

Unitherm-Cemcon's project review 2002-2003

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Canada, AB

Inland Cement Edmonton, a member of **LEHIGH PORTLAND CEMENT** has placed the order to UNITHERM-CEMCON for a new M.A.S. kiln burner (72 Gcal/h) and a precalciner burner (90 Gcal/h) with burner carriages. This order is a part of the petcoke / coal conversion project.

The new firing system was designed to reach a total kiln capacity of 3.640 TPD. In the past the precalciner was fired with five small gas burners on the calciner shell and on the top. The new top mounted tailor made precal-burner is suited to fit on the existing swirl chamber without expensive reconstruction works. The engineering included the design of the fuel - and combustion air supply piping as well as the burner control equipment. The commissioning and start-up for the new firing system was successfully completed in winter2002 /spring 2003.



Inland Cement, Edmonton AB, Canada, plant complete equipped with Unitherm burners.

Venezuela:

Cementos Caribe C.A (a member of **Holcim Group**) has awarded UNITHERM-CEMCON the contract to supply a M.A.S. kiln burner for the 2800 TPD **Cement Plant** in **San Sebastian**. The burner was designed to operate with natural gas, waste oil and two different fractions of solid alternative fuels. The scheduled substitution rate was designed to reach 45-50% of the kiln burner capacity. The successful commissioning was completed by the end of April 2003.

At the sister plant in **Cumarebo**, UNITHERM CEMCON commissioned at the same time a new full-automatic fuel gas valve train for the existing kiln burner with a modern Allan Bradley burner control system.

Germany:

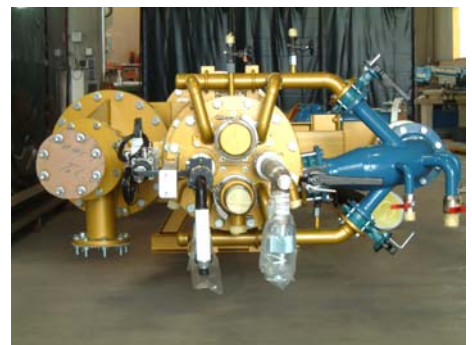
Karlsdorfer Zement / Soetenich a member of **LAFARGE** ordered a M.A.S kiln burner with suspended trolley for their 1100 TPD dry kiln system with 4 stage preheater. UNITHERM-CEMCON was selected, due to the ability of firing lignite and alternatively petcoke as well as heavy fuel oil, animal meal and plastic waste fuel. The solid alternative fuels can be separately pneumatically mixed with the main flame due to the "pneumo-Swirl®" device to influence the different burn out behaviour. In case of service each solid alternative fuel channel can be retracted while burner operation. The burner was designed with a divisible jacket tube for easier and quicker burner refractory service works. This divisible execution assists also the limited space on the burner platform; there is no need to withdraw the entire jacket pipe of the kiln burner. Expected commissioning will be in May 2003.



MAS burner for Lafarge Soetenich

Left: Burner tip for five fuels, one channel is covered for the later use.

Right: Back view with fuel connections and pneumo-Swirl connections



Bosenberg Portland Zement near **Ahlen** has installed a M.A.S. kiln burner from UNITHERM-CEMCON for the 500 TPD Lepol kiln. The already successfully commissioned new kiln burner (20 Gcal/h) was designed to fire lignite, heavy fuel oil, and alternative fuels such as plastics and animal meal. Compared to the previously installed kiln burners by two well known burner manufacturers, it is now possible to operate the kiln with 100% lignite without adding heavy fuel oil for stabilizing, which had been prior necessary to keep constant kiln conditions. Furthermore the formations of ring build-ups in the inlet zone were successfully minimized to the full satisfaction of the plant operators.

Austria:

UNITHERM CEMCON has awarded a contract for a new M.A.S. kiln burner at **Krichdorfer Zement** plant in Upper Austria. The dry kiln system with a capacity of 1100 TPD has a counter-flow positioned grate cooler which influences the secondary air flow pattern. This situation was considered during the burner design. The reason to purchase a new kiln burner (40 MW) was the limited alternative fuel substitution range as well as the unstable, less adjustable flame with the previously installed burner. The highly reliable M.A.S. burner combines the advantage of a constant burner momentum at any flame setting with the high secondary waste fuel (wood, animal meal) substitution range. Primary fuel will be regular coal. A liquid waste oil burner gun for polluted deposit water will further reduce the emissions of the already low NOx burner design. The order is completed by a new burner suspension to make the burner adjustable in any direction around the kiln axis.

Czech Republic:

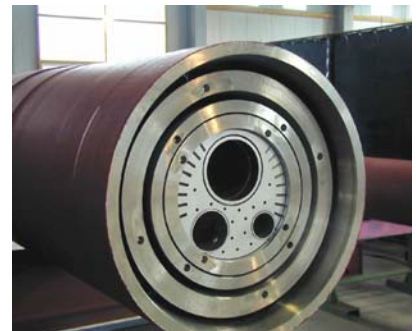
HOLCIM a.s. Prachovice ordered a M.A.S. Kiln Burner for a capacity of 135 MW for the 3200 TPD plant in northern part of Czech Republic. This burner was designed for coal/petcoke, Bunker-C fuel oil, two in operation retractable solid secondary fuel pipes (DN 150) in the centre, waste oil and natural gas. Each secondary fuel pipe is equipped with a „pneumo-swirler“® for adjustable pneumatic mixing of solid alternative fuels (to influence the burning behaviour as well as the burn-out time). This burner is equipped with a divisible outer burner jacket pipe (1.2m of 7m hot length) for an easier and quicker repair of the burner refractory lining, and cast iron ribs on the burner outer tube tip to enlarge the burner refractory lifetime. This is in fact the biggest kiln burner diameter ever produced by UNITHERM-CEMCON. The installation and commissioning took place in February 2003.



Combined M.A.S. kiln burner for Prachovice Cement, for three traditional fuels and three alternative fuels.

Bosnia-Herzegovina:

Tvornica Kakanj Cement, (Heidelberger-Group) has signed a contract with UNITHERM-CEMCON for a new advanced M.A.S. Kiln Burner with trolley which was designed to burn coal, natural gas, solid and liquid waste fuels. The use of solid secondary fuels with the additional installed „pneumo-swirler“® at the alternative fuel channel is planned for a later stage. The burner capacity is designed to reach 75 MW for the 1500 TPD dry kiln line. The burner system was successfully commissioned at the end of April 2003.



Unitherm's M.A.S. Kiln Burner for Kakanj Plant at the workshop.

The modernisation of the kiln firing equipment at the present 1100 TPD kiln at **Lukavac Cement** was successfully completed by UNITHERM-CEMCON at the end of April 2003. The new M.A.S. kiln burner is designed for a capacity of 46 MW to burn coal/petcoke, heavy fuel oil and liquid waste fuel. The entire kiln firing equipment with burner, suspended trolley, heavy fuel oil pump- and high pressure heater station as well as an automatic fuel oil burner valve train was ordered and commissioned by UNITHERM-CEMCON. This equipment was designed to use it after the erection of the new 2000 TPD kiln line too. Then the operation of the old kiln line will be stopped and the equipment will be moved to the new line.



Unitherm installation at Lukavac Cement Plant / Bosnia:

Left: M.A.S. kiln burner on floor-mounted burner carriage

Right: Heavy fuel oil high pressure preheater station



Serbia:

Beocinska Cement a member of LAFARGE Group signed a contract for a new M.A.S kiln burner with UNITHERM CEMCON. The dry kiln system with preheater will be upgraded from presently 2900 TPD to a capacity of 4000 TPD with a pre-calciner installation in the near future. The kiln burner will be designed to fit in the existing satellite cooler kiln as well as into the planned, enlarged kiln hood for a grate cooler. The main fuel for the new kiln burner will be a coal/petcoke mixture, and natural gas. An alternative solid- and liquid waste fuel channel should allow the use of secondary fuels in future. The installation will be commissioned at the end of July 2003.

Ukraine:

Kramatorsk Cement has placed the order to UNITHERM-CEMCON for 3 combined M.A.S./4/KO.EG.X burners. The new burners will be installed at the wet system kilns for firing of coal dust, natural gas and dried shredded municipal waste. This is the first in Ukraine kiln firing system which will use alternative solid fuels.

The installation of two modern M.A.S./3/KO.EG kiln burners at **Odessa's Cement Plant** with two wet system kilns each 240 TPD kiln capacity has been completed by end of April. For modernization of the firing system UNITHERM-CEMCON has also supplied natural gas burner valve trains and oxygen analyzers.

Lithuania

After successful commissioning of the kiln burner type: M.A.S./6/KO.SO.X at **Akmenes Cementas** line I, the client has placed an additional order to UNITHERM-CEMCON for the second burner for the kiln line II. The fuel capacity of the burner is 135 MW. The main fuels are coal dust and heavy fuel oil; shredded tires will be used in future as alternative solid fuel through the new kiln burner.

Pakistan:

Zaman Cement Ltd. has installed a new M.A.S. kiln burner from UNITHERM-CEMCON for their 3800 TPD dry kiln line with preheater and precalciner. The combined kiln burner (64 MW) is executed for lignite/bituminous coal and heavy fuel oil. The contract was a part of the ongoing tendency in Pakistan to shift from fuel oil/gas to coal as main fuel. The contract was settled by Unitherm's local partner EAST WEST COMMERCIAL ENTERPRISE. The commissioning is planned for 2003.



Left: M.A.S kiln burner at the shop-inspection for the contract with Zaman Cement

Right: M.A.S kiln burner in operation at Fecto Cement Plant



Fecto Cement Ltd. near Taxila has installed a new M.A.S/3/KO.SO.EG kiln burner from UNITHERM-CEMCON for their 2000 TPD kiln line. The combined kiln burner was designed for a capacity of 33 MW which is equal to 40% of the heat requirement of the rotary kiln. The contract was a part of the ongoing tendency in Pakistan to shift from fuel oil/gas to coal as main fuel. The contract was settled by Unitherm's local partner EAST WEST COMMERCIAL ENTERPRISE. The commissioning was successfully completed in November 2002. Fecto Cement is now the fourth client in Pakistan which uses the advanced M.A.S. burner technology.

Iran:

CEMMAG ordered at UNITHERM-CEMCON a new combined M.A.S. rotary kiln burner for **Benvid White Cement**. The factory is located near the city of Naeen in Isfahan province (414 km in the south of Tehran) and has a white cement production capacity of 500 TPD. The new kiln burner was designed to a capacity of 30 MW for natural gas and heavy fuel oil. The commissioning of the new firingsystem with new gas burner valve train is scheduled for summer 2003.

South Korea:

3 rotary kiln burners type: M.A.S./8/KO.SO.X each around 110 MW, were supplied and already commissioned to **Hyundai Cement Co.** for **Young Wol Cement Plant** and **Dan Yang Cement Plant**. Young Wol Cement plant has two dry system kilns with a capacity of 6000 TPD, the capacity of Dan Yang plant is 4600 TPD. The operation of the rotary kilns has been essential improved with new M.A.S.-burners supplied by UNITHERM-CEMCON. Now Hyundai Cement is going to use shredded plastic residue of automobile production as a solid secondary fuel, combined with coal dust as main fuel.



M.A.S burner with cast iron ribs on the divisible burner jacket tube to enlarge the refractory lifetime



Modern M.A.S. kiln burner installation at Hyundai Dan Yang cement plant designed for 5 different fuels