

**Company Name**

Street

City

Postcode

Country

Dear [Recipient name]

Re: JPS Reliability: Precision On-Site Fan Balancing Report

I would firstly like to thank you for the courtesy and co-operation shown to JPS Reliability Limited during my recent site visit. Following the survey at your facility I have pleasure in presenting for your attention a comprehensive Precision Fan Balancing and Vibration Analysis report on the Kiln Fan 1.

Please contact JPS Reliability Limited for any machinery reliability issues or required health verification, we offer full technical/diagnostic back up which includes:

- Conventional vibration analysis
- Phase analysis
- Resonance testing
- Bearing / gear analysis
- Oil analysis
- On Site dynamic fan balancing
- Laser alignment
- Thermal imaging
- Ultrasonic air leak energy saving surveys
- Shaft Voltage Bearing discharge surveys

Date of survey:

- X

Executive Summary:

- The high vibration levels would have been the cause of repeat premature bearing failures.
- Fan unbalance reduced from '**damaging levels**' to levels classed as '**newly commissioned machines**' (*See Balance data & Figure 1*)
- Motor vibration levels were also reduced to '**newly commissioned machines**' vibration levels (*See Figure 2*)

**Introduction:**

JPS Reliability LTD was commissioned by Mr [CLIENT NAME] of [COMPANY NAME] to balance the Kiln Fan 1 due to repeat bearing failures.

**Instrumentation:**

This survey was performed using the CSI 2140 Dual channel Machinery Health Analyser. Data analysis was carried out using the CSI AMS Machinery Health manager software V5.7. The balance was performed using the Amplitude and Phase Method.

**Methodology:**

The unit was balanced via a single plane method. Vibration data including Velocity, Acceleration and bearing condition unit PeakVue was collected from each bearing location as close as possible to the source. Where applicable additional data including high resolution vibration data was collected.

**Summary:**

- The vibrations present across the entire unit has reduced significantly after precision balance was performed

**Maintenance Recommendations:**

- None



*Kiln Fan 1*

DIN ISO 10816-3	Group 1		Group 2		
	Machine type		Machine type		
	Large machines 300 kW < P < 50 MW		Medium sized machines 15 kW < P < 300 kW		
	Motor H > 315 mm		Motor 160 mm < H < 315 mm		
Foundation	flexible	rigid	flexible	rigid	
Velocity $v_{\text{eff}}$ mm/s rms	11,0	D			
	7,1				
10 – 1000 Hz $r > 600$ rpm	4,5	C			
	3,5				
2 – 1000 Hz $120 < r < 600$ rpm	2,8	B			
	2,3				
	1,4	A			
<b>A</b>	Newly commissioned machines	<b>B</b>	Unrestricted long term operation	<b>C</b>	Restricted long term operation
				<b>D</b>	Vibration causing damage

*ISO 10816-3*

## Balancing Data

### Initial run:

The initial vibration level was extreme at **44.82mm/s RMS**, after the clip on weights were removed, the fan brushed down and the base frame retaining bolts were secure the vibration reduced to **15.81mm/s RMS @237°**, this is due to imbalance of the fan.

As per ISO 10816-3 this is deemed **'Vibration causing damage'**



### Correction weights:

The calculated correction weights required totalled 206.2 Grams at specific locations. It was decided to drill and bolt on weights as this is a lot safer and securer than clip on weights.



### Final Run:

The vibration readings after precision balancing was **1.75 mm/s RMS @ 231°** at one order.

As per ISO 10816-3 this is deemed **'newly commissioned machines'**

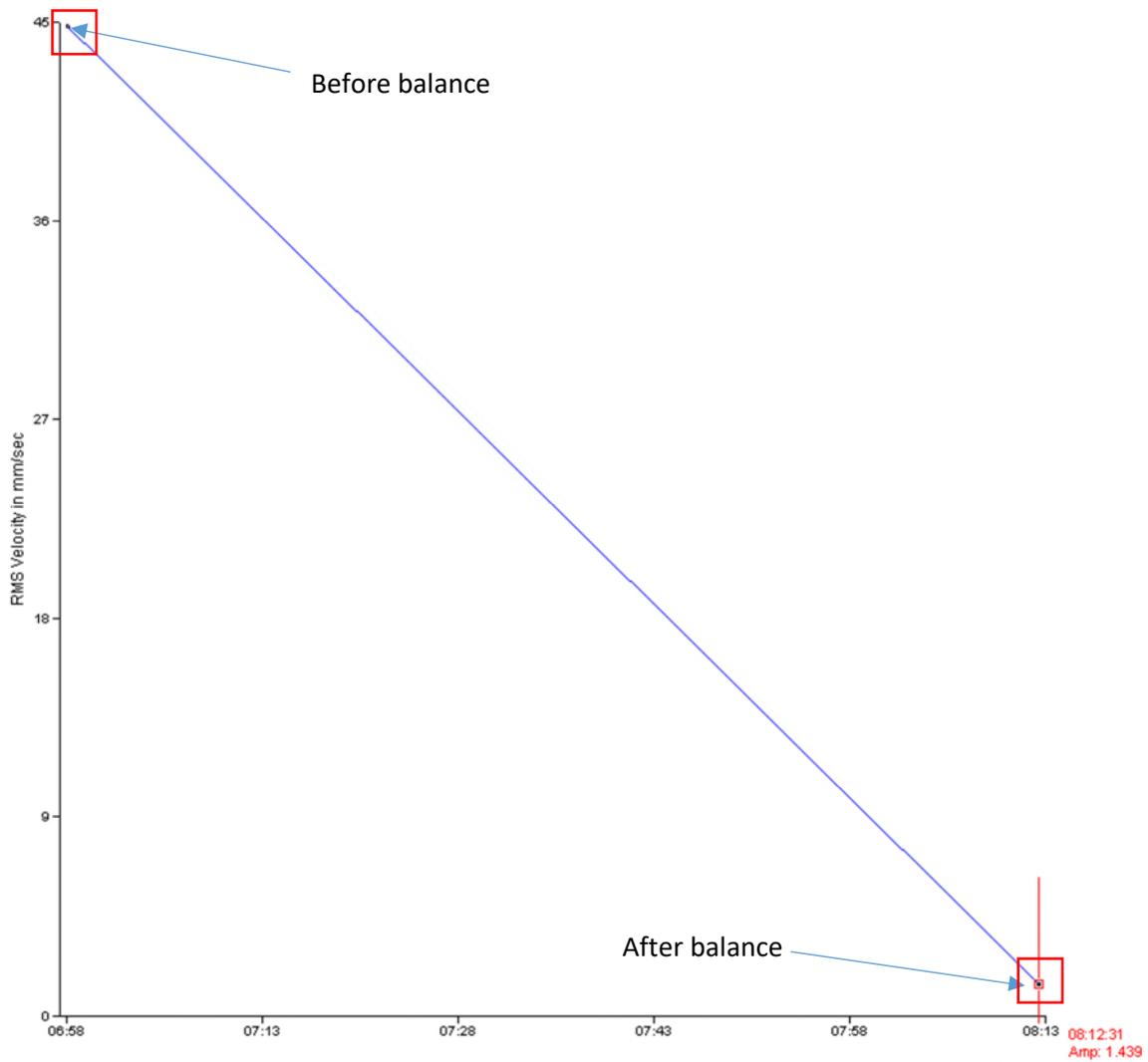
**Vibration Data: Fan Shaft**

Figure 1 is the overall velocity vibration trend from the fan drive end (DE) bearing in the Vertical direction.

The initial overall vibration level was 44.82 mm/s RMS, after precision balance reduced to 1.439 mm/s RMS.

Now the levels are deemed **'newly commissioned machines'**.

*Fig 1:*

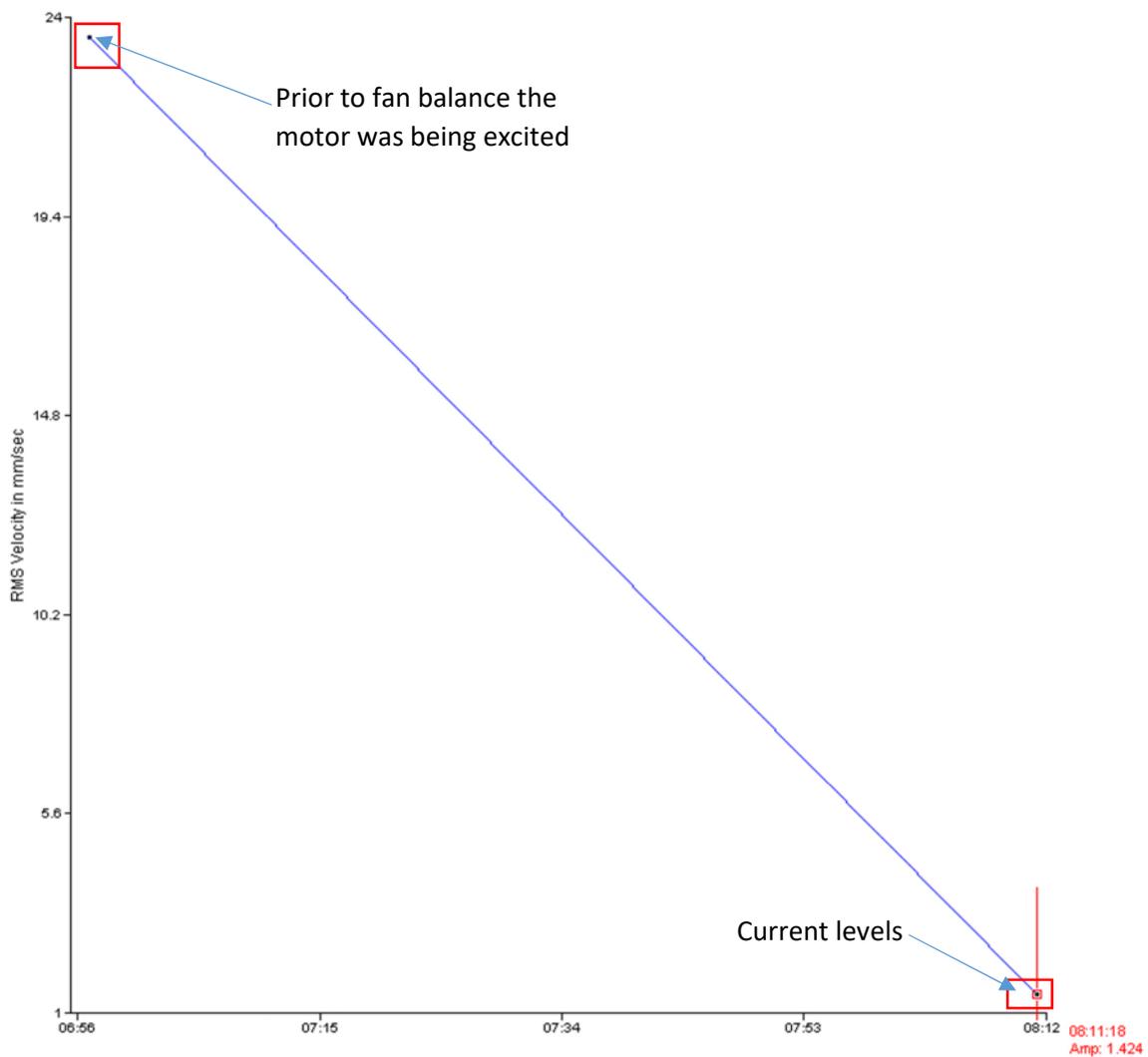


### Vibration Data: Fan Shaft

Figure 2 is the overall velocity vibration trend from the motor drive end (DE) in the Vertical direction.

The motor was being excited by the fan vibration to **damaging levels** at 23.56/ mm/s RMS, and after the fan was precision balance the motor was no longer being excited and had reduced to **'newly commissioned machines'** levels at 1.424 mm/s RMS.

Fig 2:



**Additional:**

In the interests of reliability and case history, we would appreciate feedback on work undertaken and the details of components used.

We trust that this will be acceptable to your requirements, however, should you require any additional information please contact the undersigned.

Kind Regards

*Technician*

**Technician**

Reliability Services



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