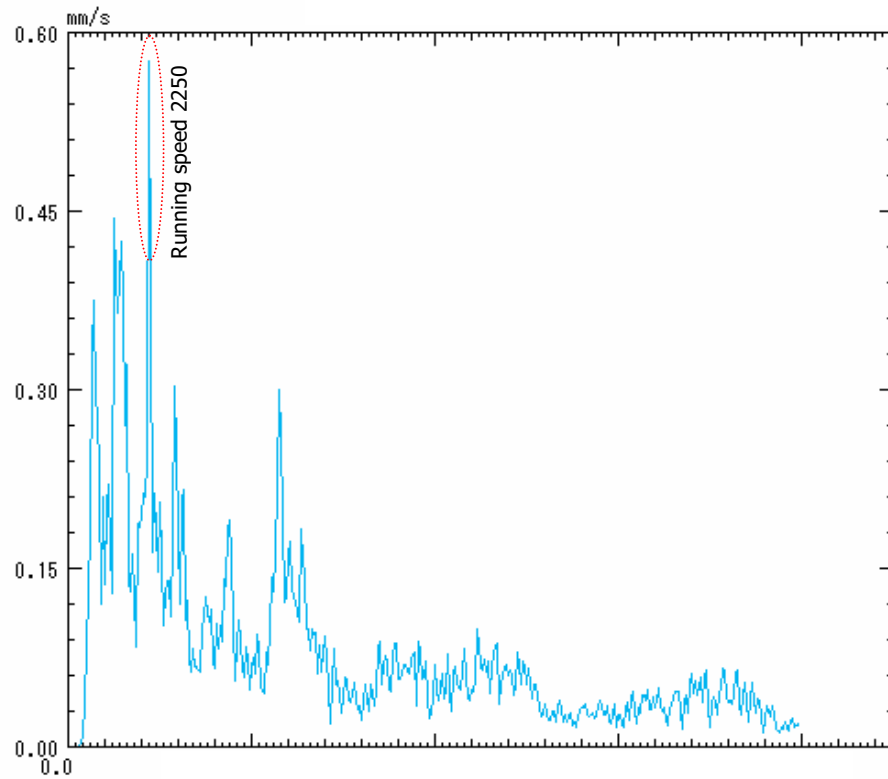


Plant Name	Machine Name	Point Name	Direction	Type
BST-1	No-7	No-7-1AV	A	V
Date / Time	Frequency	Line	Note	
2005/02/10 16:41:01	250	400		

As found

Running vibration is very low.

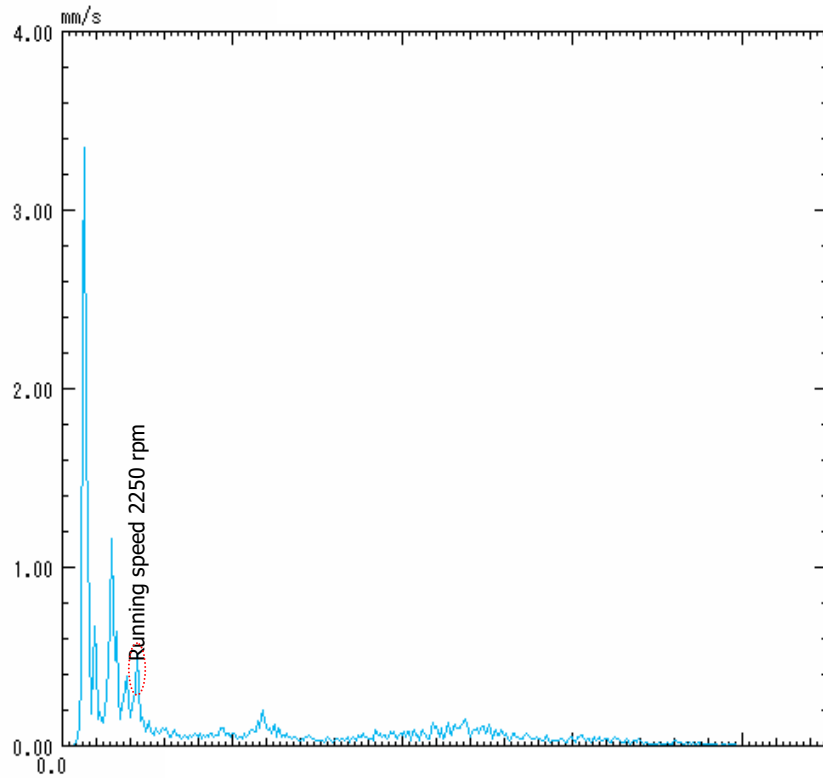
Since the running speed vibration is very low, it indicated that the machine has a good health.



Plant Name	Machine Name	Point Name	Direction	Type
BST-1	No-7	No-7-1HV	H	V
Date / Time	Frequency	Line	Note	
2005/02/10 16:42:29	250	400		

As found

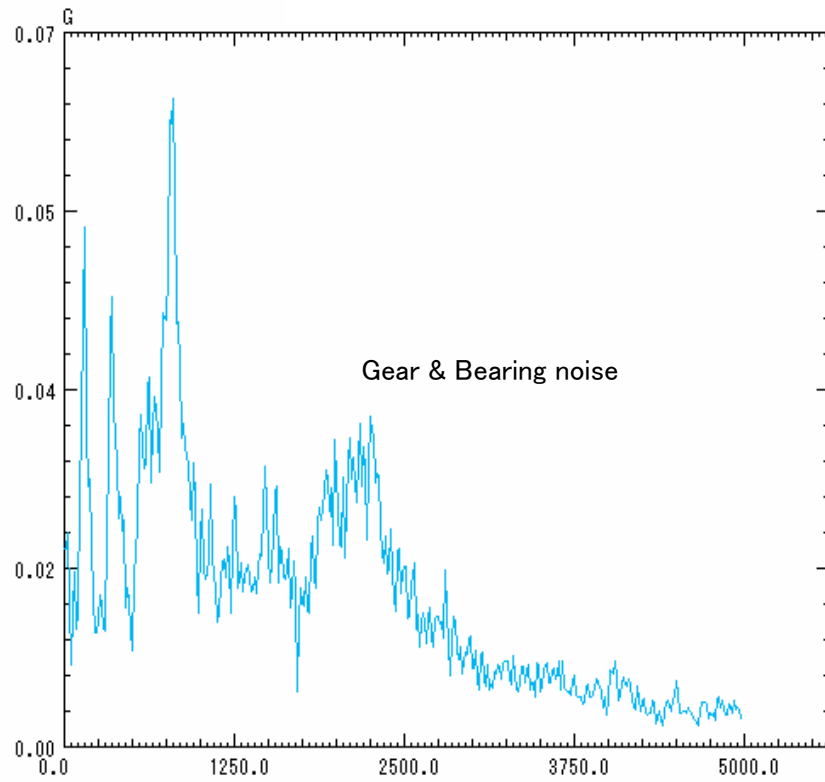
Running vibration is very low, the ceiling signal is higher than the running speed.
It is no possible to focus on the running speed.
Since the running speed vibration is very low, it indicated that the machine has a good health.



Plant Name	Machine Name	Point Name	Direction	Type
BST-1	No-7	No-7-1HA	H	A
Date / Time	Frequency	Line	Note	
2005/02/10 16:43:05	5000	400		

As found

Overall noise of 0.12 G indicates good bearing condition

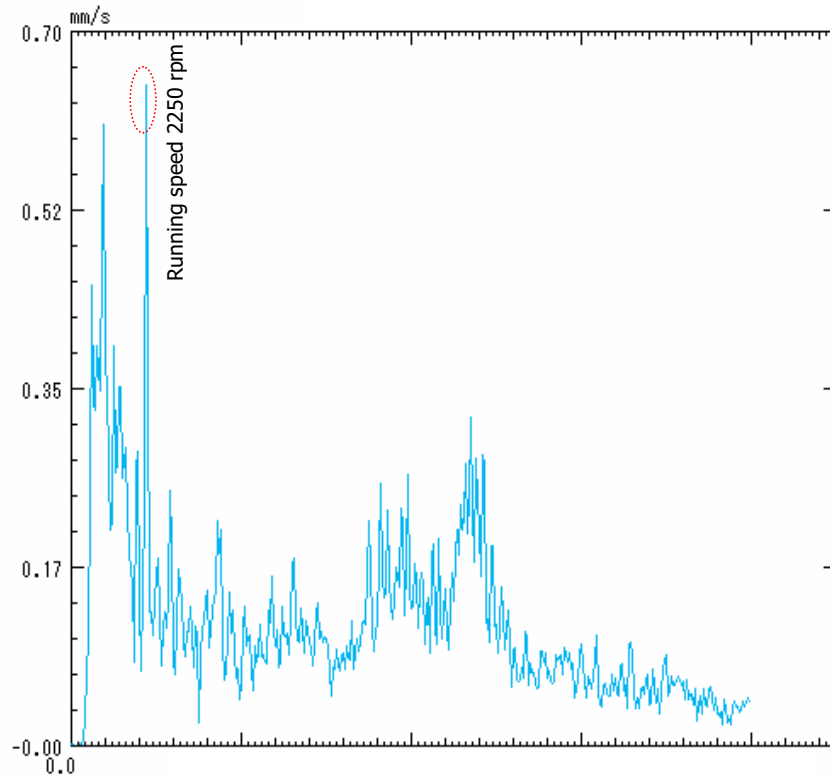


Plant Name	Machine Name	Point Name	Direction	Type
BST-1	No-7	No-7-2VV	V	V
Date / Time	Frequency	Line	Note	
2005/02/10 16:44:21	250	400		

As found

Running vibration is very low.

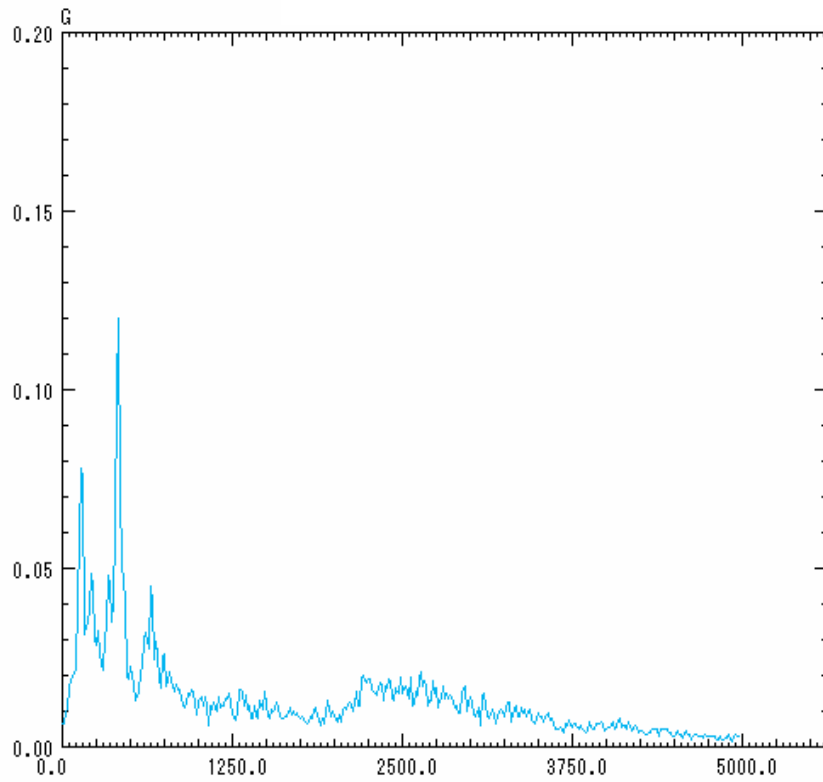
Since the running speed vibration is very low, it indicated that the machine has a good health.



Plant Name	Machine Name	Point Name	Direction	Type
BST-1	No-7	No-7-2VA	V	A
Date / Time	Frequency	Line	Note	
2005/02/10 16:44:58	5000	400		

As found

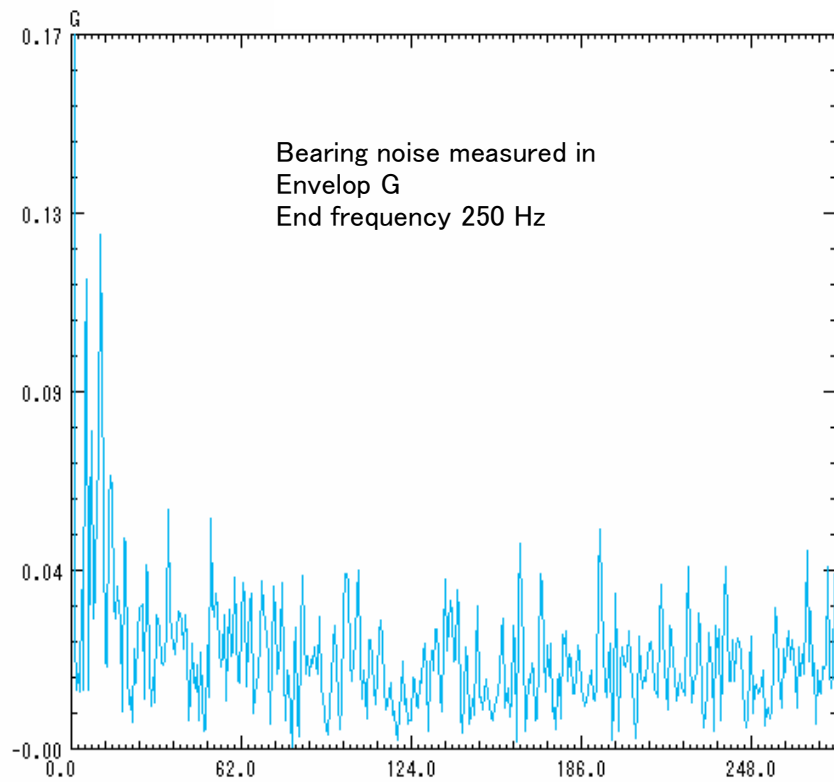
Overall noise of 0.17 G indicates good bearing condition
However, this high frequency signal was interfered by gear mesh frequency.



Plant Name	Machine Name	Point Name	Direction	Type
BST-1	No-7	No-7-2VE	V	E2
Date / Time	Frequency	Line	Note	
2005/02/10 16:45:27	500	800		

As found

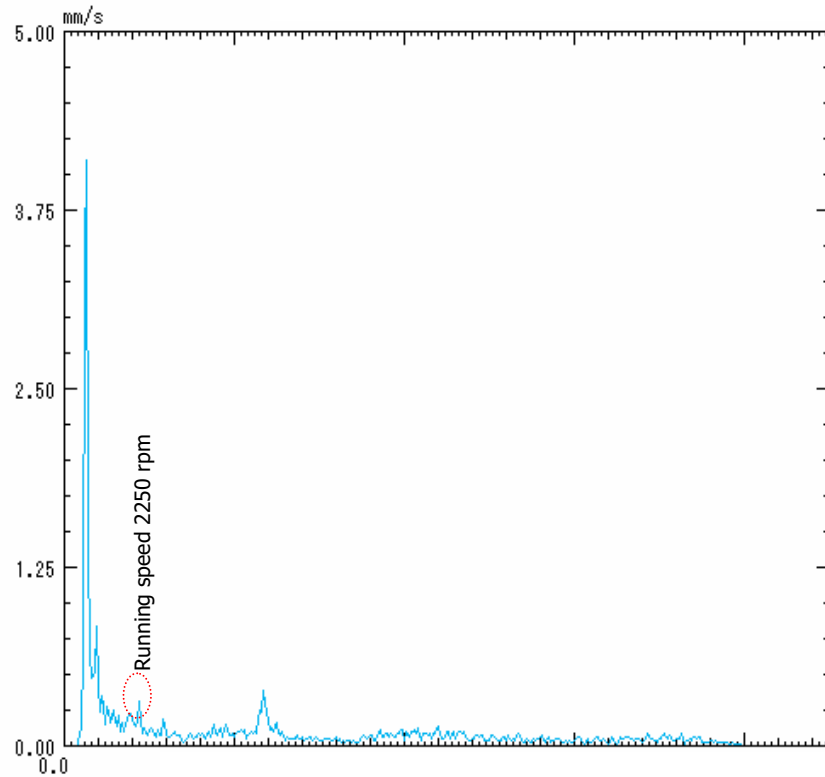
Overall bearing noise of 0.22 gE indicates good bearing condition.
However, this high frequency signal was interfered by gear mesh frequency.



Plant Name	Machine Name	Point Name	Direction	Type
BST-1	No-7	No-7-2HV	H	V
Date / Time	Frequency	Line	Note	
2005/02/10 16:46:14	250	400		

As found

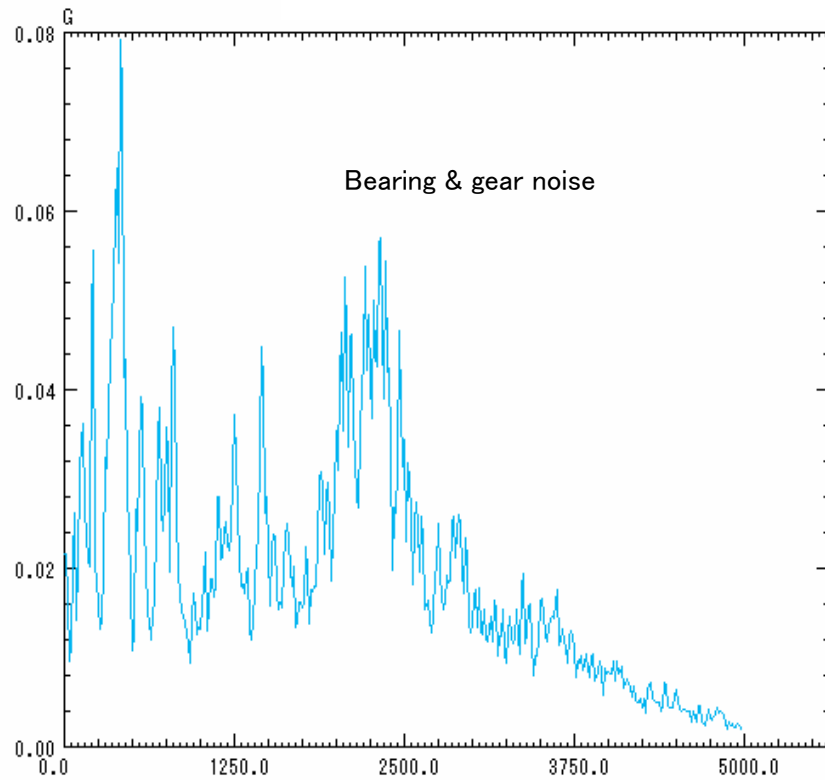
Running vibration is very low, the sub-sync signal is higher than the running speed.
It is no possible to focus on the running speed.
Since the running speed vibration is very low, it indicated that the machine has a good health.



Plant Name	Machine Name	Point Name	Direction	Type
BST-1	No-7	No-7-2HA	H	A
Date / Time	Frequency	Line	Note	
2005/02/10 16:46:53	5000	400		

As found

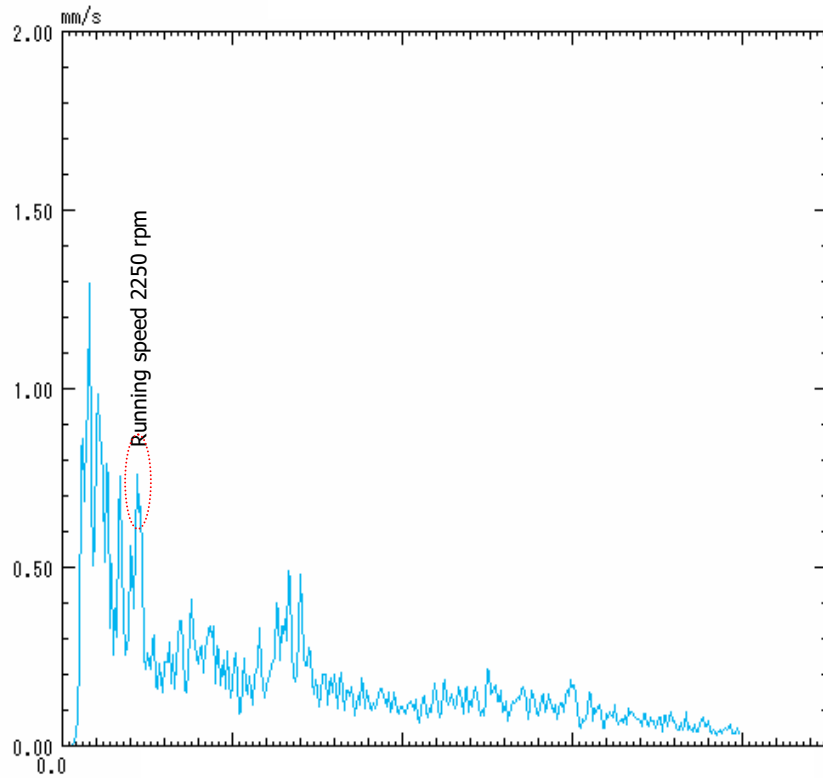
Overall noise of 0.17 G indicates good bearing condition
However, this high frequency signal was interfered by gear mesh frequency.



Plant Name	Machine Name	Point Name	Direction	Type
BST-1	No-7	No-7-3VV	V	V
Date / Time	Frequency	Line	Note	
2005/02/10 16:48:22	250	400		

As found

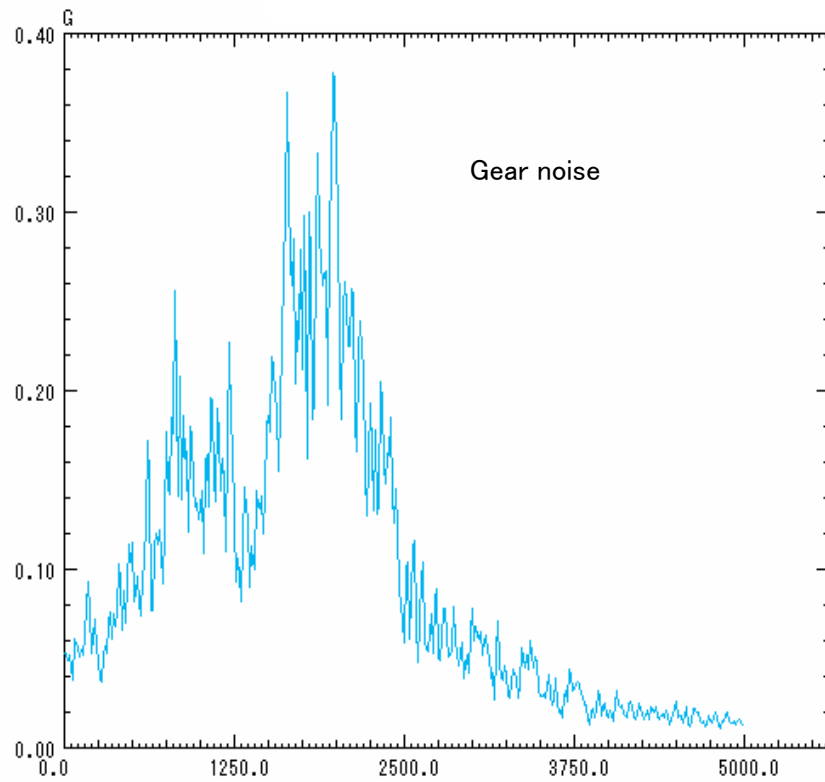
Running vibration is very low, the sub-sync signal is higher than the running speed.
It is no possible to focus on the running speed.
Since the running speed vibration is very low, it indicated that the machine has a good health.



Plant Name	Machine Name	Point Name	Direction	Type
BST-1	No-7	No-7-3VA	V	A
Date / Time	Frequency	Line	Note	
2005/02/10 16:49:34	5000	400		

As found

Overall noise of 0.52 G indicates good running condition of gear teeth or bearing

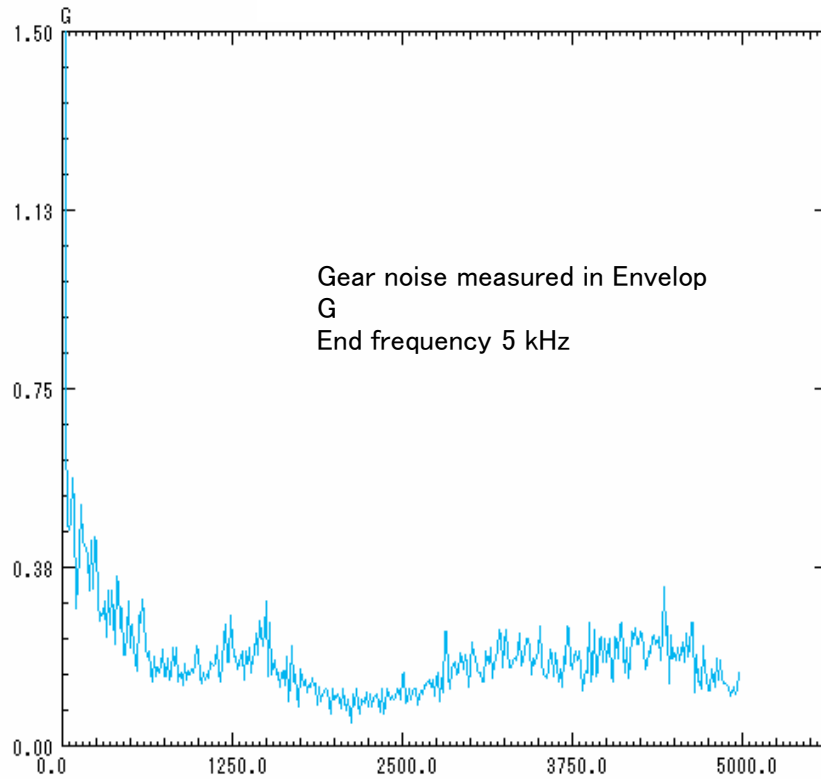


Plant Name	Machine Name	Point Name	Direction	Type
BST-1	No-7	No-7-3VE	V	E3
Date / Time	Frequency	Line	Note	
2005/02/10 16:50:37	5000	1600		

As found

Since gE is the most suitable for bearing.
Measuring gear mesh results very high magnitude of gE.

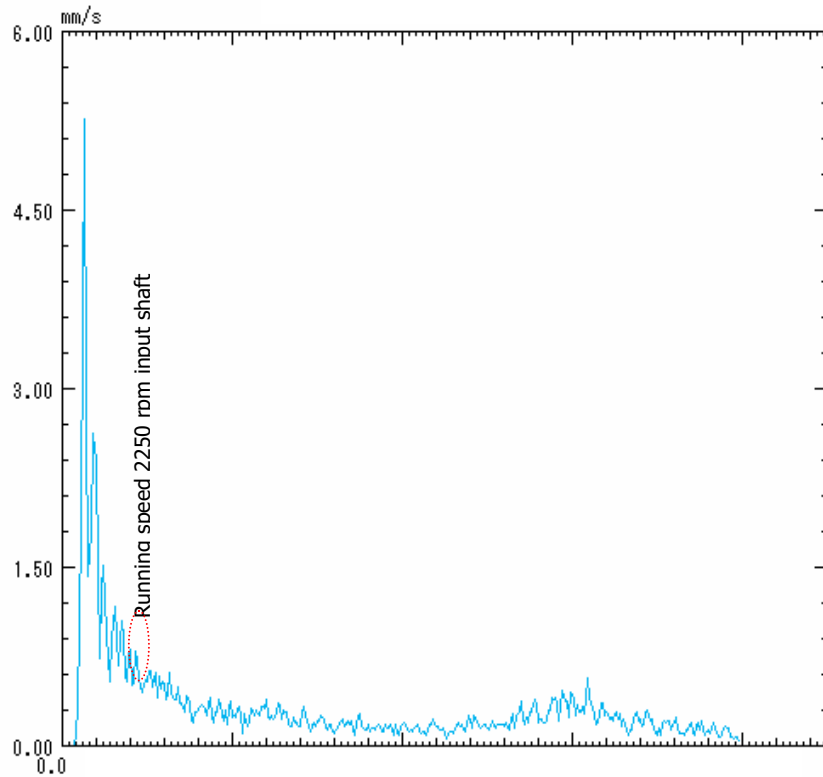
This signature can not be interpreted.
This signature should be kept as base line for future reference .



Plant Name	Machine Name	Point Name	Direction	Type
BST-1	No-7	No-7-3HV	H	V
Date / Time	Frequency	Line	Note	
2005/02/10 16:51:31	250	400		

As found

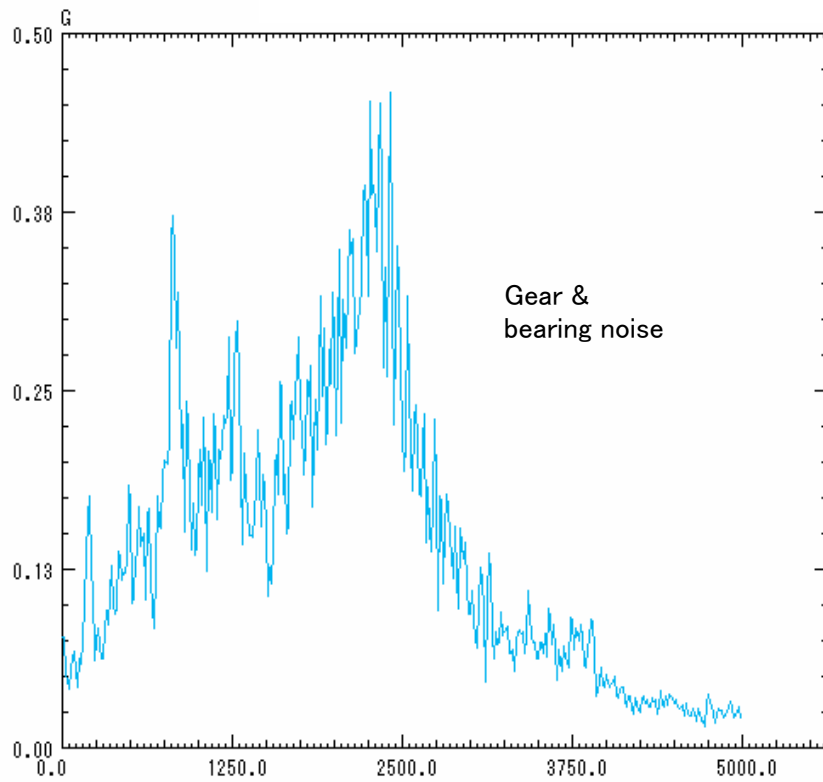
Running vibration is very low, the sub-synchronous signal is higher than the running speed. It is not possible to focus on the running speed. Since the running speed vibration is very low, it indicates that the machine has good health.



Plant Name	Machine Name	Point Name	Direction	Type
BST-1	No-7	No-7-3HA	H	A
Date / Time	Frequency	Line	Note	
2005/02/10 16:52:09	5000	400		

As found

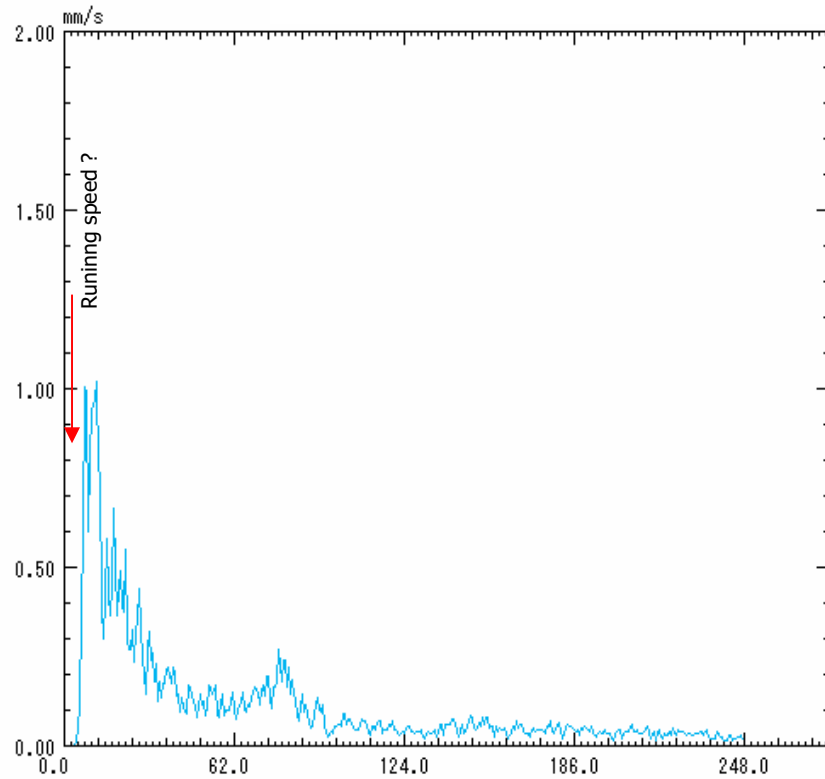
Overall high freq vibration of 0.64 G indicates no any abnormal running condition of ge



Plant Name	Machine Name	Point Name	Direction	Type
BST-1	No-7	No-7-4VV	V	V
Date / Time	Frequency	Line	Note	
2005/02/10 16:54:13	250	400		

As found

Since output shaft speed is significantly lower than the vibration detection capability. Resulting it is unable to pinpoint the output shaft running speed.

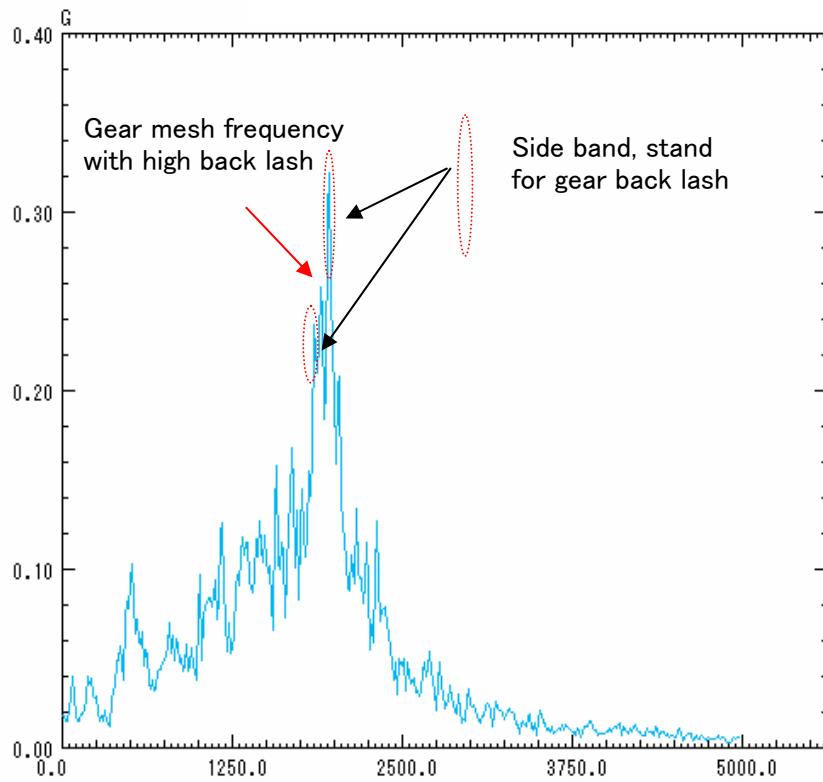


Plant Name	Machine Name	Point Name	Direction	Type
BST-1	No-7	No-7-4VA	V	A
Date / Time	Frequency	Line	Note	
2005/02/10 16:54:52	5000	400		

As found

Gear mesh freq with high back lash

Overall gear noise of 0.63 G indicates that no problem on gear teeth.



Plant Name	Machine Name	Point Name	Direction	Type
BST-1	No-7	No-7-4VE	V	E3
Date / Time	Frequency	Line	Note	
2005/02/10 16:55:31	5000	1600		

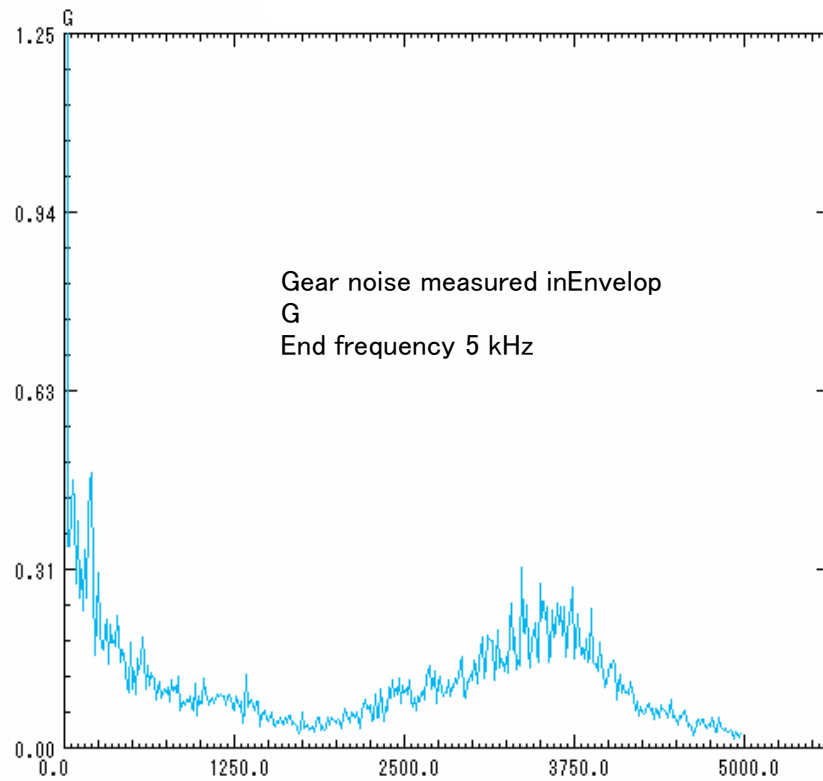
As found

Since gE is the most suitable for bearing.

Measuring gear mesh results very high magnitude of gE.

This signature can not be interpreted.

This signature should be kept as base line for future reference .

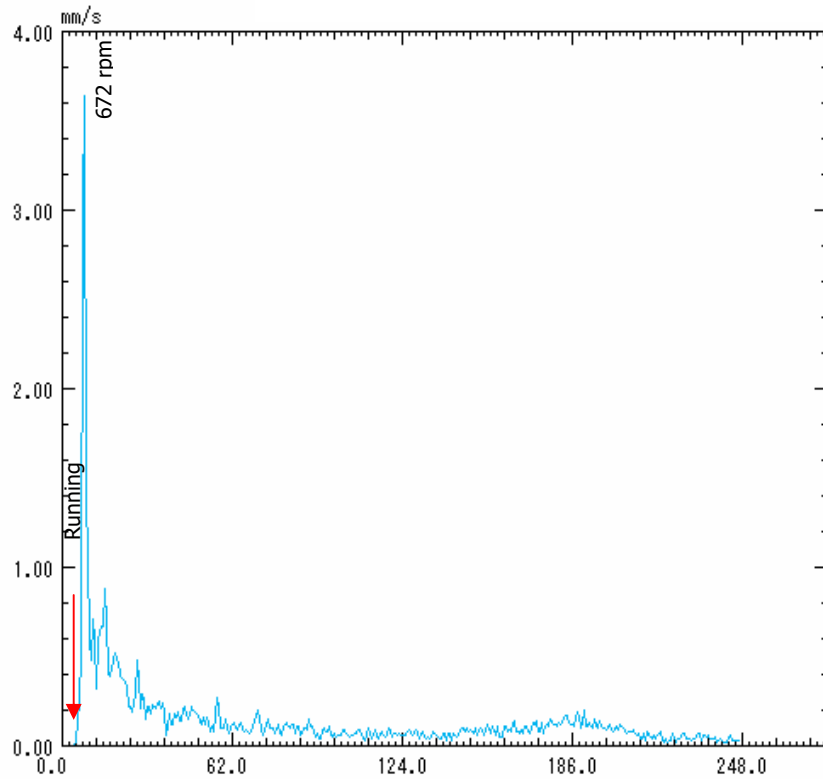


Plant Name	Machine Name	Point Name	Direction	Type
BST-1	No-7	No-7-4HV	H	V
Date / Time	Frequency	Line	Note	
2005/02/10 16:56:33	250	400		

As found

Since output shaft speed is significantly lower than the vibration detection capability. Resulting it is unable to pinpoint the output shaft running speed.

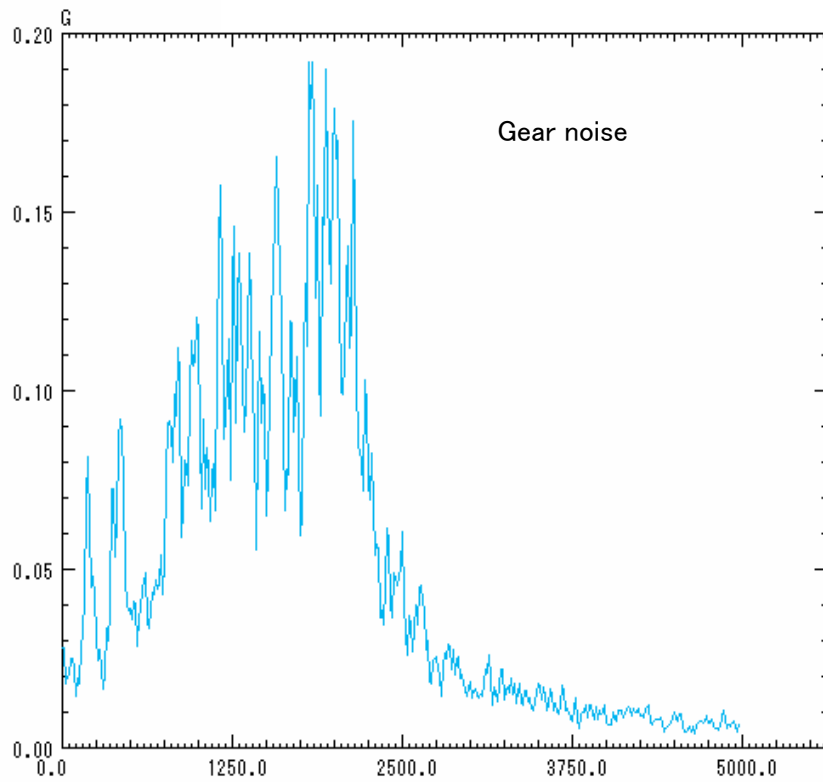
Notice , it seems that output shaft speed is ~ 300 rpm ?



Plant Name	Machine Name	Point Name	Direction	Type
BST-1	No-7	No-7-4HA	H	A
Date / Time	Frequency	Line	Note	
2005/02/10 16:57:12	5000	400		

As found

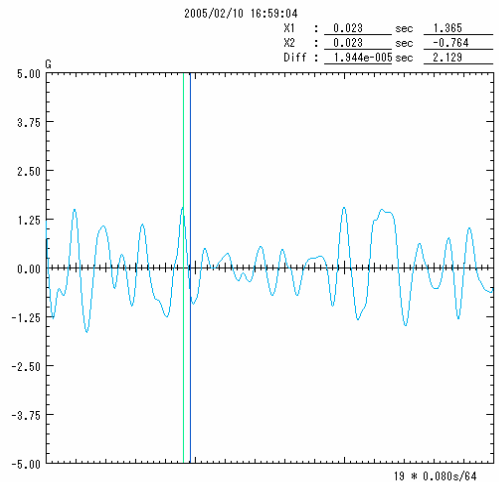
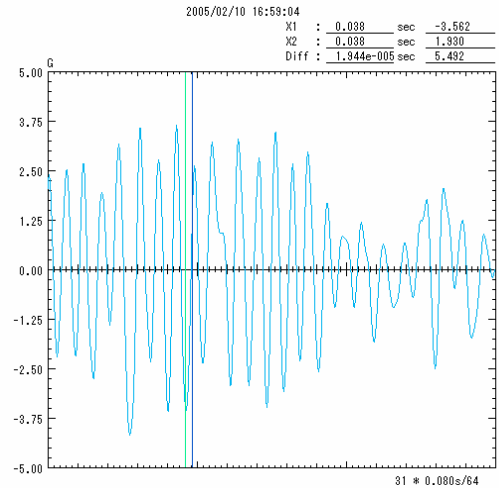
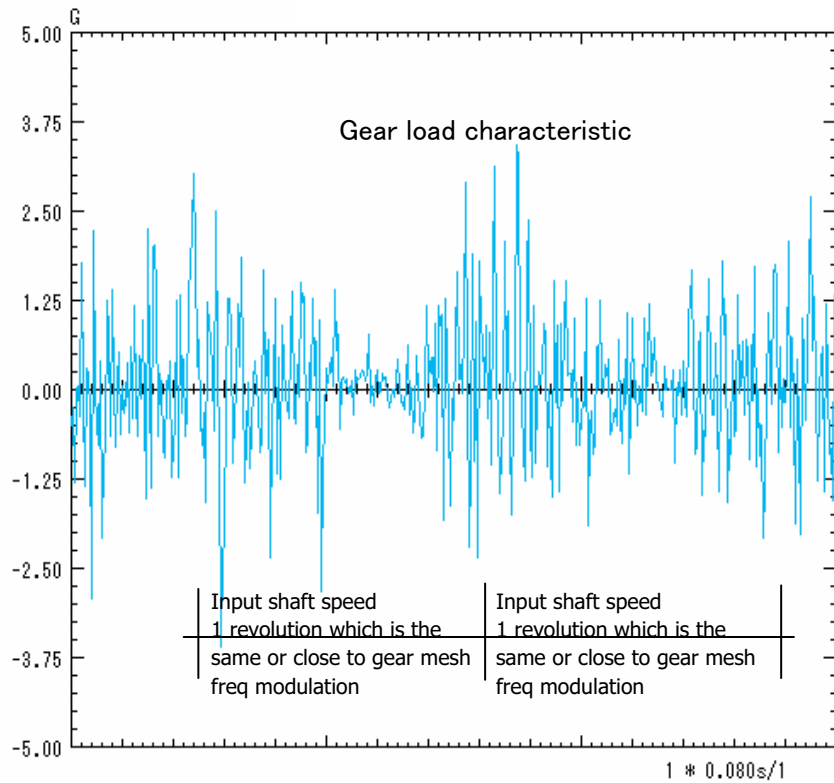
Overall high freq vibration of 0.6 G indicates that no problem on gear teeth.



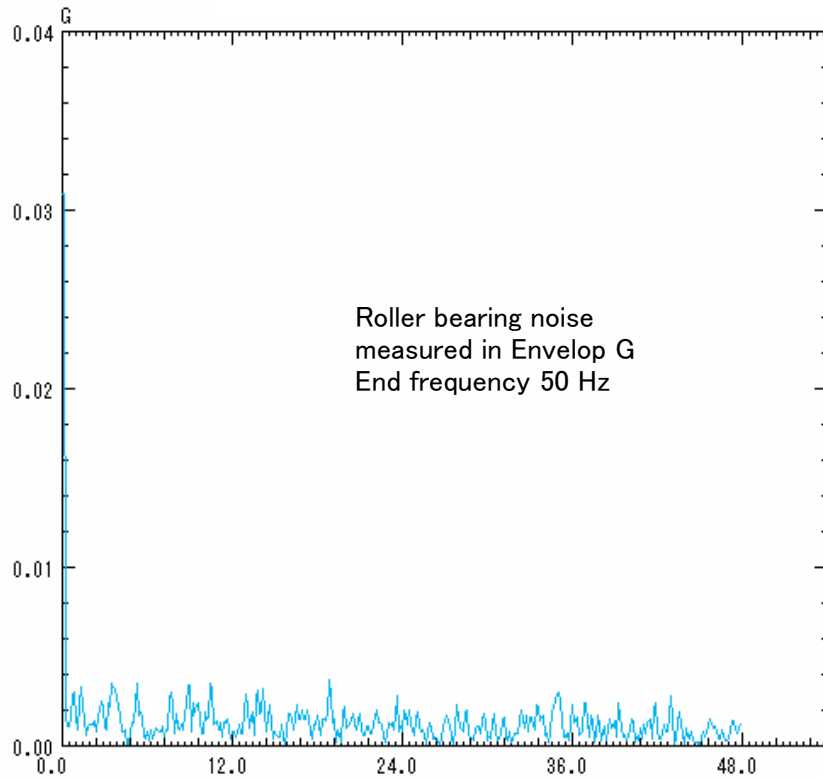
Plant Name	Machine Name	Point Name	Direction	Type
BST-1	No-7	No-7-4AW	A	A
Date / Time	Sampling	Duration	Note	
2005/02/10 16:59:04	76800	0.640000		

As found

Time domain is not cover output shaft speed due to very low frequency
However, the existing wave form indicates load fluctuation.



Plant Name	Machine Name	Point Name	Direction	Type
BST-1	No-7	No-7-5AE	A	E1
Date / Time	Frequency	Line	Note	
2005/02/10 17:00:38	50	400		



As found

Since this bearing speed is low as same as gear output shaft. Therefore only overall bearing noise in gE is measured.

Notice

Nowadays, no any suitable tools to detect bearing vibration for very low running speed due to low spike energy.

From experiment found that acoustic emission will give better result for this application

Using 'Envelop G and overall Acceleration , trending-time series analysis will give the potential to failure characteristic.

From the existing gE of 0.016 this value should be kept as a base line.

Recommendations

- 1) This equipment produces such a complex signal or there is interference from surrounding. Using the general vibration tool will give a rough information. However it is also useful for trend analysis. To better interpret the vibration signal, more sophisticate vibration tool and associated with external signal trigger are required. Moreover vibration at transient condition should be detected if it is not effect to production.
- 2) Gear load is fluctuate. Motor current measurement should confirm the load characteristic