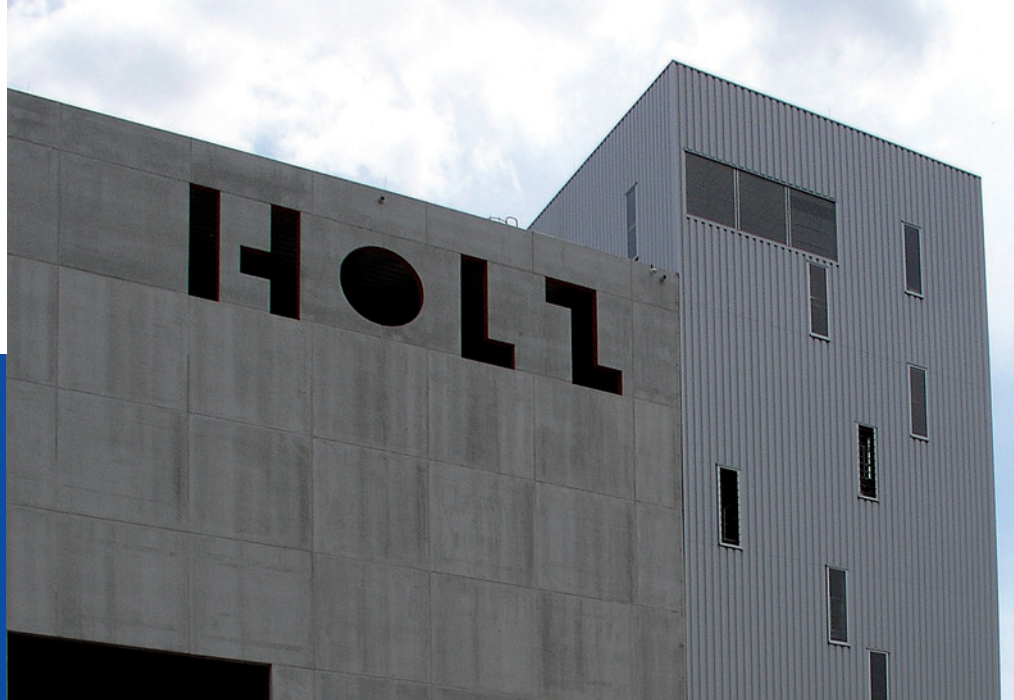


Wood-Fired Power Station Lohbrügge, Germany



High-Tech Innovation Helps To Protect The Environment – Wood-Fired Power Station In Lohbrügge, Germany

Renewable raw materials are essential for environmentally-friendly production of energy. Unlike with fossil fuels, the formation and combustion of these renewable materials can be considered earth friendly. For this reason, the thermal use of these materials through combustion is CO₂-neutral. The Hamburg-Lohbrügge wood-fired power station is built on this principle and thanks to its environmentally-friendly technology, it is the world's leading reference plant. Every year, the power station transforms 30,000 metric tons of natural wood into environmentally-friendly heat energy and electricity. This saves 23,000 metric tons of CO₂ each year.

The process of cogeneration makes the most efficient use of the energy contained in the wood. The power station generates around 8,000 kW of heat energy, which can be used to heat a nearby community, and it supplies 1,700 kW of electrical power to the public power grid. Also the energy-saving camera technology from MOBOTIX contributes to the sustainability of the power station. MOBOTIX

cameras are designed to operate in a wide range of temperatures (-30 to +60 °C, or -22 to 140 °F) without active heating or cooling. In addition, these cameras have a power consumption of only 3 W, ensuring their reliability and keeping the operating costs low. Unlike conventional solutions with weak technical specifications and limited functionalities, each MOBOTIX camera can save several hundred kilowatt-hours of energy every year. In addition, thanks to the high resolution of MOBOTIX cameras, one single camera can replace multiple conventional cameras, so it becomes clear that MOBOTIX shows no compromise when it comes to performance, economy and environmentally-friendly operation.

Sophisticated Technology From A Combined Effort

This technical masterpiece has multiple creators. As general contractor, KWA Contracting AG (KWA, www.kwa-ag.de) assigned planning and construction management duties to the engineering specialist Schuler (IBS, www.ing-buero-schuler.com).

The finished plant is operated by the Gesellschaft für Energieeffizienz mbH (GENEFF, www.geneff.de).

From the very beginning, the progress of the construction work was documented using high-quality video technology. The Hamburg-based company Hansa-Projekt Elektro- und Informationstechnik GmbH (www.hansa-projekt.de) stepped in to complete this task. This company, founded in 1979, now employs 150 staff members in the areas of electrical engineering and information and automation technology. Hansa has been using MOBOTIX cameras for years to conduct surveillance tasks for many different types of applications.

Using MOBOTIX technology, the catchphrase for Hansa employee Hendrik Braasch is to operate "everything over IP." From mid-2007 onwards, two M22 cameras have been used to document the progress of the construction work at the Lohbrügge power station. Today, seven additional cameras placed at strategic



Comprehensive documentation and optimization of the process chain

Locations in the building enable continuous documentation and optimization of the process chain. Hendrik Braasch individually configured each camera according to the requirements of each individual installation location: for monitoring the transportation of the combustion materials to the weighing station, the unloading of those materials at the dumping station, the transportation of the materials into the storage silo using a crane gripper and for monitoring the transverse conveyor, the combustion chamber, the ash container and even for a visual check of the smoke cloud. This way, the employees working in the power station control room can be continuously informed about the status of the plant.

The manager of the Lohbrügge wood-fired power station, Klaus Timmann, is convinced about the camera system: "A picture says more than a thousand numbers. Thanks to the high resolution

and the true colors of the images, I am able to view every detail or have an overview of all important images." He is particularly fascinated by the unlimited mobile access to the cameras via UMTS (3G) Internet using his 3G iPhone. The high quality of the images considerably helps the on-call service team and enables them to evaluate the status of the plant from the comfort of their own homes. One time Klaus Timmann was able to detect a discrepancy in the fuel composition from an image of the combustion chamber. Using a remote controlled crane, he was able to restack the panes of wood in the storage silo and watch a live image of the corrected combustion procedure in the combustion chamber, without ever having to leave his home.

Stress Resistance

Some of the cameras at the Lohbrügge power station are subject to particularly rough working conditions, especially the cameras in the combustion

chamber. Using a MOBOTIX developer integration kit, the CCTV combustion chamber monitoring specialist Sobotta Sondermaschinenbau GmbH (www.sobotta.de) built a high-temperature-resistant camera with fan cooling for visual monitoring of the combustion process. Here, the CMOS image sensors that MOBOTIX exclusively uses, can prove their robust and backlight-proof design that sets them apart from half frame-based CCD sensors. After a full 18 months of continuous operation, the image quality remains excellent and with no need to exchange the cameras. The camera installed above the transverse conveyor to monitor the filling of the combustion chamber does not lead an easy life in this dusty environment. If the images were to become even the tiniest bit unclear, the lens is blown clean again with a compressed air nozzle. And this camera, protected by a dust-proof housing, plays the part perfectly. Another camera on top of the chimney monitors the color and the quantity



of the smoke produced. On clear days, it stares directly into the sun for hours without generating burning effects or forming streaks. Cameras with CCD sensors don't have what it takes to stand up to these harsh conditions.

Open Interfaces

Open, well-documented software interfaces can be used for numerous different purposes. Hendrik Braasch proved this by providing the scale manufacturer, Döhrn (www.waagen-doehrn.de), with the control room image taken during the weighing procedure of the delivery vehicle to be used in the the weighing log. "There is an inexhaustable number of technical possibilities with these cameras. And the creative communication practiced by the network of MOBOTIX users always turns up new ideas and surprising solutions.

Many important reasons speak for the MOBOTIX camera systems such as simple expansion, extensive possibilities to connect to software and hardware by other manufacturers and the license-free professional video management software, MxControlCenter. MOBOTIX systems do not come with hidden follow-up costs. It's simply fun to be able to completely satisfy customers with MOBOTIX technology," he says.

MOBOTIX has developed and manufactured IP video systems, video management and analysis software in Germany since 2000.






MOBOTIX stands out for its **high level of reliability**. All outdoor cameras are subjected to a stress test for temperatures between -30°C and +60°C (-22°F and +140°F). Without additional components, without heating or cooling and with no moving parts (for example auto iris), they are virtually maintenance free.





MOBOTIX delivers a **perfectly matched package**, starting with the microSD card for storage management and HD audio (microphone and speaker) with VoIP telephony through video analysis, a professional video management system and motion detection software reducing false alarms.





The **decentralized architecture** means that a central computer is not required and the network load is minimal. The intelligent cameras from MOBOTIX process and store image data themselves, trigger events and, in the event of remote access, manage the frame rate and resolution depending on the available bandwidth.





The **6MP Moonlight sensors** and complementary **thermal imaging technology** ensure reliable detection of moving objects, even under the most challenging light conditions and over long distances. As a result, it is possible to cover large areas with just a few cameras. Less power cabling, less IT infrastructure and fewer additional light sources are needed. MOBOTIX cameras are powered using standard PoE and do not require more than 4-5 watts.



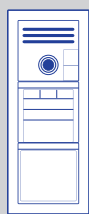

An intelligent IP video system from MOBOTIX allows you to **reduce total costs**. The investment pays for itself after a short time and the free-of-charge software and updates ensure it is a future-proof investment.

Outdoor Dual Lens			Thermal	
M15/16 AllroundDual	S15/16 FlexMount	D15/16 DualDome	M15/16 Thermal	S15/16 DualThermal
				
Robust for extreme conditions	Flexible dual camera	Modular dual camera	Thermal dual	Thermal dual

Outdoor Single Lens			
M25/26 Allround	S15M/26 FlexMount	Q25/26 Hemispheric	D25/26 Dome
			
Robust for extreme conditions	Discreet, video analysis	Discreet, video analysis	Modular Fix dome

Indoor			
i25/26 Panorama	c25/26 Hemispheric	p25/26 Allround	v25/26 MiniDome
			
180° hemispheric	Discreet, video analysis	Modular ceiling camera	Vandalism camera

Door Modules			MxDisplay+
Camera	BellRFID	Keypad	Remote Station
			

Door Sets			
Double Frame		Triple Frame	
			

Retailer information: