Vibration Report

Customer Name : L.G ELECTRONICS

Site : Greater Noida

Date of Visit : 9th & 10th March 2016

Report No. : U10316

OUR CONTACT: REPORT PREPARED BY

IADEPT MARKETING
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INRODUCTION

This report is prepared keeping in view the customer’s requirement of monitoring the health of any individual equipment at any point of time, as well as the capability to monitor the trend.

This vibration report consists of Vibration values collected at different positions on all the equipment. Demonstrated below is the procedure they have been codified:

<table>
<thead>
<tr>
<th>Location</th>
<th>Orientation</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1- Motor Non Drive End</td>
<td>H–Horizontal</td>
<td>v–Velocity</td>
</tr>
<tr>
<td>2- Motor Drive End</td>
<td>V–Vertical</td>
<td>a–Acceleration</td>
</tr>
<tr>
<td>3- (Fan/Pump) Drive End</td>
<td>A–Axial</td>
<td>d–Displacement</td>
</tr>
<tr>
<td>4- (Fan/Pump) NDE</td>
<td>R–Radial</td>
<td></td>
</tr>
<tr>
<td>5- Input bearing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6- Output bearing</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CATEGORY:

NORMAL—Those machines that are operating within the satisfactory limits of Vibration values as per ISO- 10816.

ALER TED—Those machines that are operating above the satisfactory limits of Vibration values as per ISO- 10816. It is usually recommended to plan the maintenance action at the earliest available opportunity; this would help reducing the after effects of any failure as well as properly plan the activity.

ALARM – Those machines that are operating in most abnormal condition and it is usually recommended to immediately take maintenance action, so as to avoid any catastrophic failure.

Visited by: Mr. Udit Sharma
Explanatory Notes on Measurement Process and parameters

1. All measured data is in respect of vibrations Velocity (mm/sec), collected from FFT spectrum on each point for all equipment covered in the assignment. The Data collector used when set in FFT mode, provides data of Overall Values of vibration levels in RMS mode only. Therefore, the reference values are in Velocity (RMS). Therefore, this aspect and our note 2 below must be kept in mind for any theoretical comparison.

2. Application of ISO 10816 however requires very accurate identification of machine category and is dependent on various operating parameters like height of the machine from ground, power consumption, flow parameters, load and RPM etc. This feature if used without proper identification may provide diametrically different interpretations and endanger machines.

3. Equipment used for Vibration Measurement and Analysis was Impaq Elite. Its accuracy is +5% and calibration is within validity.
### Velocity Range Limits and Machine Classes

<table>
<thead>
<tr>
<th>Velocity Severity</th>
<th>Velocity Range Limits and Machine Classes</th>
<th>ISO Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>mm/s RMS</td>
<td>Small Machine class I</td>
<td>Medium Machine Class II</td>
</tr>
<tr>
<td>0.28</td>
<td>Good</td>
<td>Good</td>
</tr>
<tr>
<td>0.45</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.71</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.12</td>
<td>Satisfactory</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>1.80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.80</td>
<td>Unsatisfactory (Alert)</td>
<td>Unsatisfactory (Alert)</td>
</tr>
<tr>
<td>4.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.10</td>
<td>Unacceptable (Alarm)</td>
<td>Unacceptable (Alarm)</td>
</tr>
<tr>
<td>11.20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### MACHINE CLASSIFICATION IN ACCORDANCE WITH ISO 10816-1

**Class 1:** Individual parts of engines and machines, integrally connected with the complete machine in its normal operating condition. (Production electrical motors of up to 15 Kw are typical examples of machines in this category)

**Class 2:** Medium-sized machines, (Typically Electrical Motors with 15 to 75 Kw output) without special foundations, rigidly mounted engines or machines (up to 300 Kw) on special foundations.

**Class 3:** Large prime movers and other large machines with rotating masses mounted on rigid and heavy foundation which are relatively stiff in the direction of vibration measurement.

**Class 4:** Large prime movers and other large machines with rotating masses mounted on rigid and heavy foundation which are relatively soft in the direction of vibration measurement. (for ex. Turbo generator sets, especially those with light weight substructures).

**Class 5:** Machines and mechanical drives system with unbalance able inertia effects (due to reciprocating parts), mounted on foundations which are relatively stiff in the direction of vibration measurement.

**In making our remarks we have applied the Vibration limits based on velocity (mm/sec) RMS values and these are:**

**Class-2(Rigid mounting)**
- 0-2.8 mm/sec - Normal
- 2.8-7.1mm/sec – Alert
- more than 7.1mm/sec – Alarm

**Class-2(Flex. Mounting)**
- 0-7.2 mm/sec - Normal
- 7.2-11.5mm/sec - Alert
- more than 11.5mm/sec – Alarm
## MACHINE SURVEILLANCE REPORT

<table>
<thead>
<tr>
<th>S.NO</th>
<th>Machine Name</th>
<th>Area/Train</th>
<th>Machine Type</th>
<th>Condition Status</th>
<th>Observations</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>20 Hp Motor</td>
<td>Trimming Press-2</td>
<td>Hydraulic pump's motor</td>
<td>Alarm</td>
<td>Inadequate rigidity/looseness in base fixing location, Structural resonance is also possible</td>
<td>Ensure proper &amp; uniform tightness in motor base fixing location, inspect and clean the motor cooling fan to recess the unbalance</td>
</tr>
<tr>
<td>2</td>
<td>60 Hp Motor</td>
<td>Trimming Press-2</td>
<td>Hydraulic pump's motor</td>
<td>Normal</td>
<td>Vibration is normal</td>
<td>Need to trend for future</td>
</tr>
<tr>
<td>3</td>
<td>3 Hp Motor</td>
<td>Trimming Press-2</td>
<td>Hydraulic pump's motor</td>
<td>Normal</td>
<td>Vibration is normal</td>
<td>Need to trend for future</td>
</tr>
<tr>
<td>4</td>
<td>Vacuum pump-1</td>
<td>Vacuum Foaming-2</td>
<td>Vacuum pump's motor</td>
<td>Normal</td>
<td>Vibration is normal</td>
<td>Need to trend for future</td>
</tr>
<tr>
<td>5</td>
<td>Vacuum pump-2</td>
<td>Vacuum Foaming-2</td>
<td>Vacuum pump's motor</td>
<td>Alert</td>
<td>Minor Indication of looseness found in the fixing location</td>
<td>Ensure proper &amp; uniform tightness in motor base fixing location</td>
</tr>
<tr>
<td>6</td>
<td>Vacuum pump-3</td>
<td>Vacuum Foaming-2</td>
<td>Vacuum pump's motor</td>
<td>Alert</td>
<td>It could be the indication of electrical excitation with rubbing of rotor bars</td>
<td>Inspect the motor for any electrical damage</td>
</tr>
<tr>
<td>7</td>
<td>Hydraulic pump vertical</td>
<td>Vacuum Foaming-2</td>
<td>Hydraulic pump's motor</td>
<td>Normal</td>
<td>Vibration is normal</td>
<td>Need to trend for future</td>
</tr>
<tr>
<td>8</td>
<td>Hydraulic pump Horizontal</td>
<td>Vacuum Foaming-2</td>
<td>Hydraulic pump's motor</td>
<td>Alert</td>
<td>Inadequate rigidity/looseness in base fixing location</td>
<td>Ensure proper &amp; uniform tightness in motor base fixing location</td>
</tr>
<tr>
<td>9</td>
<td>Vacuum pump-2</td>
<td>Vacuum Foaming-1</td>
<td>Vacuum pump's motor</td>
<td>Normal</td>
<td>Vibration is normal</td>
<td>Need to trend for future</td>
</tr>
<tr>
<td></td>
<td>Vacuum pump - 3</td>
<td>Vacuum Foaming - 1</td>
<td>Vacuum pump's motor</td>
<td>Normal</td>
<td>Vibration is normal but bearing defect frequency found with respect to minor defects in raceways of motor NDE</td>
<td>Inspect Bearing for proper lubrication and appropriate clearance</td>
</tr>
<tr>
<td>---</td>
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<td>---</td>
<td>---</td>
</tr>
<tr>
<td>10</td>
<td>Hydraulic pump</td>
<td>Vacuum Foaming - 1</td>
<td>Hydraulic pump's motor</td>
<td>Normal</td>
<td>Vibration is normal but bearing defect frequency found with respect to minor defects in raceways of motor NDE</td>
<td>Inspect Bearing for proper lubrication and appropriate clearance</td>
</tr>
<tr>
<td>11</td>
<td>Chiller pump</td>
<td>Vacuum Foaming - 1</td>
<td>Chiller pump's motor</td>
<td>Normal</td>
<td>Vibration is normal</td>
<td>Need to trend for future</td>
</tr>
<tr>
<td>12</td>
<td>60 Hp Motor</td>
<td>Trimming Press-1</td>
<td>Hydraulic pump's motor</td>
<td>Alert</td>
<td>Inadequate rigidity/looseness in base fixing location, Unbalance if also observed</td>
<td>Ensure proper &amp; uniform tightness in motor base fixing location, inspect and clean the motor cooling fan to recess the un balance</td>
</tr>
<tr>
<td>13</td>
<td>20 Hp Motor</td>
<td>Trimming Press-1</td>
<td>Hydraulic pump's motor</td>
<td>Normal</td>
<td>Vibration is normal</td>
<td>Need to trend for future</td>
</tr>
<tr>
<td>14</td>
<td>3 Hp Motor</td>
<td>Trimming Press-1</td>
<td>Hydraulic pump's motor</td>
<td>Normal</td>
<td>Vibration is normal</td>
<td>Need to trend for future</td>
</tr>
</tbody>
</table>

**W-Building Chemical Loading Bulk Storage**

<table>
<thead>
<tr>
<th></th>
<th>Pump-1</th>
<th>Polyol Tank-3</th>
<th>Pump &amp; Motor</th>
<th>Alert</th>
<th>Inadequate rigidity/looseness in base fixing location</th>
<th>Ensure proper &amp; uniform tightness in motor base fixing location</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>Pump-1</td>
<td>Polyol Tank-2</td>
<td>Pump &amp; Motor</td>
<td>Normal</td>
<td>Vibration is normal</td>
<td>Need to trend for future</td>
</tr>
</tbody>
</table>

**A-Building Ref Line- R-1**

<table>
<thead>
<tr>
<th></th>
<th>Press Vessel pump</th>
<th>Case Foaming Head-1</th>
<th>Pump's Motor</th>
<th>Normal</th>
<th>Vibration is normal</th>
<th>Need to trend for future</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>Press Vessel pump</td>
<td>Case Foaming Head-2</td>
<td>Pump's Motor</td>
<td>Normal</td>
<td>Vibration is normal</td>
<td>Need to trend for future</td>
</tr>
<tr>
<td>19</td>
<td>Back Side Motor</td>
<td>Case Foaming Head-1</td>
<td>Motor</td>
<td>Normal</td>
<td>Vibration is normal</td>
<td>Need to trend for future</td>
</tr>
<tr>
<td>20</td>
<td>Back Side Motor</td>
<td>Case Foaming Head-2</td>
<td>Motor</td>
<td>Normal</td>
<td>Vibration is normal</td>
<td>Need to trend for future</td>
</tr>
<tr>
<td></td>
<td>Equipment Type</td>
<td>Case Location</td>
<td>Component</td>
<td>Status</td>
<td>Description</td>
<td>Action</td>
</tr>
<tr>
<td>---</td>
<td>----------------</td>
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<td>--------</td>
<td>-------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>22</td>
<td>Chiller pump</td>
<td>Case Foaming ISO Chiller</td>
<td>Chiller pump's motor</td>
<td>Alert</td>
<td>Minor Indication of loose in motor base fixing location</td>
<td>Ensure proper &amp; uniform tightness in motor base fixing location</td>
</tr>
<tr>
<td>23</td>
<td>Standby Chiller pump</td>
<td>Case Foaming ISO Chiller</td>
<td>Chiller pump's motor</td>
<td>Normal</td>
<td>Vibration is normal</td>
<td>Need to trend for future</td>
</tr>
<tr>
<td>24</td>
<td>Hydraulic Pump</td>
<td>Case Foaming Head-1</td>
<td>Hydraulic pump's motor</td>
<td>Alert</td>
<td>Inadequate rigidity/looseness in base fixing location, Structural resonance is also possible</td>
<td>Ensure proper &amp; uniform tightness in motor base fixing location</td>
</tr>
<tr>
<td>25</td>
<td>Hydraulic Pump</td>
<td>Case Foaming Head-2</td>
<td>Hydraulic pump's motor</td>
<td>Normal</td>
<td>Vibration is normal</td>
<td>Need to trend for future</td>
</tr>
<tr>
<td>26</td>
<td>Pre Heating Blower</td>
<td>Case Foaming</td>
<td>Blower's Motor</td>
<td>Alert</td>
<td>Unbalance force found in both DE &amp; NDE ends of motor</td>
<td>Inspect and clean the fan to recess the unbalance/ need dynamic fan balancing</td>
</tr>
<tr>
<td>27</td>
<td>Main Heating Blower</td>
<td>Case Foaming</td>
<td>Blower &amp; Motor</td>
<td>Normal</td>
<td>Vibration is normal</td>
<td>Need to trend for future</td>
</tr>
<tr>
<td>28</td>
<td>Return Line Heating Blower</td>
<td>Case Foaming</td>
<td>Blower &amp; Motor</td>
<td>Normal</td>
<td>Vibration is normal</td>
<td>Need to trend for future</td>
</tr>
<tr>
<td>29</td>
<td>LZ Blender Hydraulic Pump</td>
<td>CRF</td>
<td>Hydraulic pump's motor</td>
<td>Alert</td>
<td>Inadequate rigidity/looseness in base fixing location, Structural resonance is also possible</td>
<td>Ensure proper &amp; uniform tightness in motor base fixing location</td>
</tr>
<tr>
<td>30</td>
<td>Notching Pump</td>
<td>CRF</td>
<td>Pump &amp; Motor</td>
<td>Normal</td>
<td>Vibration is normal</td>
<td>Need to trend for future</td>
</tr>
<tr>
<td>31</td>
<td>Hydraulic Pump Dry</td>
<td>Door Foaming</td>
<td>Pump &amp; Motor</td>
<td>Alert</td>
<td>Inadequate rigidity/looseness in base fixing location, Structural resonance is also possible</td>
<td>Ensure proper &amp; uniform tightness in motor base fixing location</td>
</tr>
<tr>
<td>32</td>
<td>Hydraulic Pump Wet Head-2</td>
<td>Door Foaming</td>
<td>Pump &amp; Motor</td>
<td>Alarm</td>
<td>Inadequate rigidity/looseness in base fixing location, Unbalance force is also observed, Structural resonance is also possible</td>
<td>Ensure proper &amp; uniform tightness in motor base fixing location, inspect and clean the motor cooling fan to recess the unbalance</td>
</tr>
<tr>
<td></td>
<td>Description</td>
<td>Location</td>
<td>Component</td>
<td>Status</td>
<td>Vibration Status</td>
<td>Additional Details</td>
</tr>
<tr>
<td>---</td>
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<td>------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>33</td>
<td>Hydraulic Pump Wet Head-1</td>
<td>Door</td>
<td>Pump &amp; Motor</td>
<td>Normal</td>
<td>Vibration is normal</td>
<td>Need to trend for future</td>
</tr>
<tr>
<td>34</td>
<td>Iso Chiller H-1</td>
<td>Door</td>
<td>Chiller pump's</td>
<td>Normal</td>
<td>Vibration is normal</td>
<td>Need to trend for future</td>
</tr>
<tr>
<td>35</td>
<td>Iso Chiller H-2</td>
<td>Door</td>
<td>Chiller pump's</td>
<td>Normal</td>
<td>Vibration is normal</td>
<td>Need to trend for future</td>
</tr>
<tr>
<td>36</td>
<td>ISO H-1 Pump</td>
<td>Door</td>
<td>Pump's Motor</td>
<td>Normal</td>
<td>Vibration is normal</td>
<td>Need to trend for future</td>
</tr>
<tr>
<td>37</td>
<td>ISO H-2 Pump</td>
<td>Door</td>
<td>Pump's Motor</td>
<td>Normal</td>
<td>Vibration is normal</td>
<td>Need to trend for future</td>
</tr>
<tr>
<td>38</td>
<td>Polyol H-1 Pump</td>
<td>Door</td>
<td>Pump's Motor</td>
<td>Alert</td>
<td>Inadequate rigidity/looseness in base fixing location, Structural resonance is also possible</td>
<td>Ensure proper &amp; uniform tightness in motor base fixing location</td>
</tr>
<tr>
<td>39</td>
<td>Polyol H-2 Pump</td>
<td>Door</td>
<td>Pump's Motor</td>
<td>Normal</td>
<td>Vibration is normal</td>
<td>Need to trend for future</td>
</tr>
<tr>
<td>40</td>
<td>Polyol Chiller H-1</td>
<td>Door</td>
<td>Pump's Motor</td>
<td>Normal</td>
<td>Vibration is normal</td>
<td>Need to trend for future</td>
</tr>
<tr>
<td>41</td>
<td>Polyol Chiller H-2</td>
<td>Door</td>
<td>Pump's Motor</td>
<td>Normal</td>
<td>Vibration is normal</td>
<td>Need to trend for future</td>
</tr>
</tbody>
</table>

**A-Building Ref Line- R-2**

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Location</th>
<th>Component</th>
<th>Status</th>
<th>Vibration Status</th>
<th>Additional Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>42</td>
<td>ISO Pump A Side</td>
<td>Case</td>
<td>Pump's Motor</td>
<td>Alert</td>
<td>Inadequate rigidity/looseness in base fixing location, Unbalance for if also observed, Structural resonance is also possible</td>
<td>Ensure proper &amp; uniform tightness in motor base fixing location, inspect and clean the motor cooling fan to recess the un balance</td>
</tr>
<tr>
<td>43</td>
<td>ISO Pump B Side</td>
<td>Case</td>
<td>Pump's Motor</td>
<td>Normal</td>
<td>Vibration is normal</td>
<td>Need to trend for future</td>
</tr>
<tr>
<td>44</td>
<td>Polyol Pump A Side</td>
<td>Case</td>
<td>Pump's Motor</td>
<td>Normal</td>
<td>Vibration is normal</td>
<td>Need to trend for future</td>
</tr>
<tr>
<td>45</td>
<td>Polyol Pump B Side</td>
<td>Case</td>
<td>Pump's Motor</td>
<td>Normal</td>
<td>Vibration is normal</td>
<td>Need to trend for future</td>
</tr>
<tr>
<td>46</td>
<td>ISO Chiller H-2</td>
<td>Case</td>
<td>Chiller pump's</td>
<td>Alert</td>
<td>Inadequate rigidity/looseness in base fixing location, Bend shaft also can be possible</td>
<td>Ensure proper &amp; uniform tightness in motor base fixing location, inspect the shaft runout &amp; alignment</td>
</tr>
<tr>
<td></td>
<td>Pump Type</td>
<td>Module Type</td>
<td>Component</td>
<td>Status</td>
<td>Description</td>
<td>Action</td>
</tr>
<tr>
<td>---</td>
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<td>------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>47</td>
<td>Polyol Chiller SEC. Pump-2</td>
<td>Case Foaming</td>
<td>Chiller pump's motor</td>
<td>Normal</td>
<td>Vibration is normal but signal of looseness is found</td>
<td>Ensure proper &amp; uniform tightness in motor base fixing location</td>
</tr>
<tr>
<td>48</td>
<td>Polyol Chiller SEC. Pump-1</td>
<td>Case Foaming</td>
<td>Chiller pump's motor</td>
<td>Normal</td>
<td>Vibration is normal</td>
<td>Need to trend for future</td>
</tr>
<tr>
<td>49</td>
<td>RZ Blender Hydraulic Pump</td>
<td>CRF</td>
<td>Hydraulic pump's motor</td>
<td>Alert</td>
<td>Signal of looseness in base fixing location is found, Unbalance if observed</td>
<td>Ensure proper &amp; uniform tightness in motor base fixing location</td>
</tr>
<tr>
<td>50</td>
<td>Hydraulic Notching Pump-1</td>
<td>CRF</td>
<td>Hydraulic pump's motor</td>
<td>Normal</td>
<td>Inadequate rigidity/looseness in base fixing location</td>
<td>Ensure proper &amp; uniform tightness in motor base fixing location</td>
</tr>
<tr>
<td>51</td>
<td>Hydraulic Notching Pump-2</td>
<td>CRF</td>
<td>Hydraulic pump's motor</td>
<td>Normal</td>
<td>Vibration is normal</td>
<td>Need to trend for future</td>
</tr>
<tr>
<td>52</td>
<td>Roll Forming Drive</td>
<td>CRF</td>
<td>Motor &amp; Gear box</td>
<td>Alert</td>
<td>Inadequate rigidity/looseness in base fixing location</td>
<td>Ensure proper &amp; uniform tightness in motor base fixing location</td>
</tr>
<tr>
<td>53</td>
<td>Polyol Chiller H-1</td>
<td>Door Foaming</td>
<td>Chiller pump's motor</td>
<td>Normal</td>
<td>Vibration is normal</td>
<td>Need to trend for future</td>
</tr>
<tr>
<td>54</td>
<td>Polyol Chemical Pump</td>
<td>Door Foaming</td>
<td>Pump's Motor</td>
<td>Normal</td>
<td>Vibration is normal</td>
<td>Need to trend for future</td>
</tr>
<tr>
<td>55</td>
<td>ISO Chiller H-1</td>
<td>Door Foaming</td>
<td>Chiller pump's motor</td>
<td>Normal</td>
<td>Vibration is normal</td>
<td>Need to trend for future</td>
</tr>
<tr>
<td>56</td>
<td>ISO Chemical Pump</td>
<td>Door Foaming</td>
<td>Pump's Motor</td>
<td>Normal</td>
<td>Vibration is normal</td>
<td>Need to trend for future</td>
</tr>
<tr>
<td>57</td>
<td>single Hydraulic Pump</td>
<td>Door Foaming</td>
<td>Pump's Motor</td>
<td>Normal</td>
<td>Vibration is normal</td>
<td>Need to trend for future</td>
</tr>
<tr>
<td>58</td>
<td>Dry Part Hydraulic Pump</td>
<td>Door Foaming</td>
<td>Pump &amp; Motor</td>
<td>Alarm</td>
<td>Inadequate rigidity/looseness in base fixing location, Structural resonance is also possible</td>
<td>Ensure proper &amp; uniform tightness in motor base fixing location</td>
</tr>
</tbody>
</table>
L.G Electronics

**Velocity with Power Spectrum**

<table>
<thead>
<tr>
<th>Factory Name</th>
<th>Area Name</th>
<th>Train Name</th>
<th>Machine Name</th>
<th>Point Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>LG-Electronic1</td>
<td>Area</td>
<td>Train</td>
<td>Machine1</td>
<td>Point1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Value</th>
<th>Date &amp; Time</th>
<th>Parameter with Direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.14826</td>
<td>01-Jan-00 12:05:25 AM</td>
<td>Velocity Horizontal</td>
</tr>
</tbody>
</table>

**Power Horizontal**

![Power Horizontal Graph]

**Power Vertical**

![Power Vertical Graph]
### Velocity with Power Spectrum

<table>
<thead>
<tr>
<th>Value</th>
<th>Date &amp; Time</th>
<th>Parameter with Direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.50335</td>
<td>01-Jan-00 12:08:27 AM</td>
<td>Velocity Vertical</td>
</tr>
<tr>
<td>0.793999</td>
<td>01-Jan-00 12:08:53 AM</td>
<td>Velocity Axial</td>
</tr>
<tr>
<td>29.5702</td>
<td>01-Jan-00 12:08:53 AM</td>
<td>Velocity Horizontal</td>
</tr>
</tbody>
</table>

**Power Vertical**

![Power Vertical Graph](image)

**Power Axial**

![Power Axial Graph](image)

**Power Horizontal**

![Power Horizontal Graph](image)
### Velocity with Power Spectrum

#### Parameter with Direction

<table>
<thead>
<tr>
<th>Value</th>
<th>Date &amp; Time</th>
<th>Parameter with Direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.26365</td>
<td>01-Jan-00 12:09:47 AM</td>
<td>Velocity Horizontal</td>
</tr>
<tr>
<td>0.688554</td>
<td>01-Jan-00 12:09:47 AM</td>
<td>Velocity Vertical</td>
</tr>
</tbody>
</table>

#### Power Horizontal

![Power Horizontal Chart]

#### Power Vertical

![Power Vertical Chart]
Velocity with Power Spectrum

<table>
<thead>
<tr>
<th>Factory Name</th>
<th>Area Name</th>
<th>Train Name</th>
<th>Machine Name</th>
<th>Point Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>LG-Electronic1</td>
<td>Area</td>
<td>Train</td>
<td>Machine1</td>
<td>Point4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Value</th>
<th>Date &amp; Time</th>
<th>Parameter with Direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.66269</td>
<td>01-Jan-00 12:11:26 AM</td>
<td>Velocity Axial</td>
</tr>
<tr>
<td>1.17014</td>
<td>01-Jan-00 12:11:26 AM</td>
<td>Velocity Horizontal</td>
</tr>
</tbody>
</table>

Power Axial

Power Horizontal
L.G Electronics

Velocity with Power Spectrum

<table>
<thead>
<tr>
<th>Factory Name</th>
<th>Area Name</th>
<th>Train Name</th>
<th>Machine Name</th>
<th>Point Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>LG-Electronics1</td>
<td>Area</td>
<td>Train</td>
<td>Machine1</td>
<td>Point5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Value</th>
<th>Date &amp; Time</th>
<th>Parameter with Direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.814177</td>
<td>01-Jan-00 12:12:24 AM</td>
<td>Velocity Horizontal</td>
</tr>
<tr>
<td>0.911501</td>
<td>01-Jan-00 12:12:24 AM</td>
<td>Velocity Vertical</td>
</tr>
</tbody>
</table>

Power Horizontal

Power Vertical
**Velocity with Power Spectrum**

![Graph of Velocity and Power Spectrum](image)

<table>
<thead>
<tr>
<th>Parameter with Direction</th>
<th>Value</th>
<th>Date &amp; Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Velocity Horizontal</td>
<td>5.15067</td>
<td>01-Jan-00 12:13:32 AM</td>
</tr>
<tr>
<td>Velocity Vertical</td>
<td>0.54394</td>
<td>01-Jan-00 12:13:32 AM</td>
</tr>
</tbody>
</table>

**Power Horizontal**

![Power Horizontal Graph](image)

**Power Vertical**

![Power Vertical Graph](image)
Velocity with Power Spectrum

<table>
<thead>
<tr>
<th>Factory Name</th>
<th>Area Name</th>
<th>Train Name</th>
<th>Machine Name</th>
<th>Point Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>LG-Electronic1</td>
<td>Area</td>
<td>Train</td>
<td>Machine1</td>
<td>Point7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Value</th>
<th>Date &amp; Time</th>
<th>Parameter with Direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.21585</td>
<td>01-Jan-00 12:20:48 AM</td>
<td>Velocity Horizontal</td>
</tr>
<tr>
<td>1.18539</td>
<td>01-Jan-00 12:20:48 AM</td>
<td>Velocity Vertical</td>
</tr>
</tbody>
</table>

Power Horizontal

Power Vertical
L.G Electronics

Velocity with Power Spectrum

<table>
<thead>
<tr>
<th>Factory Name</th>
<th>Area Name</th>
<th>Train Name</th>
<th>Machine Name</th>
<th>Point Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>LG-Electronic1</td>
<td>Area</td>
<td>Train</td>
<td>Machine1</td>
<td>Point8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Value</th>
<th>Date &amp; Time</th>
<th>Parameter with Direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.10738</td>
<td>01-Jan-00 12:22:16 AM</td>
<td>Velocity Axial</td>
</tr>
<tr>
<td>1.11742</td>
<td>01-Jan-00 12:22:16 AM</td>
<td>Velocity Horizontal</td>
</tr>
<tr>
<td>1.78132</td>
<td>01-Jan-00 12:22:16 AM</td>
<td>Velocity Vertical</td>
</tr>
</tbody>
</table>

Power Axial

Power Horizontal
 Velocity with Power Spectrum

<table>
<thead>
<tr>
<th>Factory Name</th>
<th>Area Name</th>
<th>Train Name</th>
<th>Machine Name</th>
<th>Point Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>LG-Electronic1</td>
<td>Area</td>
<td>Train</td>
<td>Machine1</td>
<td>Point9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Value</th>
<th>Date &amp; Time</th>
<th>Parameter with Direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.82117</td>
<td>01-Jan-00 12:23:13 AM</td>
<td>Velocity Horizontal</td>
</tr>
<tr>
<td>2.52203</td>
<td>01-Jan-00 12:23:13 AM</td>
<td>Velocity Vertical</td>
</tr>
</tbody>
</table>
**L.G Electronics**

**Velocity with Power Spectrum**

![Graph of Velocity with Power Spectrum](image)

<table>
<thead>
<tr>
<th>Factory Name</th>
<th>Area Name</th>
<th>Train Name</th>
<th>Machine Name</th>
<th>Point Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>LG-Electronic1</td>
<td>Area</td>
<td>Train</td>
<td>Machine1</td>
<td>Point10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Value</th>
<th>Date &amp; Time</th>
<th>Parameter with Direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.00926</td>
<td>01-Jan-00 12:24:05 AM</td>
<td>Velocity Horizontal</td>
</tr>
<tr>
<td>2.55159</td>
<td>01-Jan-00 12:24:05 AM</td>
<td>Velocity Vertical</td>
</tr>
</tbody>
</table>

**Power Vertical**

![Graph of Power Vertical](image)
CONCLUSION

During the visit of our engineer to your site from 9th march 2016 to 10th march 2016 a detailed vibration measurement and analysis was carried out on your 58 machines. It is suggested:

- To take up recommended corrective action given in the machine surveillance report for trouble free operation and plan next schedule for verification of the recommended action.
- To plan the next schedule at least after 1 month for those Machines which lies in alert zone by some marginal values for taking the close trend of vibrations.

Thanks & Regards
For Iadept Marketing

Brijesh Kumar
(Executive Director)