SICK insight
SICKS'S CUSTOMER MAGAZINE
1_2014

PROCESS

ENVIRONMENTALLY FRIENDLY

SENSOR HIGHLIGHTS IN THE CEMENT INDUSTRY

NEW TUNNEL SENSOR

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Refinery upgrades its productivity

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Get rid of your blue plume

SO_3 measurement in power plants

WE CAN DO A LOT ABOUT THE DUST

We're all familiar with house dust. But the term „dust" also refers to pollen, fungal spores, bacteria and small particles of inorganic material, such as stone dust or mineral fibers. Smoke and soot also fall into this category. Dust, or rather „suspended particulate matter exposure," can be caused by humans. While industry is one human source of dust, road traffic and agriculture are also major contributors. When categorizing the degree of exposure from a health standpoint, the type of dust and particle size are critical factors, as well as the concentration of harmful substances. Coarse dust, or particles larger than 10 µm in size, get caught in mucous membranes and nose hairs. Small particles can make it all the way into respiratory passageways. Dust emissions worldwide are therefore measured and monitored with the aim of keeping these levels as low as possible. The results of these measurements offer a clear affirmation of our heightened environmental awareness, as dust emissions from power plants in Europe have fallen from 2.4 g/kWh in 2002 to the current level of less than 1 g/kWh for new plants. This is also certainly the result of tougher environmental protection legislation. However, the question remains as to whether or not everything that is measurable should also be regulated. Only time will tell. Until then, we can still do a lot about the dust.

Erwin Sick was aware of this dust situation 50 years ago, so he developed the first soot spot number measuring device for combustion plants fueled by light oil. The device was installed in the feed channel leading to the smokestack, but was mainly used in smaller steel chimneys. It was the beginning of Erwin Sick's environmental measurement technology and, simultaneously, the start of the „green" transformation – well in advance of the mainstream trend. The concentration of airborne pollutants at the time was significantly higher than today's level, and the health concern was even greater. Conditions have changed, and increasingly precise measuring devices for dust emissions and flue gases have long since become the norm at SICK. Erwin Sick was convinced that we surely needed better and more useful technology instead of simply more technology. Today, SICK is already equipped to handle the coming pollution challenges with highly advanced, future-oriented dust measuring devices. Able to capture the smallest of measuring ranges at high resolutions, these devices have been developed knowing that environmental standards in many countries are changing, and that emissions are steadily decreasing.

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VOLUME FLOW MEASUREMENT WITH BULKSCAN® LMS511 AT INDEN LIGNITE OPENCAST MINE

EXTREME STRESS, EXTREME PERFORMANCE

Tough, yet provides precise, fast, and reliable measurements – the Bulkscan® LMS511 laser volume flowmeter is proving its worth when it comes to extremely demanding measuring applications at RWE Power AG's opencast mine in Inden, Germany.

>> Along with Garzweiler and Hambach, Inden is the third opencast mine in Germany's Rhineland lignite mining region. The mining field covers an area of approximately 4,500 hectares. Its coal seams are up to 45 m thick and are situated as much as 230 m below the Earth's surface.

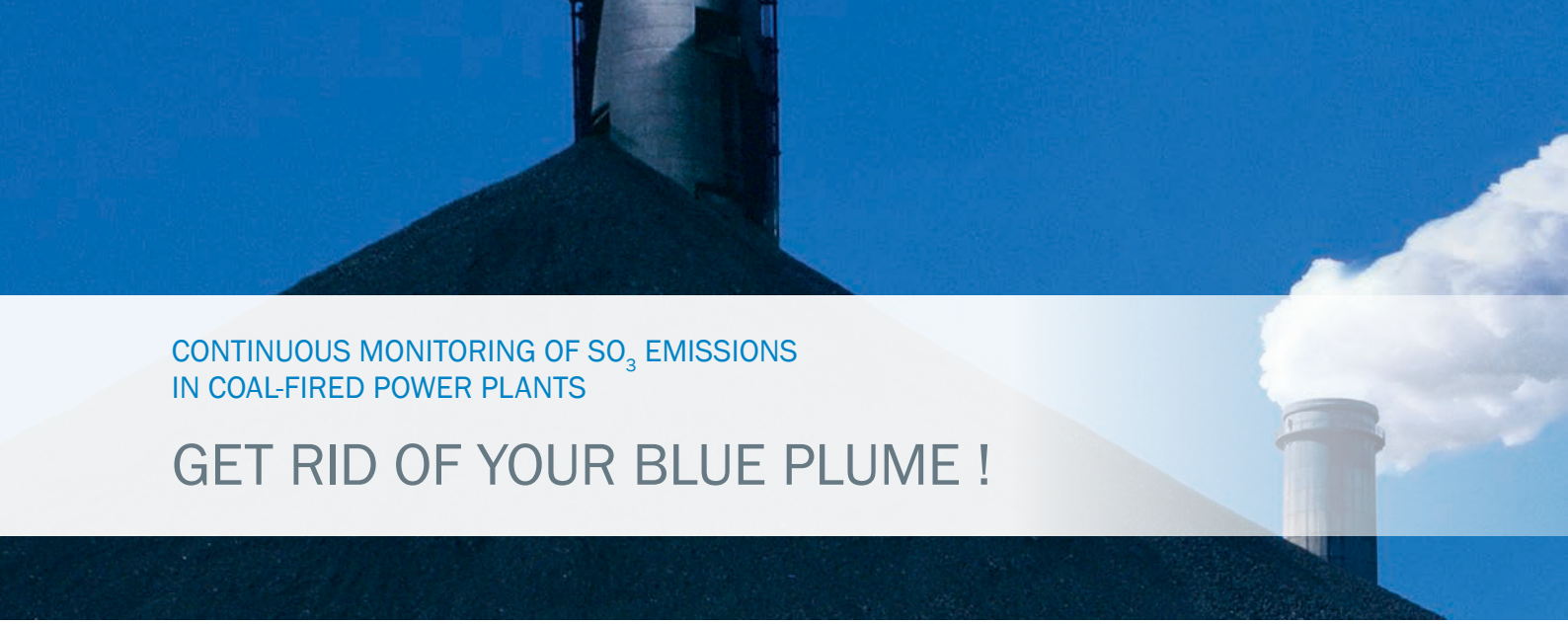
BULKSCAN® LMS511 OPTIMIZES REMOVAL WITH BUCKET-WHEEL EXCAVATORS

Meter for meter, bucket-wheel excavator 255 cuts through the earth with its pivot boom. The material that is removed is then conveyed from the bucket wheel to a belt and transported to the bench conveyor at the rear of the bucket-wheel excavator. RWE Power has installed a Bulkscan® LMS511 above the first belt in the boom – one with an integrated heating system but without additional weather protection. The laser measurement sensor quickly and precisely determines the profile of the bulk materials and calculates the current volume flow to the millisecond via the belt speed. „This value is used in the control system of the bucket-wheel excavator to vary the pivoting speed and therefore the output in order to ensure that the flow is as even as possible. This avoids load peaks, which also enables us to reduce wear to the system", explains Bernd Steyer from RWE Power.

LASER MEASUREMENT ALLOWS TRIPPER CARS TO BE OPERATED WITHOUT A DRIVER

Laser measurement technology also guarantees that the tripper cars are correctly aligned and positioned, for example in front of spreader 737. The laser scanners are mounted on the structure of the tripper cars in such a way that the bench conveyor frame is scanned vertically at the front and at the back. This mobile unit, which allows the material being conveyed to be transferred to the spreader when the waste material is disposed, meets the continuous belt of the belt conveyor at its accumulation point. It then guides it through the tripper car in a loop in such a way that a discharge edge to the next transport belt is established via the deflection. „The laser measurement sensors in the tripper car allow the car to be positioned exactly relative to the belt conveyor. Another function is the fact that the height of the tripper car's accumulation point is accurately controlled with respect to the belt conveyor", explains Manfredo Cammalleri from RWE Power.

Further information:
www.sick.com



CONTINUOUS MONITORING OF SO_3 EMISSIONS IN COAL-FIRED POWER PLANTS

GET RID OF YOUR BLUE PLUME !

SO_3 emissions have a significant impact and should not be underestimated. This is why the power plant industry has been on the lookout for a reliable, continuous measurement system to monitor SO_3 for quite some time now. With the MCS100E HW gas analysis system from SICK, this wish is now a reality.

>> A blue plume at the exit of the chimney is anything but reassuring; it only takes 10 ppm SO_3 to contaminate the air and pose a health hazard. Not only that, but the SO_3 combines with other flue gas components such as NH_3 forming ammonium hydrogen sulfate, which results in an increased risk of blocking of air preheaters and the connected ductwork. In addition the SO_3 combines with absorption materials such as activated carbon and inhibits the removal of mercury from exhaust gases. In a nutshell: SO_3 is something that nobody wants and everyone could do without. Nevertheless, it is an inevitable byproduct of thermal and catalytic SO_2 oxidation both in boilers and in the selective catalytic reduction system (SCR). The SO_3 emissions from the boiler depend on the sulfur content of the coal, the combustion conditions, the flue gas properties, and other measures for controlling air pollution.

Engineers and operators of coal-fired power plants complained that they had „already made extensive efforts to control these problems“, adding that „a good solution would be to have permanent and reliable SO_3 monitoring to provide the appropriate control of process parameters, but the question is how?“ This sounded like a challenge and, in 2008, SICK‘s research and development department in Meersburg, Germany, began to study various measurement technologies that could accurately and continuously monitor the concentration of SO_3. This was by no means an easy task, as SO_3 is extremely unstable and difficult to obtain.

WHICH MEASRUING TECHNOLOGY SUPPLIES REALTIME MONITORING RESULTS?

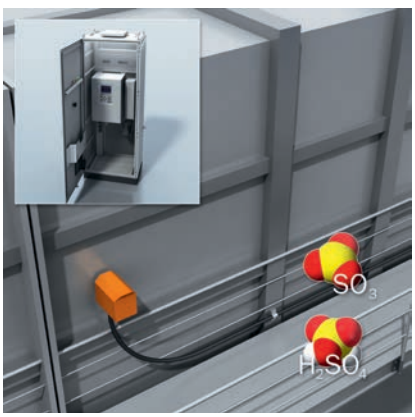
The in-situ technology was discounted from the outset, as it could not measure multiple components simultaneously. Correct realtime data is important, however, in order to immediately see how the process changes affect the SO_3 concentrations. Intensive laboratory testing phases then led to a clear result: SO_2, SO_3, and H_2SO_4 can be measured precisely using a multi-component filter photometer. The most significant result, however, was the total amount of SO_3 and H_2SO_4, as both components can be found in exhaust gas and can cause corrosion. It was also discovered that a full picture of the emissions could be established by measuring the concentrations of SO_2, H_2O, CO_2, and NO in parallel. The bonus is everything can be measured in one device with the MCS100E HW multi-component infrared photometer.

Product Manager Jörn Baasner confirmed that „for decades now, the MCS100E HW has proven itself in its ability to perform continuous emissions monitoring of acidic gases.“ Baasner also added that „there are currently more than 4,000 SICK IR analysis devices in use worldwide in cement factories, waste incineration plants and in the power plant industry.“

The MCS100E HW is designed for hot/wet measurement, which requires the gas temperature to be kept above the acid dew point for the entire sampling and measuring process. The system can also be fitted with a calibration filter to check the system calibration on a routine basis and make adjustments without the need for cylinder gas. Because it is next to impossible to obtain stable SO_3 and H_2SO_4 concentrations, the best way to ensure continuous power plant operation is through the use of a calibration gas filter.

IT IS FINALLY TIME TO FIND OUT

The first installation was made at a coal-fired power plant in the United States in June 2010. The plant cleans the flue gas using a wet flue-gas desulfurization system (FGD) and controls the SO_3 and H_2SO_4 concentrations by means of dry sorbent injection (DSI). Readings were taken with the MCS100E HW for six months, along with a selection of comparative measurements, in order to ensure that the SO_3 and H_2SO_4 mea-



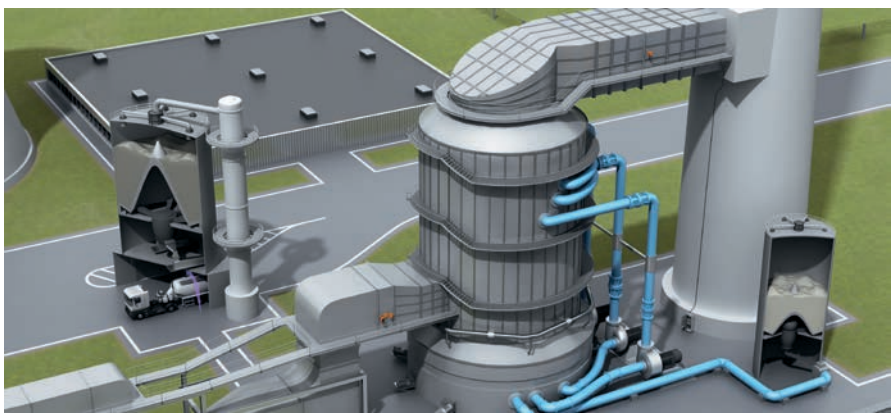
surements are correct. The customer commissioned an independent testing company to do this, which used EPA's Method 8A for comparative measurements. This procedure can be compared to VDI Guideline 2462, Page 2, from November 2011.

The results were clear: For measurements in the range of 2 to 5 ppm, the online analyzer performed extremely well with a maximum measuring deviation of 2 percent of the full scale compared to the reference method. The typical response time for the complete analysis system is 4 minutes. The signals for the SO_3 and H_2SO_4 measurements regulate the dry absorption, which saves money on sorbent material: The investment in the MCS100E HW has paid off after just 9 months. Even after a further 18 months, there were still no complaints and the customer extended the continuous SO_3 monitoring in other areas of the plant. The measuring point in the downstream area of the wet FGD was fixed in the lower part of the chimney to make it easier to access the analyzer system.

MEASUREMENT SUCCESS SPEAKS FOR ITSELF

The MCS100E HW is a tried and tested measuring system that allows power plant operators for the first time to reliably monitor the varying conditions so that they can make appropriate adjustments to their control systems. The ideal real-time monitoring of SO_3 and H_2SO_4 offers financial and environmental benefits. Indeed, considerable savings can be made as a result of reduced use of sorbent, as well as reduced maintenance work and unplanned outages due to premature corrosion of the air heaters and ductwork. The efficiency of the activated carbon injection for removing mercury is increased and, last but not least, power plants are now in a better position to monitor for blue plume caused by SO_3.

Further information:
www.sick.com



EMISSION MONITORING OF HCl

CLEANING TOXIC EXHAUST AIR – GOOD FOR THE ATMOSPHERE

Large production capacity and climate-friendly emissions are not contradictions. The determination of HCl concentration after the wet scrubber is taken care of by SICK.

>> It is unavoidable. The use of chemicals in the production of semi-conductors and LCDs cannot be replaced. Solvents und acid steams are released in the process. However, before high concentrations of toxic and aggressive substances are pushed through the chimney, the exhaust air must be cleaned, reducing the HCl emission limit values to permitted levels. A wet scrubber is a straightforward method to clean up gases and to remove water soluble substances.

What counts is the final result and therefore the cleaning process must be as thorough as possible – there are legal limits to the annual emission of HCl. That is why effective monitoring and control requires a continuous determination of gas concentration after the scrubber. At the same time, the water content must not distort the measuring result. So the gas analyzer has to determine H_2O in addition to HCl. The wet scrubbers are working so effectively that concentrations in small ranges below 3 ppm HCl have to be measured. SICK has the measuring solution.

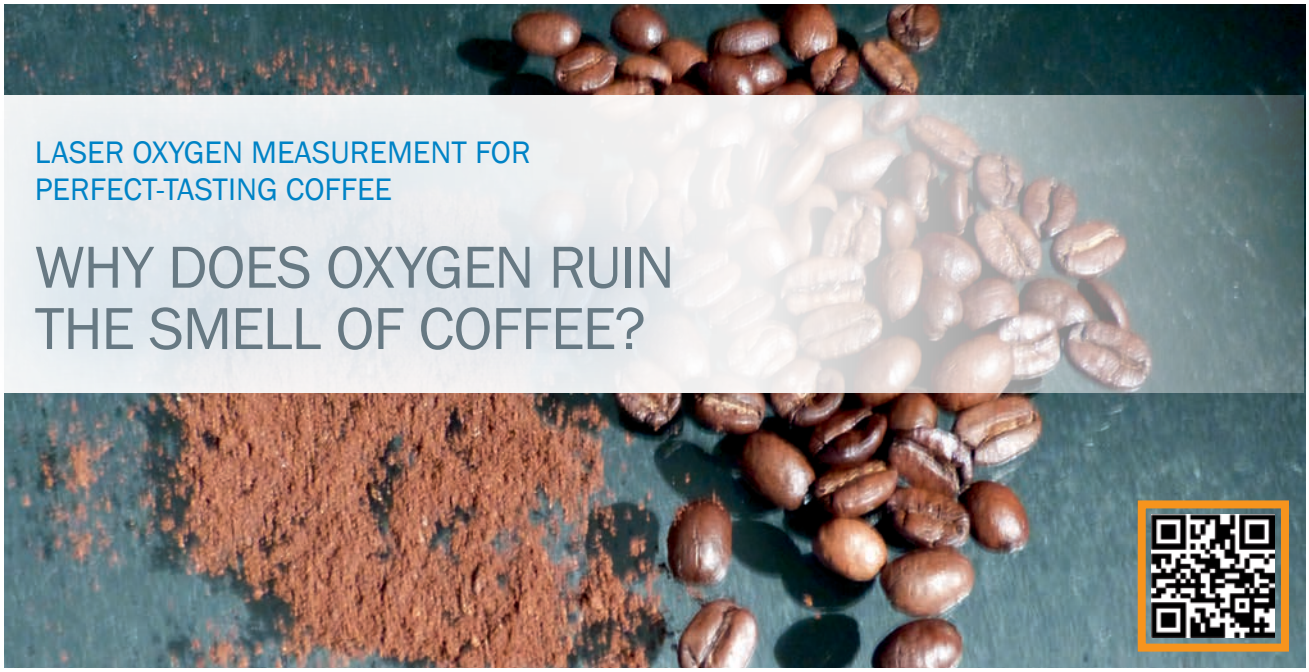
120 °C (250 °F) HEATED GAS DUCTS MAKE CHALLENGING HCl MEASUREMENTS POSSIBLE

The required measurements and analysis are carried out at the back end of the "cleaning system", the wet scrubber. The MCS100E CA version – an analyzer system based on hot measurement technology – is a device version of the MCS100E HW, tailor-made by SICK specifically to customer requirements. The NDIR method measures HCl with an accuracy of +/– 2 % below 10 ppm. As the water content has to be arithmetically deducted to get standardized measuring results for the HCl measurement, filter units as well as the sample leads are heated up to 120 °C (250 °F) to avoid condensation. An extremely high sensitivity is achieved by using a measuring cell with integrated mirrors. The customer favoured SICK and its extractive measuring system MCS100E, because the diameters of the exhaust gas chimneys are too narrow for the use of in-situ measuring devices. The integration of the measuring system into an analyzer container is an option that easily facilitates maintenance and protects the measuring device from ambient influences.

MEASURING SMALLEST HCL CONCENTRATIONS ALLOWS PRODUCTION TO FULL CAPACITY

The MCS100E HW stands out with measuring results characterized by high stability and high linearity – and measures HCl with an accuracy of +/– 2 % below 10 ppm. Gas analyzers from SICK have been used successfully for 25 years now in the field of emission monitoring. They meet high standards of measuring comfort, require low maintenance and take up the challenge of difficult measuring conditions. Depending on the individual requirement, SICK can recommend an in-situ or an extractive device.

Further Information:
www.sick.com



LASER OXYGEN MEASUREMENT FOR PERFECT-TASTING COFFEE

WHY DOES OXYGEN RUIN THE SMELL OF COFFEE?

The answer to this question is that the aroma we associate with coffee is a delicate thing. To ensure that the coffee smell stays in the packaging, oxygen has to be removed, as the taste will inevitably be lost if the oxygen content is too high. This process requires not only inertization, but it also needs SICK's rapid laser oxygen measurement system.

>> Inertization is one of the standard processes found in packaging applications. It adds nitrogen as an inert gas and removes oxygen. The results are improved product quality with a longer shelf life and a fuller aroma. To make this process happen, oxygen is measured directly at the packaging machine so that the nitrogen can be supplied in doses. This process requires a highly efficient system.

DISCOVERING NEW OPTIONS

One leading coffee producer used to monitor this process using electrochemical measurement cells. The nitrogen flow was controlled manually until the concentration of oxygen had settled to a low enough level, and this setting was then maintained. Today, producing nitrogen is a fairly energy-intensive process, involving significant costs, and as a result there is a desire to keep these costs low. The company had its heart set on a method of controlling inertization directly at the machine and in a way that was based on requirements, although this meant that the oxygen measurement process had to produce results quickly. The slow response times of the electrochemical measurement cells posed a real problem, and this also meant that it was critical for the control system to be based on the existing measuring device. TRANSIC111LP – the laser oxygen transmitter featuring an external gas measurement cell – soon proved to be a successful alternative to the old measurement solution, by offering rapid measurement in a four-shift operation around the clock, and with the kind of accuracy expected in the inertization process.

TESTING BEFORE DECIDING

But before the company made its decision, it performed a test in which the laser transmitter was pitted against the electrochemical measurement cell. It was the SICK technology that won by a clear margin. The quick and reliable laser transmitter was easy to integrate without any errors or warnings. The O_2 measurement process was simple and accurate, and was carried out without any appreciable time delay. The rapid measured value display ensured that the nitrogen could be controlled reliably, automatically, and without the need for additional manual interruptions, whereas the process of measuring with the electrochemical cell required more attention. Ultimately, the SICK O_2 transmitter not only saved on nitrogen, it also reduced maintenance costs for the measuring device to a negligible detail. The wear-free, mechanical component-free device functioned without the need for fuel, meaning that the company was able to recoup its investment after approximately 18 months.

Everyone involved agreed that the TRANSIC111LP was really worth the investment. The outstanding density of the gas measurement cell received similar praise: The concentration inside remained constant for a particularly lengthy period, as this had not been the case with the previous installation, which impressed the operating personnel.

Further Information:
www.sick.com/transic100lp

SENSOR HIGHLIGHTS AND TAILORED ANALYTICAL INSTRUMENTATION

FROM RAW MATERIAL EXTRACTION UP TO END PRODUCT DISTRIBUTION

From mass calculation when transporting raw materials on up to fill level technology in silos or object recognition for packing machines. SICK stands for automation and draws on many years of practical experience and expertise in almost all sectors – all this is Sensor Intelligence.

>> The cement industry plays an important role within the building material industry. Productivity and product quality are decisive factors in international competition. Being an industry with intensive usage of energy and raw materials, the cement industry pays special attention to preserving natural resources and to global climate protection. The use of alternative fuels is gaining in significance. This makes it very important to monitor the relevant processes with continuous gas analysis instrumentation. Compliance with the applicable local emission limit values must also be ensured.

EMISSION MEASUREMENT

Emission limit values in the cement industry are monitored continuously to ensure environmentally friendly production. SICK's analytical instrumentation delivers all measured values required for the components to be used by the process control system. These values can then also be processed by an emission computer when required.

QUALITY CONTROL

SICK provides an intelligent and sturdy solution for monitoring clinker production by measuring on the rotary kiln inlet. The same applies here as for emission measurement: High measurement availability with low maintenance effort.

SERVICE

Competent consulting, qualified planning support, detailed project planning and engineering, installation and start-up – SICK provides everything from one source. We also stand for reliable support during maintenance and repairs – after purchase as well.

OPTIMUM MATERIAL FLOW

Materials such as coal, stone or clinker are valuable which makes exact determination of the volumes stored or transported absolutely mandatory for optimum processing. SICK's bin level measuring and volume measuring devices serve to control storage and transport according to plant requirements.

MACHINE SAFETY

Whether on the packing machine or when palletizing cement sacks – SICK's solutions ensure the safety of operating personnel, optimize production, reduce machine floor space and minimize downtime.

PLANT MONITORING

The complete solution includes monitoring the electric precipitator to protect against explosions when the CO concentration is suddenly too high as well as monitoring the coal bunker for smoldering fires.

EFFECTIVE PROCESS CONTROL

RELIABLE GAS ANALYSIS AT THE KILN INLET

A global trend that is making its mark in the cement industry is the use of alternative fuel sources. The composition of alternative fuels vary widely, however, and risk creating undesirable effects on process stability and product quality.

>> State-of-the-art process gas analysis provides one method of ensuring reliable combustion control (CO and O_2) as well as effective process control (NO, SO_2, and HCl). A leading edge hot-wet process photometer that uses hot-extractive sampling and carries out hot gas conditioning delivers excellent results when faced with the tough measuring requirements associated with this kind of application – even in cases where alternative fuels are being used.

Conventional fuels such as gas, oil, petroleum coke or coal enjoy widespread use throughout the cement industry worldwide. Increasingly, however, they are being ousted in favor of alternative fuels with smaller price tags. But substituting gas, oil or coal for these alternatives has significant implications for processes, as using them in main burners can lead to a dramatic increase in the concentrations of chloride and sulfur in flue gas.

Continuously analyzing the gas atmosphere at the infeed point of a rotary kiln is a highly effective way of obtaining key process data and using it for the control loops of the process.

The SPC3000 sampling system, developed specifically to cope with demanding conditions at measuring points, in combination with the MCS300P HW multi-component analysis system from SICK, offer the very best solution for gas analysis measurement at rotary kiln inlets. Not only is the analyzer system easy to use – with hardly any maintenance required and offering excellent availability – but the hot-wet measuring technology features benefits that make the system a truly winning choice. The gas from the process is continuously maintained above the acid and water dew point in the sampling line and is conveyed directly to the sample cell of the analyzer without any additional gas conditioning.

Further information:
www.sick.com

TO MEET EMISSION MONITORING DEMANDS NOW AND IN THE FUTURE

MCS100FT RIDES THE TURKISH WAVE

New legislation relating to the use of alternative fuels in cement plants in Turkey necessitated an upgrade on existing emissions monitoring systems to additionally measure HF, HCl and VOC by the end of 2012. This resulted in a "wave" of MCS100FT project wins across the year.

>> With its MCS100FT analysis system, SICK has not only convinced the technicians of NUH Cimento, but also meets the full requirements of the Ministry of the Environment in Ankara who are implementing legislation and standards in Turkey equivalent to those in Europe. The advantages of the SICK FTIR technology are acknowledged, the benefits of the integrated system design are clear, and the certification according to EU Directives is fulfilled. The extremely low operating costs are the final compelling factor.

„Be a friend to people and the environment" – a clear statement by NUH Cimento Sanayi A.S, the largest producer of cement in Turkey, and one that exports cement to five continents. The manufacture of products of the highest quality is one of the greatest concerns of NUH Cimento, and one that it pursues diligently, alongside protection of the environment. Being green both inside and outside the factory is more than just a neighborly topic. Above all, however, protection of the environment demands clean production processes, clean effluent and clean air. As a technology leader, new paths to innovation and change are now opening for NUH Cimento, which is why it has chosen the powerful measurement technology developed by SICK for monitoring emissions.

ROBUST MEASUREMENT TECHNOLOGY FOR COMPLEX FLUE GASES

In addition to measuring the conventional pollutant species (CO, NO_x, SO_2) and reference parameters (O_2, CO_2, H_2O), the MCS100FT is capable of monitoring trace levels of hydrogen fluoride, hydrogen chloride and volatile organic compounds.These toxic gases occur particularly in combustion processes when alternative fuels are used. The challenge is to measure these trace pollutants with high precision even in the presence of widely varying concentrations of the background gases and process conditions. This is a measurement task that can be solved by the multi-component MCS100FT analysis system, which analyzes these gases precisely and reliably. The long-term stability of the measured values can be relied upon to assist the plant operator in looking to meet defined emission limits. This avoids the danger of restrictions on production or fines being imposed by the environmental authorities.

EASY DOES IT

Of course, measuring flue gas pollutant concentrations precisely is a prerequisite of European legislation, but this is not quite as simple for measuring extremely low hydrogen fluoride (HF) concentrations. The MCS100FT, however, has the unique ability to measure HF down below part per million levels (ppm) with extremely high precision. The integrated QAL3 filter also makes validating the analyzer's system performance over a certain period of time much easier. As an approved alternative to using conventional calibration gas bottles, the QAL 3 filters reduce the time for a full drift check & manual adjustment from a full working day performed by a specialist to just one hour and all managed by the touch of a button. It couldn't be easier or quicker.

ALWAYS WITHIN REACH

Remote access ensures that connection with the trained service team in Istanbul is available and help is always at hand if needed. Even the specialists at the parent company production facility are willing to offer their support, and are able to cast an eye from afar over the analysis system data and performance.

With its highly precise and reliable measurement technology, ease of operation and low maintenance effort the MCS100FT adds up to a complete package that is difficult to beat. The customer benefits of this analyzer system are widely acknowledged in Turkey.

Further information:
www.sick.com

OUTSTANDING MEASURING TECHNOLOGY PROVES A WINNER ACROSS THE BOARD

ENVIRONMENTALLY FRIENDLY: SIMPLY IRRESISTIBLE

In Mexico, top-class measuring technology for monitoring emissions has become a must-have. So much so, in fact, that even burglars at one facility couldn't resist the appeal of SICK's new measuring devices – although it's assumed that they aren't using the equipment to monitor pollutant emissions. This is, however, what the plant operator and the environmental authorities do on an ongoing basis. Thanks to SICK's reliable and sensitive measuring technology, not only can this cement plant rest safely in the knowledge that it is adhering to emission limits, but its measuring concept is also providing a blueprint for more of the Mexican cement manufacturer's systems across the world.

>> The practice of measuring emissions on the basis of EU guidelines doesn't stop at Europe's borders. One notable cement manufacturer in Mexico is yet another example of where these standards are adhered to. It has implemented a major package of environmental measures that include transferring measured data for gas, dust and flow rate to a data acquisition system. All the SICK measuring devices, including the data acquisition system, have been set up in a large container which itself has been specifically adapted to the local conditions and has a design that can withstand the extremes of the Mexican desert. The data acquisition system records the measured values, processes and transfers them to the environmental authorities in the form of reports. The project as a whole has also been implemented with consultation, maintenance, servicing, and training included – all tailored specifically to the company's needs, and with SICK providing a one-stop shop for everything.

VOC MEASURING TECHNOLOGY INSPIRES CONFIDENCE

Because the company wanted to ensure a flawless emissions measurement process, the plant operator was very clear about the importance of monitoring volatile hydrocarbons (VOCs). In some cases, these organic compounds are classified as acutely poisonous or even carcinogenic. SICK's GMS800 FIDOR extractive gas analyzer is ideal for measuring the compounds, as its proven flame ionization detection (FID) technology enables it to measure the total hydrocarbon concentration in gases, within both small and large measuring ranges.

Only this FID technology allows all carbon components to be recorded as sum parameters; here, the composition can vary according to the material supply that is used for the combustion process. Other types of technology are unable to respond as flexibly and can only record predefined components and C compounds. This is what makes measurement technicians so confident that flame ionization detection is the only truly reliable type of technology in this context. For environmental authorities, too, there is simply no better way to measure emissions in cement plants, which is why FID is specified in the EN 14181 standard.

Other winning features of the GMS800 FIDOR from SICK are its high availability of 99.5 percent and maintenance interval of 12 weeks. Type-approved according to EN 15267 and EN 14181, the FIDOR only requires hydrogen as a fuel gas – and not the more expensive helium.

The customer couldn't be more satisfied with the overall package that has been supplied. This outstanding measuring technology is a winner across the board. Sadly, it has even proved irresistible to some uninvited guests – burglars who broke into the facility and stole all the computers under the cover of night.

Further information:
www.sick.com

INTERNATIONAL ASSIGNMENT

KEEP ON MOVING TO PROTECT THE ENVIRONMENT

What happens when a pioneer in environmental monitoring and an environmentally friendly global manufacturer of building materials join forces?

>> Assuming responsibility for the environment and committing to economical – as well as ecological – sustainability are nowadays more important than ever before. A well-known international manufacturer of building materials is not only engaged for the common good but also actively contributes to the protection of the environment through its actions during production. An important topic for this firm is the long-term sustainable handling of its regions natural resources. Therefore, emission reduction in the energy-intensive production of cement products offers an ambitious goal for the company.

In this respect, in 2003 the company established the EMR system (emission monitoring and reporting) which measures emissions at the cement kiln for the consolidated group of the company's branches. The firm detects and measures dust, sulfur dioxide (SO_2), nitrogen monoxide (NO), volatile organic compounds (VOCs) and other chemical compounds, such as hydrogen chloride (HCl) or ammonia (NH_3). This continuously measured data is evaluated daily, monthly and yearly and the averages are recorded for analysis. In order to comply with the locally imposed standards, all main smoke stacks of the company's cements plants require reliable continuous emission monitoring system.

The cement manufacturer benefited from its previous measuring experience with SICK and decided the multi-component analyzer system MCS100E HW, capable of measuring up to eight gas components simultaneously, was the correct solution for this measuring task. The DUSTHUNTER SP scattered-light dust measuring device, the FLOWSIC100 PR gas flow measuring device and a high-performance evaluation system for emission data were part of the professional emission package that the customer requested.

Apart from this measurement solution, the manufacture's head office cooperated with SICK in developing a training program for employees assigned to perform the maintenance of these plants. The partner firm determined the maintenance intervals and work requirements jointly with SICK and compiled the compliance check lists. Following the training of the employees, SICK held practical oriented "train-the-trainer" seminars in many of the firm's sister cement factories, enabling those local employees to easily pass on their SICK-specific knowledge to their colleagues.

The company's international locations are just as far-reaching as SICK's subsidiary and partner network for competent customer support. For recurring, large-scale service work, local specialists from SICK are always at work on site. Thus, SICK not only can ensure short response times but communication difficulties due to language barriers are eliminated.

The availability of the SICK measuring systems improved more than 90 percent – a great success for the acceptance of the measuring system. Also an improvement for this cement manufacturer is the regular open exchange of information and experience between those responsible at the customer's site from both SICK and the cement partner. Thus, the customer can rely worldwide on the high standard of emission values recorded by SICK's measurement technology and make a major contribution to environmental protection.

Further information:
www.sick.com

EMISSION TRADING

MONITORING BIOGENIC CO_2 AT THE CHIMNEY

Dr.-Ing. Martin Oerter, Forschungsinstitut der Zementindustrie GmbH, Düsseldorf (Cement Research & Design Institute in Germany)

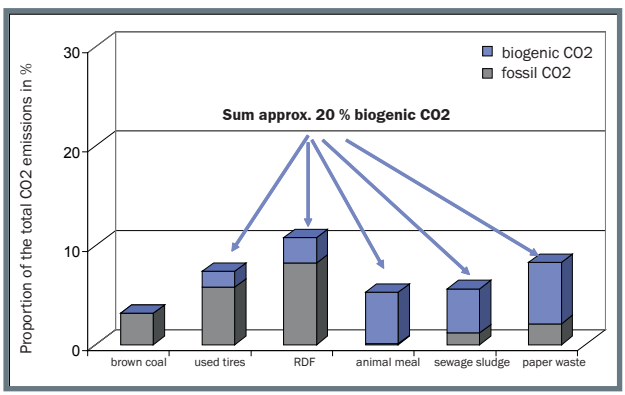
Biogenic carbon dioxide is „young“ and is therefore not considered in the European Emission Trading Scheme. Plant operators, who utilize energy from alternative fuels (e.g. sewage sludge and processed waste), are affected in particular: they reduce the CO_2 emission that is relevant for the trading system compared to producers with comparable carbon dioxide levels from purely fossil sources. For this reason, it is vital for the industry to determine the CO_2 share accurately.

>> Up to now, the biogenic CO_2 share has been determined by analyzing the flow of input material. The complex procedure has proven itself in practice. However, it entails the costly sampling and analysis of all fuels. One possible alternative would be to take a sample directly at the chimney and determine the biogenic CO_2 in the flue gas. The ^{14}C method (a procedure commonly used for many years now to determine age in archeology) could be used to do this. It is based on the fact that a low share of the carbon present in the natural atmosphere comprises the radioactive carbon isotope ^{14}C. The isotope has a half-life of 5,500 years. Since fossil energy sources are several hundreds of thousands of years old, they no longer contain ^{14}C carbon isotopes. The concentration of this radioactive isotope corresponds to the share of „young“ carbon in the flue gas.

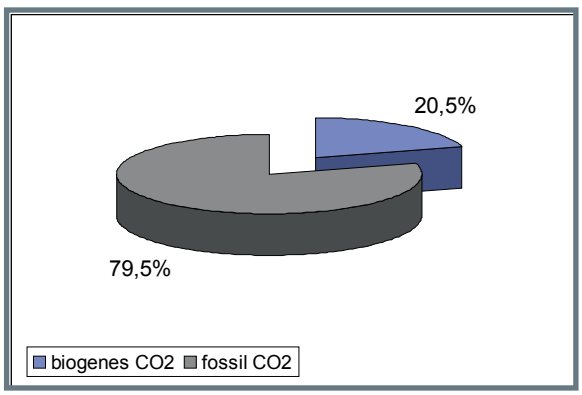
The European cement industry started a research project on this subject several years ago. Samples of the flue gas at the clinker chimney were taken regularly and the share of biogenic CO_2 determined. In parallel, all incoming fuels were analyzed for their biogenic CO_2 content. Within the scope of analytical accuracy, the examinations produced comparable results (Figures 1 and 2).

The research institute is currently working on the further development of the procedure. The aim is to use an automatic sampler to obtain continual and representative samples of the flue gas and then analyze these. In combination with a „classic“ continuous CO_2 measurement, this would allow the fossil and biogenic CO_2 emissions at the chimney to be determined.

Measurement of the CO_2 emissions at the chimney is now accepted in the European Emission Trading Scheme. The corresponding directive (601/2012/EU), which defines the legal framework conditions, confirms that the measurement is basically equivalent to the preferred balance method. This brings new opportunities for the manufacturers of measuring devices. Besides determining the CO_2 concentrations at the chimney however, it has to be considered that the flue gas velocity must be measured precisely over the entire chimney cross section. Depending on the particular plant, the annual CO_2 freight has to be determined with an accuracy of 2.5 %.



Results from solid sampling analysis



Analysis results of flue gas probes taken at the chimney

TÜPRAŞ IS PLANNING FOR NEW GROWTH WITH ECONOMICAL AND ECOLOGICAL PRODUCTS

REFINERY UPGRADES ITS PRODUCTIVITY

Processing crude oil residues and converting them into useful products – this is the reason for the major modernization project at the Tüpraş Izmit refinery. YOKOGAWA and SICK are supplying an extensive range of solutions specifically for monitoring and controlling production processes and for measuring emissions.

>> Ready in 2014: Tüpraş will then be able to produce more white products – such as diesel, aviation fuel, gasoline, and liquefied petroleum gas – which are currently still imported in large quantities. The complex Izmit refinery will also supply high-quality gasoline. The new processing facilities will significantly reduce the quantity of sulfur-rich heavy oil and low-grade heating oil. The increased capacity and the adjustment in line with European standards mean that the refinery can continue to complete on a global basis. There will be a significant increase in the white product yield to more than 80 %, while the production of black products will be reduced by around 50 %. The overall project takes into account the need to reduce the environmental impact from the outset and uses state-of-the-art technology to adjust the refinery procedures in line with the EU environmental specifications: vacuum distillation, delayed coker, hydrogen plant, sulfur recovery, amine regeneration, sour water stripper unit, plus a CHP plant. The hydrocracker system will have the highest process pressure in the world, while the flare gas burner – at 180 meters – will be the second highest in the world. Técnicas Reunidas is responsible for the engineering, procurement and monitoring of the project. YOKOGAWA, together with SICK and Bartec Benke, succeeded in winning the contract in a call for tenders which featured eight other competitors. The winning factors included the excellent price/performance ratio, the good advice provided to both the EPC and the end customer when selecting suitable technology and the united front resented by the three partners. For Tüpraş, this triumvirate was invaluable, because the importance of professional cooperation cannot be underestimated, particularly in major projects on this scale. YOKOGAWA is supplying the complete process control system and the field instrumentation at a total volume of 7 million Euros. This also includes the SICK analysis technology for measuring the process and the emissions. Bartec Benke is supplying the physical property analyzers.

MODERN PROCESS MEASUREMENT TECHNOLOGY

In-situ technology was judged to be by far the best option for monitoring emissions. This type of technology is extremely reliable and low-maintenance. This also results in a significant reduction in investment costs, because there is no longer any need to install costly explosion-pro-

Factory approval of the systems

tected analysis housings or cabinets for extractive emission monitoring systems.

The VD U preheater, the fired coker preheater and the coker furnace of the delayed coker, the steam reformer furnace, the combined chimney of the hydrocracker furnace, and the CHP plant are all fitted with SICK in-situ analyzers: SO_2, NOx, CO, H_2O, dust and flow rate (GM32, GM35, DUSTHUNTER and FLOWSIC100). The YOKOGAWA zirconium oxide analyzer makes in-situ oxygen measurements. The total hydrocarbon content in the delayed coker is also measured, and the SICK EuroFID plays an important role in this process. The chimney of the sulfur recovery plant is also fitted with a SO_2/NO_x in-situ measurement device.

For the purposes of process and wastewater analysis, TOC measurements are required in the oily condensate of the delayed coker, the wastewater treatment plant, and the amine regeneration, among other things. Altogether, six TOCOR700 analyzers are used to determine the TOC, two of which have an explosion-protected design. All pH and conductivity measurements are carried out by over 50 YOKOGAWA sensors.

The key systems used to control and monitor the processes include the high-performance process chromatographs and FTNIR analyzers from YOKOGAWA, the continuous gas analyzers from SICK and the physical property analyzers from Bartec Benke. We can single out the key process analyses in the delayed coker and the hydrogen plant as examples.

Traces of hydrogen sulfide in the coker gas and the coker liquefied petroleum gas are detected with a YOKOGAWA GC in the sections of the main fractionating column. In the coker naphtha, the 1 %, 95 %, and end boiling points are of interest, while only the 95 % point is relevant in the light coker gas oil. The Bartec Benke DPA-4.5 distillation process analyzers are installed here.

The separate hydrogen production in the Izmit refinery is carried out according to the SMR (steam methane reforming) process, which first involves producing synthesis gas from natural gas. Synthesis gas consists of hydrogen, carbon monoxide, carbon dioxide, and residual methane which has not been completely converted. CO is converted to CO_2 in the downstream shift reaction. This gas is then converted into pure hydrogen in a PSA (pressure swing absorption) system. The residual methane concentration is measured at the input of the PSA with an GMS820P UNOR NDIR analyzer and the efficiency of the upstream SMR process is checked at the same time. The breakthrough of CO and CO_2 is monitored at the output of the PSA. A specially modified GMS820P UNOR is used here. This version makes it possible to measure the total CO and CO_2 in the measuring range from 0 to 50 ppm with a single measuring cuvette.

Altogether, this project includes nearly 200 process analyzers – 64 of which are from SICK – including the relevant sample preparations, 7 analyzer housings, 11 analyzer cabinets and just under 50 analyzer racks. They are all forward-thinking solutions, which specifically fulfill the requirements placed on measuring technology used in refineries.

Further information:
www.sick.com

Tüpraş is Turkey's leading oil company and processes about 28.1 million tonnes of crude oil every year in their four refineries. The KOC Group which owns Tüpraş is the largest group of companies in Turkey in the industrial, commercial and financial sector.

Téchnicas Reunidas which is based in Spain, is one of the leading international engineering and construction companies with high levels of expertise in the fields of oil and gas, refinery, petrochemistry and in electricity generation projects.

BARTEC BENKE products and solutions prevent explosions wherever hazardous substances such as flammable liquids, gases and dust could occur. They keep humans safe and protect the environment.

YOKOGAWA delivers customer centric solutions for a wide array of industry. Solutions are based on leading edge technology and fully optimized with a high value in the measurement, control and information field.

FLARE GAS FLOW MEASUREMENT AT VERY HIGH AND LOW FLOW RATES

FFFFFFFLOWSIC100 FLARE

Strict regulations and legislation for the reduction of carbon dioxide and other greenhouse gases, and the progressive optimization of chemical and HPI processes have led to a distinct increase in the worldwide demand for a gas flow metering technology. Flare gas measurement in particular is more and more becoming the focal issue. The requirements for the measurement technology are especially demanding. It is precisely for this application that SICK has launched the FLOWSIC100 Flare – an innovative flare gas flow meter incorporating the latest ultrasonic technology.

The development of the FLOWSIC100 Flare stands for more than 30 years of experience in the field of ultrasonic gas flow metering for emission monitoring and process control; it underlines SICK's technological leadership. The special benefit of the measurement principle is the proven long-term differential measurement, which enables flow velocities to be measured over an extremely wide measurement range.

The FLOWSIC100 Flare offers outstanding performance both at very low and extremely high gas flow rates. In normal plant operation, the flow velocity of the flare gas is often below 1 m/s down to almost zero. In this operational status, flow conditions are difficult and require stable and precise measurement. In the case of emergency system shutdown, the flow velocity can reach much more than 100 m/s in less than a few seconds. Noise, turbulences in the gas flow and signal drift can then adversely affect the measurement or even make it impossible.

In addition, the application includes a series of further requirements, which the measurement technology must master reliably. Depending on the plant operation, the composition of the flare gas can vary considerably with a short period of time. This, in turn, has a direct effect on the signal transmission in the gas and can dictate the need for special, high-performance ultrasonic sensors. The FLOWSIC100 Flare was developed to accommodate all of these measurement requirements.

SICK offers this series as a trans-illumination version with two probes and as a lance version with one probe for low-cost installation on one side only. All devices are changeable under process conditions and offer an integrated control cycle for fully automatic monitoring of the device functionality.

Further information:
www.sick.com

THE GM32 UNIVERSAL ANALYZER IS ALSO EXPLOSION-PROOF

INTERESTING FOR THE CHEMICIAL, NATURAL GAS AND OIL INDUSTRIES

A wide scope of safety functions and sophisticated system technology with the advantages of the in-situ technologgy: Even the Ex-version of the GM32 is one of SICK's most tried and tested products.

>> The GM32 Ex pressurized version can be utilized in Ex zones 1 and 2 with ATEX class 3G or 2G at up to 650 °C. The pressurized apparatus prevents the formation of an explosion-prone atmosphere by maintaining positive pressure with inert gas inside the analyzer relative to the external atmosphere. This means that potentially explosive gases cannot penetrate the analyzer.in the GM32 Ex, the sender-receiver unit and the connection unit including Ex p controller are connected via a pressurized hose, meaning that they are mutually pressurized. The other device components are non-electronic and therefore intrinsically safe. The inert gas is fed into the sender-receiver unit via an Ex p valve, while purged air provides additional protection from aggressive gases.

The GM32 Ex is also extremely versatile thanks to a cross-duct version and various measuring lances. The compact controller with a host of outputs and facilities for connecting makes it possible to access data and carry out remote

FLOWSIC600 ULTRASONIC GAS METER

RELIABILITY AND LONG-TERM STABILITY IN NATURAL GAS FLOW MEASUREMENT: THANKS TO FLOWSIC600?

The FLOWSIC600 from SICK was first installed over a decade ago. Good measuring devices were available before this point in time, however, since it was introduced the FLOWSIC600 has stood for mechanical durability, excellent measurement accuracy, superior long-term stability, as well as unbelievably low maintenance requirements.

>> The FLOWSIC600 ultrasonic gas meter measures precisely what is required. The wide frequency spectrum of the transducers provides a broad application range and even ignores extreme interference caused by pressure regulators. Data from recalibrations confirms that the transducers and electronics are stable and therefore have no significant shifts in the characteristic curve. The ingenious diagnostic function in the device firmware detects interference well before it can affect the measurement accuracy. Even corrosive gas conditions pose no problems, since the meter bodies are made of steel, stainless steel or duplex steel. The titanium transducers are hermetically sealed so that fluids cannot penetrate. Contamination cannot result in damage. There are no parts that can shear off, since the cabling is fully integrated. The FLOWSIC600 can even withstand freezing temperatures, the hot desert sun or tornadoes. Our continual solid growth additionally enhances the trust and confidence of our customers.

Further information:
www.sick.com

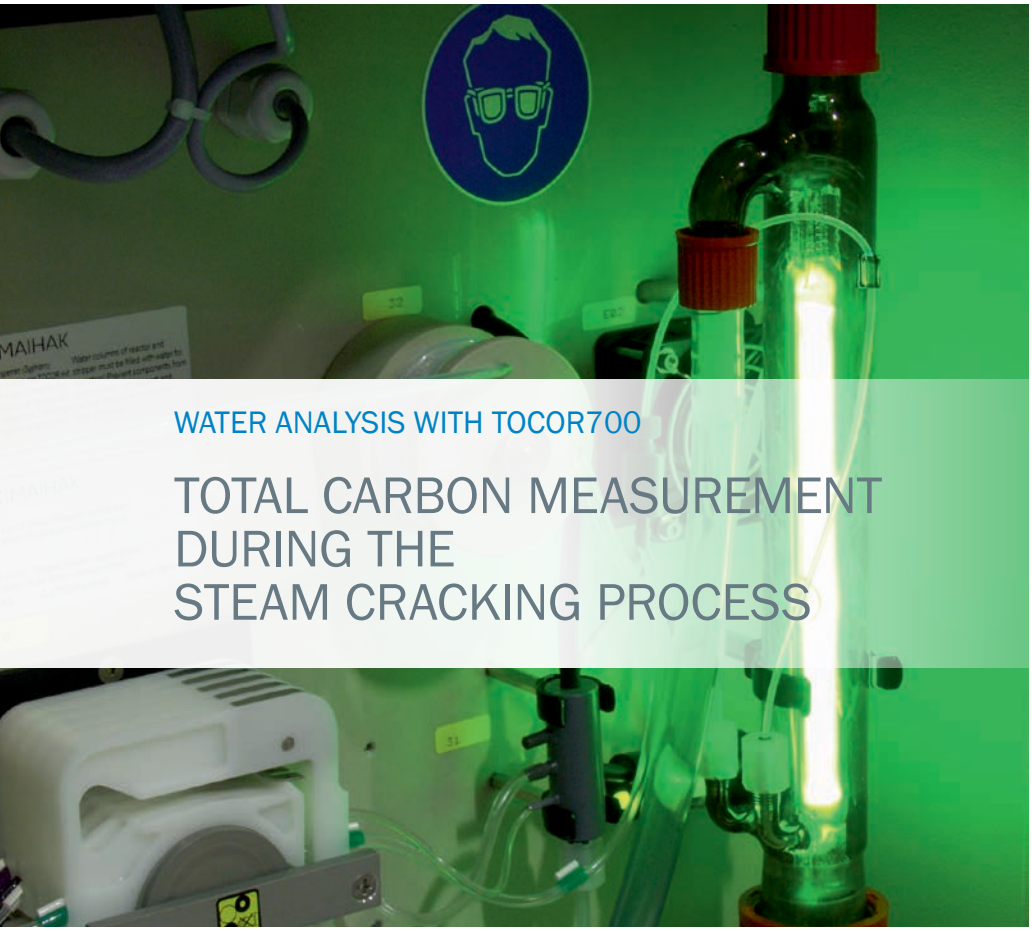
maintenance worldwide. The robustness of the device, uncomplicated installation and automatic self-testing ensure long maintenance intervals and minimal maintenance costs.

THE ADVANTAGES REMAIN

The tried-and-tested advantages of SICK's in-situ measuring technology remain in the GM32 Ex, such as direct, rapid measurement without the need for gas transport, without gas conditioning, and especially, its automatic self-testing system without test gases. Installation directly at site of measurement.

For this reason, the GM32 Ex is of particular interest to the chemical, natural gas and oil industries. Alternatively, it can be used as an emissions measuring device in sulfur recovery plants or FCC cracker units. FM approval is also being planned.

Further information:
www.sick.com

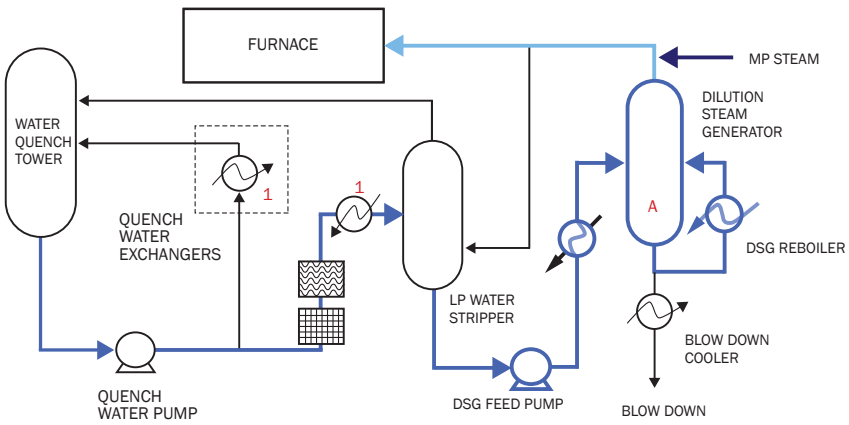


WATER ANALYSIS WITH TOCOR700

TOTAL CARBON MEASUREMENT DURING THE STEAM CRACKING PROCESS

The TOCOR700 total carbon water analyzer is the ideal tool for determining the value of the TOC (Total Organic Carbon) parameter, both in circulating water and in the steam cycle. It continuously measures organic carbon content and notifies the control room if the value exceeds a set limit, allowing plant operators to put appropriate measures in place to counteract this.

>> Part of the olefin production process, steam cracking is a technique that uses steam to break down substances such as naphtha, LPG or ethane, creating short-chained, unsaturated hydrocarbon compounds that can in turn provide raw material for a whole host of chemical compounds. Following the cracking process itself, the product and steam mixture is cooled from around 800 °C to 400 °C by means of quenching. This produces high-pressure steam, which can then be used for cracking again. The downstream quench towers separate pyrolysis oil and pyrolysis gasoline; water is also injected as part of this process. After cleaning and cooling, some of this process water is reused in the quench tower and some of it is supplied to the dilution steam generator (DSG) so that the steam can once again be generated for the cracking process (A).



In this particular case, the TOCOR700 has been introduced for the purpose of measuring the heat exchangers' (1) cooling water (circulating water) as well as measuring the steam generated in the DSG (A). Thanks to the TOCOR700, the circulating cooling water can be monitored for hydrocarbon impurities, thus enabling any leak points in the heat exchangers to be identified at an early stage in the process. If contaminated cooling water were to be reused, it is likely that parts of the plant would be damaged as a result.

The residual organic impurity content is measured in the steam at the DSG outlet, as any such hydrocarbon impurities would result in fouling. As part of this process, some of the steam flow is condensed in a sample preparation facility, conditioned, and conveyed to the TOCOR700.

A UV oxidation version of the TOCOR700 has been installed in this application. For cases that require an exact analysis of hydrocarbon compounds that are difficult to oxidize, it is also possible to obtain a version featuring a thermal reactor. Both systems are able to detect and show content that is far below 0.5 mg/l C.

The TOCOR700 is available for explosion protection zones 1 and 2, making it both the perfect solution for HPI applications and a valuable tool in ensuring process reliability and plant protection.

Further information:
www.sick.com

A NEW AGE FOR VISIBILITY MEASUREMENT IN TUNNELS

VISIC100SF MODERNIZES MEASUREMENT PERFORMANCE FOR TUNNEL AIR QUALITY

Red lights in front of the tunnel mean poor air quality in the tunnel. Tunnel operators know that such situations must be avoided at all costs. For this reason, continuous monitoring of visibility in road tunnels is mandatory. While the market offers many measuring devices that can perform this task, the VISIC100SF from SICK is truly in a league of its own. Because it combines scattered light with an electrochemical cell, it is the world's only tunnel sensor that can measure exhaust fumes as well as monitoring visibility. And all of this is contained in just one compact device.

>> Measuring devices should work without faults and only require infrequent maintenance, while also being user-friendly and cost-effective. The VISIC100SF delivers in every respect. The optimized factory settings automatically reduce the amount of setup needed on the device in the tunnel. The VISIC100SF only requires one mounting location, and a compact one at that. With its „plug&measure" design, it can be commissioned quickly without any configuration. And because there are no moving parts, there will be no faults caused by mechanical wear. Precisely measured visibility values can be obtained at any time and optional heating makes it easy to compensate for foggy conditions. The deluxe optical technology is packaged expertly and integrated in a „black box."

PERFECTLY COMBINED: THIS MAKES SENSE

The VISIC100SF also detects CO and NO and is the only device in the world to offer this feature in this combination. The VISIC100SF provides ample space for SICK's CO and NO electrochemical cells, as well as offering simple, flexible retrofitting options if the requirements in the tunnel change. Thanks to this perfect combination, VIS, CO and NO information is kept up to date at all times.

The electrochemical cells have been installed in a way that affords a higher degree of protection, as well as allowing the device to cope with differences in flow. Furthermore, the firmware, which has been developed in line with SIL1, guarantees excellent operational safety and the IP6K9K enclosure rating ensures that no dust or water can get into the measuring device.

The VISIC100SF is a technical innovation that provides low maintenance coupled with extremely low operating costs. And its benefits don't end there: the VISIC100SF does not need any protective measures when the tunnel is cleaned. Last but not least, the measuring device is already approved according to the latest EN 50545 standard.

Further information:
www.sick.com

RELIABLE FLOW MEASUREMENT FOR GAS AND PROCESS APPLICATIONS

SO ECONOMICALLY MEASURE EXPERTS: FLOWSIC300

Economy, reliability and long-term stability are vital when it comes to gas transfer that is not billed. The solution to this predicament is called ultrasonic technology. The new ultrasonic flow meter FLOWSIC300 from SICK is fully aligned with the trend towards modern, low-maintenance measuring technology and impresses the market with its efficient performance. Many companies worldwide can benefit from its qualities by using the flow meter for the transport and storage of natural gas, in the petrochemical industry and in the natural gas and oil production.

>> For all those who think economically and yet, do not want to compromise quality, the FLOWSIC300 ultrasonic flow meter is an attractive option. The flow meter owes this, among others, to its pedigree, because SICK has already made a name for itself with the highly accurate ultrasonic flow meter FLOWSIC600 designed for the custody transfer of natural gas. The FLOWSIC300 benefits from this expertise in non-custody transfer applications too. Due to its high-quality components, it performs with utmost reliability even in the most adverse environments. The FLOWSIC300 offers a wide measuring range (>100:1) and covers a wide operating range. The ultrasonic flow meter creates no pressure drop and the measured data is not impacted by pressure, temperature or gas composition, which allows for reliable metering despite unexpected process parameters.

Flow measurement with FLOWSIC300 means above all: cost-effectiveness. The ultrasonic flow meter is insensitive to soiling and virtually maintenance- and wear-free. Its lifecycle costs are therefore minimal. Since internal metering requires a high degree of system stability, the integrated self-diagnosis functionality continuously monitors the performance and warns if there is any risk of failure. The FLOWSIC300 embodies the state of the art with its flow measurement, without pressure drop. It enables the customer to use the pipe capacity without limitations and to avoid costly energy losses through friction, which occur, for example, when differential pressure flow meters are used.

On top of that, the FLOWSIC300 is easy to mount, even during operation of the pipe and when space is a critical issue. A change to ultrasonic technology usually pays off in these cases. The FLOWSIC300 is particularly suited for pipes larger than DN300. Using conventional gas meters in pipes of such size would simply be too expensive.

Further information:
www.sick.com

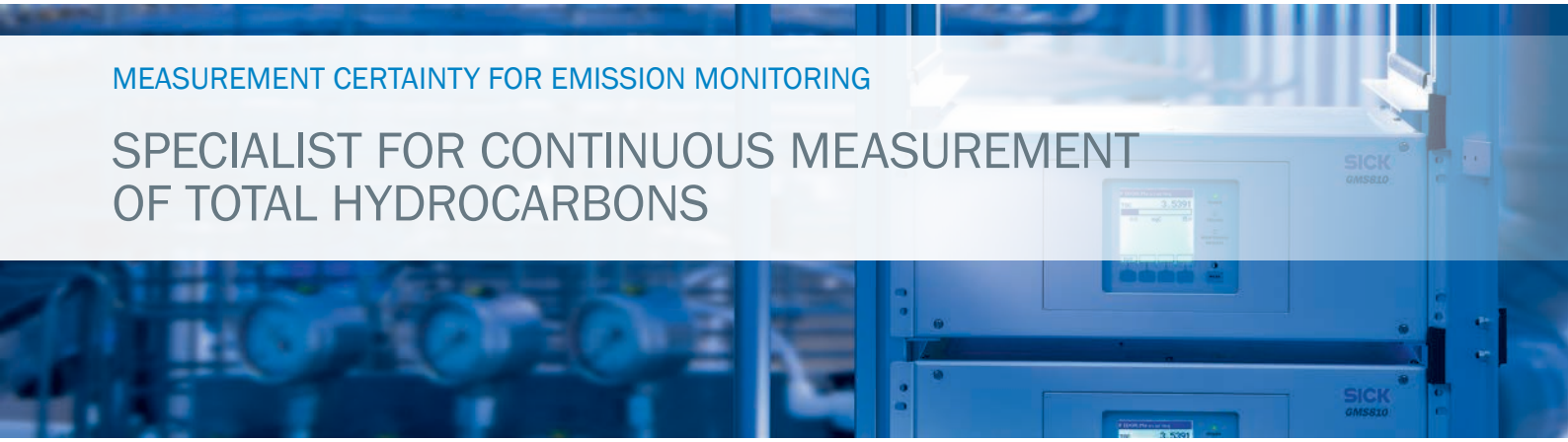
MEASUREMENTS OF MINIMAL DUST CONCENTRATIONS DOWNSTREAM OF FABRIC FILTERS AND BAG FILTERS

SAFE FILTER MONITORING

>> Filter bags have a limited service life. Over time, minor defects develop. As operation continues, they suddenly enlarge and can lead to dust being able to get into the flue gas. Dust measuring devices installed downstream of the panel filter in the flue gas stream can detect this type of damage at an early stage so that the bags concerned can be replaced. The more sensitive and faster the measuring device responds to a change in dust concentration, the more the system can be relied upon to prevent dust breaking through and to conform to limit values.

The DUSTHUNTER SP100 is ideal for applications of this nature. It can be installed very easily from a single side. The probe design renders mechanical adjustment and alignment with a particle-free measuring distance.

Further information:
www.sick.com



MEASUREMENT CERTAINTY FOR EMISSION MONITORING

SPECIALIST FOR CONTINUOUS MEASUREMENT OF TOTAL HYDROCARBONS

A compact analyzer and a professional device for continuous hydrocarbon measurement, the GMS800 FIDOR is the flame ionization analyzer from SICK. Standalone or system-integrated, the gas analyzer combines robust design, simple operation, precise measurement and modern interface technology for optimum availability of 99.5 %. This means improved measurement reliability for overall monitoring of total hydrocarbon concentrations.

>> It is simply made for this measurement: The GMS800 FIDOR is ideally suited for emission monitoring according to regulatory requirements in waste incinerators, cement and chemical plants, for example. Based on the proven flame ionization detection principle, it measures total hydrocarbon concentrations in gases at both low levels and high concentrations. With a high degree of operational safety the GMS800 FIDOR is also capable of operation in an extended process gas pressure range of ± 120 mbar. Protective filters at all gas inlets provide increased protection against contamination and failure. The analyzer uses hydrogen for fuel gas and, at 30 ml/min, the consumption is low. An expensive hydrogen/helium mixture is not required. The certified maintenance interval of 3 months is achieved through the durability of the device and results in low cost of ownership.

All this and even more make it possible: cost effective measurement and easier operation for plant personal.

Further information:
www.sick.com

GAS ANALYSIS WITH SIDOR

SUPERIOR IN ITS DISCIPLINE

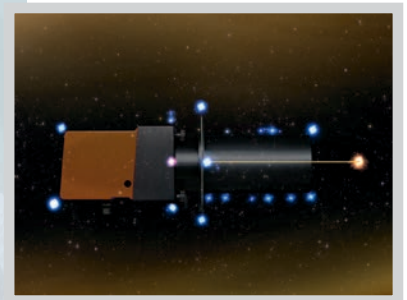
Simplified, better and really good value: Excellent standards for an extractive photometer.

>> With long term measuring stability never before achieved – the SIDOR measures the gas components CO, NO, SO_2, CO_2, CH_4 and O_2 depending on the measuring application. Thereby it meets all requirements for emission monitoring according to 2001/80/EC as well as 27th FICA combustion optimization of small boilers exhaust measurements in power stations.

With the innovative SIDOR, SICK focuses on standardization and optimization of the measurement technology. That pays off, at the latest, when calculating operational costs.

The SIDOR is an extractive gas analyzer for measuring 1 or 2 gas components. With the addition of an electrochemical or paramagnetic measuring cell, oxygen can be measured as well. The availability of numerous freely configurable digital inputs and outputs make the construction of a complete system much simpler. The innovative concept makes repair very easy. For example, the cuvette can be exchanged locally without difficult adjustment. Furthermore the highly precise production of the sub-assemblies allows an on-site-repair without the need for linearization in the factory. Due to the short enclosure, the easy integration into measuring systems and the uncomplicated commissioning, the SIDOR is ideal for replacement of older instruments.

Further information:
www.sick.com



50 YEARS OF MEASURING DUST

HUNTING STARDUST

>> It's now been 50 years since SICK installed the first continuously measuring analyzers for determining smoke density. This half-century was celebrated in Dresden on October 17, 2013. With the event's theme of „HUNTING STARDUST," participants took an appreciative look at the past and, at the same time, a curious look into the future of dust technology. A high-profile international symposium discussed both current and future challenges in the field of dust measurement. As one participant remarked, „it's possible that the largest amount of dust expertise on the planet is gathered today in this room." This statement was reinforced by contributions from Germany, Russia, India and Denmark.

Fifty years ago, no one could have guessed that dust measurement pioneer, Erwin Sick, was introducing a seminal chapter of this continuously growing sector – a chapter that would remain relevant to this day for topics such as environmental policy or the improvement of industrial processes. With its wide range of solutions, SICK offers proven technology in the areas of transmission, scattered light and gravimetric dust measurement and is virtually unbeatable thanks to the DUSTHUNTER and its ruggedness, simple operation and high availability.

The anniversary celebration was also a great opportunity to thank SICK's Manfred Stromberg for a lifetime of work with dust. Mr. Stromberg retired from the company at the end of the year 2013.

500 NO_x / NH_3 MONITORING SYSTEMS IN CHINA

SENSOR INTELLIGENCE IN ABUNDANCE

>> SICK MAIHAK China, a subsidiary of SICK AG, has now delivered its 500th DeNOx system for monitoring denitrification levels in China's coal-fired power stations. Nitrogen reduction is a topic that is very much on the agenda in today's China, with measures needed to meet the strict requirements that the government has set out in its 12th five-year plan. As a result of these, denitrification systems have become a necessity, as have methods for monitoring nitrogen oxide (NO_x) and ammonia (NH_3).

SICK MAIHAK China occupies the top spot when it comes to installed in-situ laser measuring devices (TDLS) and has achieved a healthy second place in the field of analyzers used for NOx measurement. „There are now more than 70 power plants using SICK complete solutions and monitoring NOx at the inlet and outlet areas of DeNOx systems", says Li Changyun, Managing Director of SICK MAIHAK China. NH_3 slip is measured using the SICK GM700 laser gas analyzer with high precision, down to the single-digit ppm range. Its lance is equipped with a special filter, which prevents dust from penetrating and interfering with the measurement process – an indispensable feature in applications prone to exceptionally high levels of dust in the gas duct.

Deborah Padwater, Industry Manager for power plants, sums things up with pride: „Premium measuring technology, reliable measuring performance and customer satisfaction are at the heart of our success".

NOMINATED MERCURY MEASURING SYSTEMS

SICK IS ONE OF BADEN-WÜRTTEMBERG'S LEADING INNOVATORS IN ENVIRONMENTAL TECHNOLOGY

Baden-Württemberg
MINISTERIUM FÜR UMWELT, KLIMA UND ENERGIEWIRTSCHAFT
Umwelttechnikpreis Baden-Württemberg 2013
NOMINIERT
KATEGORIE 4 – MESS-, STEUER- UND REGELTECHNIK

SICK successfully entered its mercury measuring system, MERCEM300Z, into the environmental technology competition in the measurement and control category. The company made the shortlist and finished just outside the medal positions.

>> Baden-Württemberg's Ministry for Environment, Climate and Energy Economics has been awarding the environmental technology prize since 2009. The prize is awarded bi-annually for outstanding and innovative products in the field of environmental technology. The prize money amounts to 100,000 Euros and is shared among four different categories (energy efficiency, material efficiency, technology for the reduction of emissions, treatment and separation as well as measurement and control technology). The jury also awards a special prize. Companies based in or operating subsidiaries in the German state of Baden-Württemberg are eligible to participate. Products offering a significant contribution to resource efficiency and environmental protection and which are to be launched in the near future, or which have been on the market for less than two years, can qualify for the prize. This year's prize was presented by environment minister Franz Untersteller on 11 July 2013 at the Wagenhallen in Stuttgart.

„We consider this nomination to be a special recognition of our commitment in the development of innovative environmental technologies," explains Dr. Robert Bauer, Chairman of SICK AG and head of Resource Technology. The MERCEM300Z is a system for continuous monitoring of mercury emissions in flue gases and is designed for use especially in waste incinerators, cement plants and power stations. SICK launched the product in 2011.

From left: Florian Greiter, Product Manager MERCEM300Z. Franz Untersteller, Baden-Wuerttemberg's Environment Minister. Dr. Christoph Ueberfluß, head of development at the Meersburg location

JOINT GROWTH PROSPECTS

SICK SETS UP A JOINT VENTURE WITH BELGIAN SYSTEM INTEGRATOR

SICK Engineering GmbH has created a joint venture with GGS Oil and Gas Systems bvba (GGS), a Belgian system integrator, in order to engineer, fabricate and market complex system solutions for gas flow measurement with effect from June 1, 2013. The new company, SICK Metering Systems NV, located in Kalmthout, Belgium, is a 50:50 joint venture.

>> SICK Metering Systems will focus on high-end integrated metering solutions for ultrasonic gas measurement stations. These turn-key stations include, in addition to flow measurement, filtration and pressure reducing stations, heating installations, ultrasonic flow meters, gas quality analyzers as well as interfaces like evaluation and monitoring software. By forming this partnership, SICK Engineering GmbH has combined its product expertise in the area of ultrasonic gas flow measurement technology with the systems know-how and service network of GGS, set up in 2006 as a company specializing in gas and fluid measurement systems.

"The joint venture with GGS, a well-established system supplier in the oil and gas sector, provides us with the opportunity to jointly tap major growth markets, which would have remained closed to us without the comprehensive systems know-how," explains Reiner Bengel, general manager of SICK Engineering GmbH. Together with GGS's managing director, Peter Himschoot, he will be responsible for the management of SICK Metering Systems. "Among the most important target markets are large-scale projects with international oil and gas companies," Bengel adds.

www.sickmeteringsystems.com

Order No. 8016860

VISIC100SF: MODERNIZES MEASUREMENT PERFORMANCE FOR TUNNEL AIR QUALITY

THIS IS SICK

Sensor Intelligence.

Scattered light for visibility: VISIC100SF measures accurately and reliably, is simple to install, compact with a small foot-print and is easy to handle without the need for adjustment. Trouble-free operation – no wear and tear parts. Operational safety with SIL1, IP 6K9K. This sensor is just getting started where others leave off, with fog correction. VISIC100SF also senses CO and NO. Scattered light and electro-chemical cell – two measurement principles in a single compact device. Perfectly combined and always up-to-date. We think that's intelligent. www.sick.com/visic100sf