

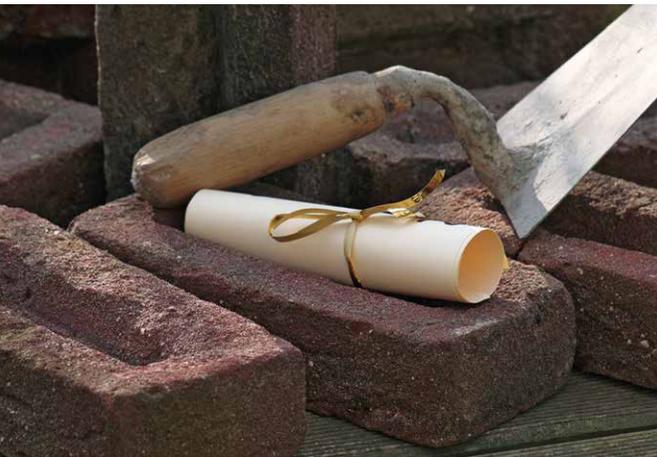


Air Pollution Control · Noise and Vibration Control · Plant Safety · Environmental Compatibility · Light · Health & Safety

Interdisciplinary expert opinions and independent, legally compliant testing services – from site selection through to legally compliant plant operation

Laying the foundations for your project – permit management, interdisciplinary expert opinions and independent consulting and testing from Müller-BBM

Companies embarking on major projects nowadays need to take many factors into account. As well as complying with an ever increasing number of rules and regulations governing the environmental impact of industrial plants, firms also need to ensure their projects meet the approval criteria of official agencies and are acceptable to the general public and their elected representatives. Offering a full-service consultancy, Müller-BBM's team of knowledgeable experts can help you meet all these requirements – from identifying the right site through to regular emission measurements.



Power Plant Würzburg – examined by Müller-BBM

The benefits for you

Legal security, increased efficiency and cost-effectiveness

Interdisciplinary expert opinions and management of licensing procedures by Müller-BBM deliver clear efficiency gains. Whatever the size of your project, we offer specialists who have many years of experience in handling approval procedures in the fields of occupational health and safety, fire and explosion protection, electromagnetic environmental compatibility, lighting, air pollution control, noise and vibration control as well as plant safety. We have at our fingertips up-to-the-minute information about the implementation and interpretation of national and international standards and applicable legislation. You can therefore safely put your trust in the know-how and experience of Müller-BBM's engineers and technicians.

Dedicated contact person

Take advantage of our interdisciplinary services and unified project management to obtain all the necessary permits through just a single interface, allowing you to simplify your project management and focus on your core competencies. A dedicated contact person will be responsible for the prompt and meticulous performance of all inspections as well as the submission of expert opinions and permit applications. With offices in Munich, Berlin, Cologne, Dresden, Frankfurt, Gelsenkirchen, Hamburg, Karlsruhe, Nuremberg, Stuttgart and Weimar, plus daughter and sister companies in Austria, Sweden and the Netherlands, Müller-BBM's consulting engineers and experts will deliver better performance at lower cost to you.

Always at your side

We like to get close up and personal, and not just in a geographical sense. We see our role as being a partner who is always at your side to provide advice and help, especially when projects are time-critical. Our non-hierarchical corporate structure is designed to support this approach. Short channels of communication = fast decisions, assuring the success of your investment.

On the safe side

Solid expertise is keystone of success

Müller-BBM employs an interdisciplinary team of experts in fields such as air and odour monitoring, noise and vibration control, impacts of light immission and electromagnetic fields. Not only perform our engineers, chemists, geologists, meteorologists, physicists and environmental scientists measurements and inspections, they also offer advice about any adaptations to plant technology necessary to meet the relevant approval criteria and to guarantee legal security in all project phases and during the actual plant operation. Moreover, this is expertise on which you can rely: we have been working in

industrial noise and vibration protection since the 1960s and in the field of air pollution from 1984, since when we have demonstrated our competence in numerous major German and international projects. We offer a comprehensive range of services to help you build and operate plants:



Permit management, expert opinions and consultancy services

- Environmental impact assessments
- Dispersion modelling
- Stack height calculations
- Odour impact studies
- Risk and safety analysis
- Fire and explosion protection
- Legally compliant business organization and management systems
- Noise abatement planning
- Electromagnetic environmental compatibility
- Light immission expert opinions
- Coordination of nature conservation concerns
- Life cycle assessments

Independent testing services and verification services

- Testing laboratory accredited according to DIN EN ISO/IEC 17025
- Measurement of stack emissions / ground level concentrations from air pollution, noise and vibration
- Annual surveillance testing (AST) and calibration (QAL2) of stationary continuously operating measurement devices
- Testing of combustion temperatures and combustion conditions
- Olfactometry investigations and odour field inspection studies
- Workplace air and hazardous substance exposure monitoring
- Laboratory services and material testing
- Verification of greenhouse gas emission monitoring reports



Comprehensive services – tailored to your needs

With our comprehensive range of services, we can assist you at every stage of your project as well as during the actual plant operation. We will combine cross-modular approaches and individual modules that match your needs to provide a package with exactly the level of support you require, including the certainty that all legal requirements are met – at a cost you can budget for with confidence.



Environmental impact assessments

Stack height calculations and immission forecasts are as much a part of our armoury as collating the documentation for general and site-specific preliminary impact assessments, including full environmental impact assessments if necessary. During the approval process we can also conduct risk and safety analysis, help you complete application documents, or even handle all the work involved in submitting applications on your behalf.



Measurement of air pollution, stack emissions and ground level concentrations

As a testing facility accredited according to DIN EN ISO/IEC 17025 and a notified body according to §29b of the German Federal Air Pollution Control Act (BImSchG), we conduct stack emission and ground level concentration measurements for all kinds of industrial or agricultural plants, e.g. waste incineration plants, biogas plants, chemical plants, refineries, paper mills, and waste treatment facilities. We measure and analyse the entire spectrum of air pollutants, from organic and inorganic gases to odours, dust and substances contained in dust. Besides, our subsidiary mas | münster analytical solutions gmbh analyses highly toxic dioxins and furans. We also operate ground level concentration measuring stations to continuously monitor air quality, for instance in the vicinity of airports.

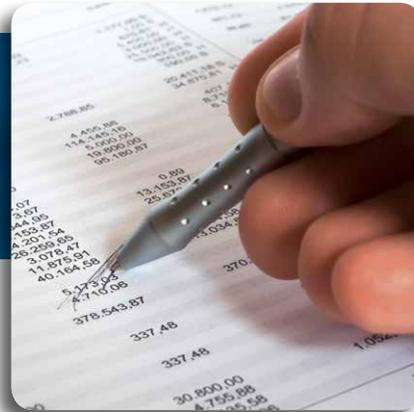


Function testing and calibration

Müller-BBM is a notified body in Germany and Luxembourg for verifying the correct installation, functional testing and calibration of automated measuring systems. Depending on the type of plant involved (power stations, chemical plants or waste incinerators), we check that the measuring instruments being used for monitoring are working correctly and calibrate them according to the relevant reference standards. In addition Müller-BBM handles the parameterisation of the emissions computers and performs plausibility checks for remote monitors. We are also happy to advise on the selection of suitable measuring instruments and installation points.

Legally compliant business organization and management systems

For the implementation and safeguarding of a legally compliant business organization, our experts will support you when it comes to legally compliant delegation of entrepreneurial duties in your company. As-is analysis, planning and establishing environmental, quality and safety management systems, including a system for environmental indexes and monitoring of legal requirements are as much part of our profile as are the realization of organization analyses, especially in safety relevant areas of your business (e. g. statutory order on hazardous incidents, G 1000 / W 1000 / S 1000 / FW 1000 according to regulations of DVGW, VDE and AGFW, implementation of regulation of industrial safety, outsourcing to subcontractors). Furthermore, we offer to create relevant documents regarding the legally compliant organization (e. g. organization, operation, plant safety, emergency and instruction manuals) as well as our services as coordinators and external officers (e. g. for environmental management, environmental protection, hazardous goods, waste or fire protection).



Odour investigations

Within urban land use planning we perform odour investigations to identify possible situations of conflict caused by the impact of existing industry on planned development. We perform odour perception prognoses in the plant vicinity, using adequate dispersion models. We also measure plant emissions by means of sensoric testing by a team of qualified testers, thus evaluating the performance of exhaust cleaning devices. In situations of initial pollution, we quantify the level of odour impact arranging field inspections by means of plume or grid measurements.

Life cycle assessments

Along with material and energy flow analyses, life cycle assessments (LCA) are used to document the environmental impact of industries, processes, services or products. In addition to supplying these expert opinions, we can also perform economic analyses. We offer assistance at all stages, from defining the objectives, specifying the process structures and identifying the required data through to interpreting the data and producing informative reports. Reports include concrete practicable solutions and implementation suggestions for optimising your production processes.

Fire protection

As one of the key elements during the design and planning approval stages of your building project, we can draw up a fire protection concept. Besides complying with the relevant building codes, we also take into account your own design ideas and the prospective use of the buildings. For the actual operational phase we draw up fire safety regulations, fire brigade plans and all the technical fire safety documentation required. Finally, we can also provide insurance risk analyses and expert opinions on fire safety.

Modular service packages

Plant safety/water pollution

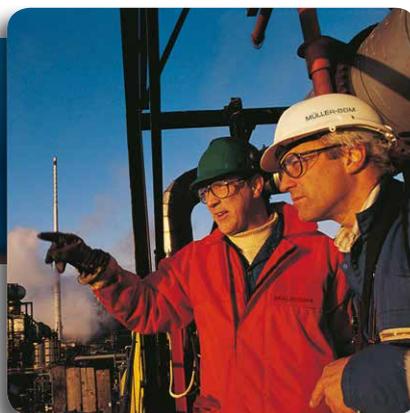
With many years of experience in all areas of safety technology, our experts are accompanying you. Particularly in matters of operational safety, we can help you assess potential workplace and equipment hazards and recommend appropriate safety precautions. As well as performing explosion protection expert opinions and elabo-



rating explosion protection documentation, we also offer commissioning tests. For plants handling substances hazardous to water, we can perform expert opinions as well as conduct commissioning and routine tests. We offer a comprehensive range of services, from concept design and safety reports through to drawing up alarm and hazard prevention plans, including strategies for alerting the public.

Workplace monitoring and occupational health and safety

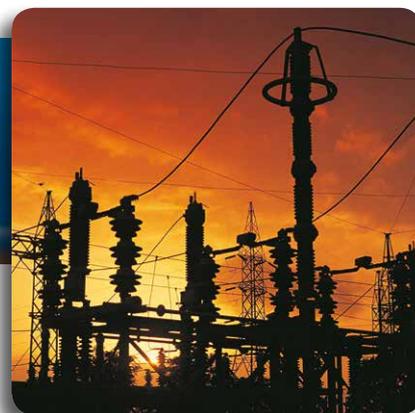
In addition to conducting audits of exposure to hazardous substances at the workplace, we also perform full-scale workplace analyses and risk assessments in accordance with TRGS 402. We draw up measurement plans and advise on appropriate steps to reduce exposure. In addition Müller-BBM can assist with



the classification of preparations or mixtures of substances, particularly residue mixtures, the preparation of safety datasheets and the categorisation of transportation goods. We also measure noise and vibrations at the workplace and help you draft and implement suitable abatement concepts. Our safety experts can advise you on all issues pertaining to occupational health and safety and accident prevention.

Electromagnetic environmental compatibility

Müller-BBM measures and assesses electromagnetic fields at workplaces with a high exposure risk, e.g. in the vicinity of electric welding plants, high-frequency welding equipment, galvanisation plants, induction furnaces, demagnetisation equipment and other plants using high currents, high voltages



or high frequencies. As well as major electrical installations requiring operating licences, such as high voltage lines, electricity substations and transformers, Müller-BBM also inspects and assesses railway systems or underground and tram railways whose electromagnetic fields can impair the operation of sensitive measuring and analysis equipment.

Light immission

Light immission measurements are often required as part of environmental approval processes or environmental impact assessments. Analogously to noise protection, Müller-BBM can advise you on measures to prevent light immission already during the development planning stage. We produce forecasts to estimate the impact of light



immissions from planned installations on their environment, simulating and taking account of various illumination scenarios. We also measure light immission values locally in existing plants to identify potential areas of conflict at an early stage and consequently enable you to avoid contentions.

Noise and vibration control

For new or modernised facilities, we prepare noise expert opinions for submission to the relevant licensing authorities. These include recommendations for best acoustical design of facades, roofs, exhaust and piping insulation, mufflers, noise barrier enclosures and machinery properties. For verification of adequate acoustic insulation, noise



immissions into the environment are forecast for the planned design of the plant design and are compared with the critical values of the relevant standards. Before and during the construction phase, Müller-BBM ensures that the protection measures set out in the noise expert opinions are correctly implemented from the noise abatement perspective and if design changes arise during the planning procedure. In co-operation together with the operators of vibration-generating machinery, Müller-BBM develops technical solutions to limit vibration emissions. We specify measures for the elastic decoupling of systems that generate vibrations in order to prevent a negative impact on humans, equipment and buildings.

Energy management

For companies with high power consumption, energy management systems become more and more important as tax benefits often come with the condition to introduce such a system. Energy management systems can help to systematically uncover reduction potentials. An energy management system based on existing rules and supplemented



by system-related aspects helps you to systematically incorporate energy consumption analyses in operational processes and competently assess potential savings based on ecological and economic criteria.

Müller-BBM has followed the legal and technical development of energy management from the very beginning and started implementing it in everyday operations very early on. Our experts provide comprehensive energy management systems consulting, taking into consideration vulnerability analyses and substantive requirements for establishing and implementing an energy management system. We support you during the initial review in preparation for implementation, and help with the internal energy audit.

Buildings

Building acoustics
Room acoustics
Media and communications technology
Thermal building physics
Building climatology
Sustainability
Fire protection
Structural dynamics
Building pollutants

Environment

Noise control
Air pollution control
Vibration control
Light and electromagnetic fields
Environmental compatibility
Plant safety
Legally compliant business organization
Risk assessment
Chemical analysis

Technology

Automotive acoustics
Ship acoustics
Rail acoustics
Industrial acoustics
Machine acoustics and machine dynamics
Psychoacoustics
Mobile communication

Comprehensive solutions from a single source

Consulting · Planning · Measuring Expert Opinion · Research

Müller-BBM GmbH is a subsidiary of Müller-BBM Holding AG, with headquarters in Planegg near Munich. Since 1962 Müller-BBM has been advising clients nationally and internationally and is now one of the world's leading engineering firms. More than 400 highly qualified employees form an interdisciplinary team of architects, scientists and engineers in the most diverse specialist fields. The company currently has twelve offices in Germany as well as a branch office in Austria.

Notifications

Müller-BBM is notified as an expert authority in accordance with § 29 b of the German Federal Pollution Control Act (BImSchG). The notification comprises

- determining emissions and immissions of air pollutants, noise and vibration
- verifying the correct installation and function in addition to the calibration of continuous emission measurement systems (CEMS)
- checking combustion conditions

As a test laboratory, Müller-BBM is authorized to render the services of an independent third-party provider for assessing and examining performance reliability in accordance with EU regulation no. 305/2011 (Construction Products Regulation).

Accreditations

Our testing and calibration laboratories are accredited according to ISO/IEC 17025:

- Test laboratory for sound and vibration, electromagnetic fields and light, air pollution control, measurement of hazardous substances
- Acoustic testing laboratory
- Calibration laboratory for acceleration and acoustical quantities

Müller-BBM has a significant number of employees with competency certificates that were awarded to them on an individual basis. They include publicly appointed and sworn experts, state-recognised experts and otherwise appointed and notified experts.

Detailed information on the scope of our accreditation, its international validity and the corresponding certificates can be found on <http://www.muellerbbm.com/quality/>.

Headquarters

Müller-BBM GmbH
Helmut-A.-Müller-Straße 1 – 5
82152 Planegg/Munich
Germany
Phone +49 89 85602-0
Fax +49 89 85602-111

www.MuellerBBM.com