Structural Dynamics of Industrial Buildings

Contact:
Prof. Dr.-Ing. Dieter Heiland
+49 / 234 / 95020-6
info@baudynamik.de
www.baudynamik.de
Industrial buildings underlie high structural standards and they have to comply with special requirements because of their complex operation. Generally, high static loads as well as dynamic forces are induced by the machines. They lead to vibrations which

- influence other facilities in the surrounding area,
- disturb the individual
- could damage the building's structure itself.

In addition, the structural vibration level has to be very low because of the current high requirements of production tolerance. High-precision manufacturing facilities have special frequency-dependent definitions of the allowed vibration level. Therefore, it is necessary to verify the “dynamic serviceability” of the structural building.

<table>
<thead>
<tr>
<th>Year</th>
<th>Reference Projects (Extract)</th>
</tr>
</thead>
</table>
| 2016 | Portlandzementwerk Wittekind Hugo Miebach Söhne KG, Erwitte  
Vibration monitoring during two weeks to identify the vibration source. |
| 2016 | Schoeller GmbH und Co KG, Standort Penig  
Acceptance measurement in an annex of the paper mill containing a gas turbine. |
| 2016 | Tracto Technik GmbH, Lennestadt  
Dynamic investigations to ensure the serviceability of a suspended ceiling in a new storage building. |
| 2016 | WILO SE, Dortmund  
Vibration measurements in the existing building and on the ground. Dynamic design of new fabrication areas. Assessment of installation areas for machines in the existing halls. |
| 2016 | Hexion GmbH, Iserlohn  
Measurements of the emissions coming from a resin digester. Dynamic retrofitting concept for the building to install a new digester. |
2014  **Spenner Zement, Werk Duisburg**  
Vibration investigation and monitoring near a new slag sand mill with attached mixing and loading station.

2014  **Aurubis GmbH, Lünen**  
Determination of dynamic forces on an in-door crane in Lünen during the typical working process.

2014  **Saint Gobain Rigips GmbH, Steinbruch Berneburg**  
Measurement and assessment of immission data collected in two buildings during blasting operations in a stone quarry in Berneburg.

2014  **Basalt AG, Steinbruch Imhausen**  
QE measurements to check the running vibration monitoring in several buildings during blasting operations in a stone quarry in Imhausen.

2014  **ASM München**  
Dynamic investigation concerning the installation of several SIPLACE pick and place tools.

2014  **Seepex, Bottrop**  
Vibration measurements in a new office building near a stone crusher.

2014  **Vestolit, Chemiepark Marl**  
Analysis and assessment of vibrations on a sifting plant.

2014  **Dipl.-Ing. Herwath Reich GmbH, Bochum**  
Preliminary dynamic design of an security housing for a displacement test rig.

2014  **IDE GmbH, Raunheim**  
Measurements of vibration and structural stiffness on the raft foundation of the new hall 1..

2014  **GNS, Essen, Germany**  
Preliminary dimensioning of the foundation for a new drop tower test rig.
2013  **WILD Westerweiterung, Eppelheim, Germany**  
Vibration measurements and analysis of the serviceability of production plant with automatic cutting presses.

2013  **Bosch, Madrid, Spain**  
Floor Vibration Study for the planned modification of a pick and place production line.

2013  **Saint Gobain Glass, Cologne, Germany**  
Dynamic site evaluation for the extension of a magnetron device.

2013  **Märkisches Federnwerk KG, Lüdenscheid, Germany**  
Vibration analysis and optimisation for the reposition of a winch FUL45 in the existing building.

2013  **IBV Ingenieurgesellschaft, Marl, Germany**  
Vibration investigation of the anchoring of a cold pilger mill.

2013  **Teckentrup, Herscheid, Germany**  
Comparing vibration measurement of a press for the assessment of a cutting impact dampening.

2013  **ATA-Gears, Tampere, Finland**  
Vibration evaluation for the installation of a vibratory finishing machine.

2013  **Moog Unna, Germany**  
Consulting during the planning procedure of a foundation for a test rig.

2013  **REXAM Ludesch, Austria**  
Preliminary investigation for the placement of bodymakers and other plants of the can production. Vibration prognosis and consulting services concerning the production requirements and a vibration isolation.

2012  **Spener Rheingold Duisburg, Germany**  
Vibration Isolation of a grinding plant for granulated blast furnace slag in Duisburg, Germany (for the company Spener-Zement GmbH & Co. KG).
2012 **Conti TEMIC microelectronic GmbH, Ingolstadt, Germany**
Vibration study for the extension of a Pick & Place line in a new building of Conti Temic microelectronic GmbH in Ingolstadt.

2012 **Andritz Kufferath GmbH, Düren, Germany**
Vibration analysis of a weaving loom and office premises nearby.

2012 **DYNA-Mess Stolberg (Rheinland), Germany**
Optimisation of an steel foundation for a 500 Hz testing machine with FEM analysis.

2012 **Peikert BMS, Berlin, Germany**
Dynamic design of a foundation for a Siemens SIPLACE SX1/SX2 tool.

2011 **OBO Bettermann, Menden, Germany**
Investigation of structural dynamics and dynamic design of two foundations for presses.

2011 **Sandvik Materials Technology, Ennepetal, Germany**
Site evaluation for the installation of a laser table at the location in Ennepetal.

2011 **Tongs Forge Wuppertal, Germany**
Vibration investigation including measurements according to the german BlmschG to allow night operation in the production area.

2011 **Water distribution system, Waterways and Shipping Office Rheine, Germany**
Evaluation of vibration effects due to the water distribution system on the building (which is under preservation order) according to DIN 4150 part 3.

2011 **Seepex, Bottrop, Germany**
Monitoring of vibrations in an existing office building. Prognosis of vibrations for the planning of an extension of the building.

2010 **Siemens AG**
Development of a positioning concept for pick-and-place machines, types SX1/2 and SX4.
<table>
<thead>
<tr>
<th>Year</th>
<th>Project</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>Spener Zement</td>
<td>Examination of structural dynamics and modal analysis of a rotary kiln foundation and an attached service building. Development of reconstruction measures for a reduction of the vibrations due to kiln rotation.</td>
</tr>
<tr>
<td>2010</td>
<td>Extension of a pick-and-place production area, Salzgitter, Germany</td>
<td>Dynamic evaluation of ambient and installation conditions for production lines of pick-and-place devices in an upper floor of the building.</td>
</tr>
<tr>
<td>2010</td>
<td>BHR construction of high-pressure pipes</td>
<td>Dynamic examination of a double-flame-tube boiler and its exhaust system.</td>
</tr>
<tr>
<td>2009</td>
<td>Stute Töncenter</td>
<td>Assessment of a positioning location for an industrial paint mixing device.</td>
</tr>
<tr>
<td>2009</td>
<td>ZF-Lenksysteme (steering systems)</td>
<td>Evaluation of foundation vibrations due to the operation of lever press.</td>
</tr>
<tr>
<td>2009</td>
<td>OBO Bettermann</td>
<td>Vibration measurement and dynamic design for two press foundations.</td>
</tr>
<tr>
<td>2008</td>
<td>Endress und Hauser</td>
<td>Investigation of vibrations and appropriate dynamic design of a hall for CNC machines.</td>
</tr>
<tr>
<td>2008-2010</td>
<td>Luhn und Pulvermacher spring fabrication Hagen, Germany</td>
<td>Detection of vibrations and noise caused by a roll and development of vibration control measures for reduction of the local vibration level.</td>
</tr>
</tbody>
</table>
2008  Hänsel Textil GmbH
Examination of occurring vibrations and noise causing looms.
Deduction of adequate emission control concepts.

2008  ESW Elektronik GmbH
Vibration detection and development of structural upgrade
concept for hall containing a production line of pick-and-place
machines.

2008  B & S Stanztechnik
Prognosis of vibrations for an extension of the existing
production area.

2007  Rexam (can maker), Ludesch, Austria
Reconstruction of machinery foundation for bodymaker
machines of a can production line.

2007  Siemens AG Berlin, Germany
Evaluation of vibrations affecting pick-and-place machines.

2007  Schmidt drop forge, Solingen, Germany
Vibration measurement of a strap-lift drop hammer, prognosis
and evaluation.

2007  Mauser injection moulding
Vibration measurements and monitoring.

2007  Kolbenschmidt
Measurements of vibrations due to milling machines, prognosis
and evaluation.

2007  Honeywell, Stuttgart, Germany
Measurements of vibrations and structure stiffness for an
evaluation of structural dynamics of a hall used for
semiconductor production.

2006- 2007  Bosch, Madrid, Spain
Measurements and dynamic analysis for retrofit measures in
order to install a production line with pick-and-place machines.
2005-2007 Blaupunkt, Braga, Portugal
Vibration measurement and investigation of retrofit measures for the installation of pick-and-place machines.

2005-2007 Kolbenschmidt, Germany
Design for processing centres of a motor manufactures / retrofitting of the building structure in order to fulfill low vibration limits.

2006 Infracor, Marl, Germany
Vibration measurement and analysis of a cooling tower fan.

2006 Kia Motors, Frankfurt, Germany
Vibration investigations and analysis for the installation of milling machines.

2005 Schott, Jena, Germany
Vibration measurements and analysis for glass manufacturing facilities.

2002 VW Autostadt, Wolfsburg, Germany
Vibration investigation for several foundations of driving simulators.

2002-2005 Opel, Bochum, Germany
Dynamical investigation for several assembly platforms.

2001 VW Gläserne Manufaktur, Dresden, Germany
Vibration investigation for foundations of driving simulators.

... for more information, please visit www.baudynamik.de