



Structural Dynamics of Industrial Buildings



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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 buildings 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.

<u>Year</u>	<u>Reference Projects (Extract)</u>
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 annexe of the paper mill containing a gas turbine.
2016	Tracto Technik GmbH, Lennestadt Dynamic investigations to ensure the serviceability of a suspended ceiling in 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 mashine.
- 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 Spenner Rheingold Duisburg, Germany**
Vibration Isolation of a grinding plant for granulated blast furnace slag in Duisburg, Germany (for the company Spenner-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 BImSchG 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.



- 2010 Spenner Zement**
 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.
- 2010 Extension of a pick-and-place production area, Salzgitter, Germany**
 Dynamic evaluation of ambient and installation conditions for production lines of pick-and-place devices in an upper floor of the building.
- 2010 BHR construction of high-pressure pipes**
 Dynamic examination of a double-flame-tube boiler and its exhaust system.
- 2009 Stute Töncenter**
 Assessment of a positioning location for an industrial paint mixing device.
- 2009 ZF-Lenkssysteme (steering systems)**
 Evaluation of foundation vibrations due to the operation of lever press.
- 2009 OBO Bettermann**
 Vibration measurement and dynamic design for two press foundations.
- 2008 Endress und Hauser**
 Investigation of vibrations and appropriate dynamic design of a hall for CNC machines.
- 2008 Strack Norma**
 Modal Identification of oscillation of machinery and foundations due to operations of portal milling machines. Modifikation and repairing concept of the isolated foundation.
- 2008-2010 Luhn und Pulvermacher spring fabrication Hagen, Germany**
 Detection of vibrations and noise caused by a roll and development of vibration control measures for reduction of the local vibration level.



- 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.

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