

Search query (2): [SP]: field of the invention [0001] the present invention in general relates to the production of cement clinker wherein use is made of fibre cement material, which contains organic fibres, as a raw material in addition to the conventional raw materials which are used for the production of cement clinker. the cement clinker is produced in a system which comprises a cyclone tower and a rotating drum kiln. the cyclone tower comprises heat exchanging cyclones and a pre-calciner unit wherein fuel is combusted to feed the cyclone tower with heat. the rotating drum kiln is heated by means of further fuel which produces a flame at the end of the rotating drum kiln. the raw clinker meal is passed through the cyclone tower to preheat it. by the combustion of the fuel in the pre-calciner unit a hot zone is produced in the cyclone tower wherein the raw clinker meal is heated to a temperature of at least 800 degrees centigrade in order to calcine the raw clinker meal. the heated and calcined raw clinker meal is fed from the cyclone tower into the rotating drum kiln wherein the raw clinker meal is further heated to be molten and the molten raw clinker meal is subsequently cooled to produce the cement clinker. background [0002] in june 2005, the world business council for sustainable development defined 5 key performance indicators within the cement sustainability initiative [j. s. damtoft et al these indicators cover various subjects like energy reduction and an increasing use of alternative raw materials, as well as the reduction of co2-emissions that is becoming a key issue in the sustainable development of most companies [h. mikulcic et al the high temperatures needed to obtain optimal reactivity in clinker kilns, typically about 1500 degrees centigrade, are highly energy-consuming. the raw clinker meal is in particular to be molten partially to provide a liquid phase wherein sintering processes take place. in the current processes, the required energy is delivered by burning both traditional and alternative hydrocarbon fuels as well as and recovered fuel materials. despite the significant co2-emissions related to the combustion of these fuel materials, co2-emissions are mainly generated by the use of limestone as the main raw material for clinker. limestone, primarily consisting of CaCO_3 , will release CO_2 during decarbonation, delivering CaO as main constituent of alite ($3\text{CaO} \cdot \text{SiO}_2$), belite ($2\text{CaO} \cdot \text{SiO}_2$), aluminate ($3\text{CaO} \cdot \text{Al}_2\text{O}_3$) and ferrite ($4\text{CaO} \cdot \text{Al}_2\text{O}_3 \cdot \text{Fe}_2\text{O}_3$) which are the major clinker phases.[0003] the use of alternative fuels based on recycled energy-rich materials or energy-rich non-marketable by-products of e.g. chemical processes is already well established in the cement industry. for example, u.s. pat. no. 5,614,016 (f.l. smidth and co a/s, denmark,1997) and us 2007/0122762 a1 (buzzi unicem, usa, 2007) disclose the use of several kinds of waste materials which are substantially completely combustible and exothermic, preferably tires and plastics, mixed with the raw material feed and fed into a pre-calcining stage of a cement clinker production process.[0004] on the other hand, the use of alternative raw materials based on recovered materials as replacement for limestone is less frequently implemented. nevertheless, the replacement of limestone could minimize the effects of quarrying and improve the environmental impact by energy reduction as well as the reduction of CO_2 emission, by acting as a non-carbonate CaO source.[0005] us2005/0066860 a1 (t. j. logan et al. usa, 2005) discloses the use of a mixture of organic waste material (preferably sewage sludge) and mineral by-products (preferably a coal combustion by-product such as fly ash, bottom ash, fluidized bed ash, boiler ash and flue gas desulfurization by-products) in a cement manufacturing process, both as a fuel and combined with the raw material feed to the kiln. the inorganic material content is about 25 to 75 weight percent. the mixture is used as a raw material feed in an amount of 10 to 50 weight percent based on the total weight of the raw material feed. a fibre cement material is not mentioned, nor a method of production of a cement clinker. [0006] the use of fibre cement material, wherein the fibres don't comprise organic fibres but asbestos fibres, in the production of cement clinker is disclosed in the article "cement-bound asbestos products successfully disposed of and recycled in the clinker burning process", zkg international, bauverlag b v., gettersloh, d e, vol. 48, no. 11, 1 jan. 1995. shredded asbestos cement sheets were fine-ground to particle sizes corresponding to a cement raw meal. the asbestos cement meal was injected in the flame of a rotary kiln through the inner pipe of a multi-channel burner in a quantity corresponding to an input of 2 percent of the raw meal feed to a kiln plant. due to the very high temperature of more than 1600 degrees centigrade, the asbestos components were destructed. moreover, no asbestos fibres could be detected in the exhaust gas dust. a drawback of such a destruction method is that the heat exchanging properties of the cyclone tower are not used to preheat the asbestos cement material resulting in higher energy requirements of the kiln, especially when larger amounts of asbestos fibres would be used. indeed, at the flame of the rotary kiln a certain maximum temperature should be achieved in the clinker production process whilst the addition of relatively cold asbestos cement in this zone of the kiln reduces the temperature in that maximum temperature zone.[0007] in order to avoid fine milling of the fibre cement material, in particular asbestos cement material, wo 98/02392 proposes to only crush the fibre cement material in order to obtain a coarser granulate which can be fed via the inlet feed end into the rotary kiln. due to the high temperature of about 800 degrees centigrade at this inlet, no non-destructed asbestos fibres were exhausted from the kiln.[0008] a method, wherein organic fibre cement material is used as a raw material in the production of cement clinker in a cement manufacturing process as a supplemental source of raw material up to 2 weight percent of the total weight of the meal, has been disclosed in global cement magazine, october 2010, pp. 12-16. it is described that the fibre cement material is fed into a hopper from where it is fed into the feeder of a raw clinker meal mill, i.e. it is mixed with and processed along with the conventional clinker meal. at said concentration of 2 weight percent, it was concluded that the quality of the clinker still met all quality requirements, especially in terms of amounts of al, si, ca and fe, and to a lesser extent mg, k, na and s, and the emissions to the atmosphere at the kiln's chimney still met all emission limiting values as required by the exploitation permit. an advantage of this method is that by adding to organic fibre cement waste material to the raw clinker materials before grinding them to produce the raw clinker meal, the organic fibre cement material is also preheated in the cyclone tower (which is heated by the kiln gas evacuated from the rotary kiln to recuperate the heat thereof) so that the fibre cement waste material is added, in the same energy efficient way as the other raw materials, to the inlet at the top of the heat exchanging cyclone tower.[0009] the current application discloses however the effects of using large amounts of recuperated organic fibre cement materials as alternative raw material for portland clinker production and further describes possible boundary conditions and/or limitations. in particular adding larger amounts of organic fibre cement material either to the raw clinker meal feed or directly into the rotary kiln appeared to produce organic compounds which increase the total organic carbon (toc) content of the exhaust gasses from the clinker production installation and/or which may be deposited onto the inner walls of the cyclone tower (pre-heater). description of the invention [0010] it is the object of the invention to provide a method for the production of cement clinker in a cement manufacturing process using organic fibre cement as a supplemental source of raw material, such that a cement clinker can be made based on more than 2 weight percent of organic fibre cement material relative to the total weight of the raw material feed (=raw clinker meal and organic fibre cement material), without imparting neither the quality of the clinker, nor the emissions to the atmosphere and without causing clogging/pollution of the cyclone tower.[0011] the inventors have now found that organic fibre cement can be used as a supplemental raw material for cement clinker production, in particular portland cement clinker production, wherein the cement clinker is produced in a system comprising a cyclone tower with heat exchanging cyclones and with a pre-calciner unit wherein fuel is combusted to feed the cyclone tower with heat and a rotating drum kiln which has at least one feed end and which is heated by means of further fuel. in this system the raw clinker meal is passed through the cyclone tower to preheat it, the fuel is combusted in said pre-calciner unit to produce a hot zone in the cyclone tower wherein the raw clinker meal is heated to a temperature of at least 800 degrees centigrade to calcine it, the heated and calcined raw clinker meal is fed from the cyclone tower via the feed end of the rotating drum kiln into this rotating drum kiln wherein the raw clinker meal is further heated to be molten and the molten raw clinker meal is subsequently cooled to produce the cement clinker. in order to enable the use of larger amounts of organic fibre cement m

Results: 9

Search history

Search PN=(wo2013110810) (Results 1)

1:

Search [SP]: field of the invention [0001] the present invention in general relates to the production of cement clinker wherein use is made of fibre cement material, which contains organic fibres, as a raw material in addition to the conventional raw materials which are used for the production of cement clinker. the cement clinker is produced in a system which comprises a cyclone tower and a rotating drum kiln. the cyclone tower comprises heat exchanging cyclones and a pre-calciner unit wherein fuel is combusted to feed the cyclone tower with heat. the rotating drum kiln is heated by means of further fuel which produces a flame at the end of the rotating drum kiln. the raw clinker meal is passed through the cyclone tower to preheat it. by the combustion of the fuel in the pre-calciner unit a hot zone is produced in the cyclone tower wherein the raw clinker meal is heated to a temperature of at least 800 degrees centigrade in order to calcine the raw clinker meal. the heated and calcined raw clinker meal is fed from the cyclone tower into the rotating drum kiln wherein the raw clinker meal is further heated to be molten and the molten raw clinker meal is subsequently cooled to produce the cement clinker. background [0002] in june 2005, the world business council for sustainable development defined 5 key performance indicators within the cement sustainability initiative [j. s. damtoft et al these indicators cover various subjects like energy reduction and an increasing use of alternative raw materials, as well as the reduction of co2-emissions that is becoming a key issue in the sustainable development of most companies [h. mikulcic et al the high temperatures needed to obtain optimal reactivity in clinker kilns, typically about 1500 degrees centigrade, are highly energy-consuming. the raw clinker meal is in particular to be molten partially to provide a liquid phase wherein sintering processes take place. in the current processes, the required energy is delivered by burning both traditional and alternative hydrocarbon fuels as well as and recovered fuel materials. despite the significant co2-emissions related to the combustion of these fuel materials, co2-emissions are mainly generated by the use of limestone as the main raw material for clinker. limestone, primarily consisting of CaCO_3 , will release CO_2 during decarbonation, delivering CaO as main constituent of alite ($3\text{CaO} \cdot \text{SiO}_2$), belite ($2\text{CaO} \cdot \text{SiO}_2$), aluminate ($3\text{CaO} \cdot \text{Al}_2\text{O}_3$) and ferrite ($4\text{CaO} \cdot \text{Al}_2\text{O}_3 \cdot \text{Fe}_2\text{O}_3$) which are the major clinker phases.[0003] the use of alternative fuels based on recycled energy-rich materials or energy-rich non-marketable by-products of e.g. chemical processes is already well established in the cement industry. for example, u.s. pat. no. 5,614,016 (f.l. smidth and co a/s, denmark,1997) and us 2007/0122762 a1 (buzzi unicem, usa, 2007) disclose the use of several kinds of waste materials which are substantially completely combustible and exothermic, preferably tires and plastics, mixed with the raw material feed and fed into a pre-calcining stage of a cement clinker production process.[0004] on the other hand, the use of alternative raw materials based on recovered materials as replacement for limestone is less frequently implemented. nevertheless, the replacement of limestone could minimize the effects of quarrying and improve the environmental impact by energy reduction as well as the reduction of CO_2 emission, by acting as a non-

carbonate cao source.[0005] us2005/0066860 a1 (t. j. logan et al. usa, 2005) discloses the use of a mixture of organic waste material (preferably sewage sludge) and mineral by-products (preferably a coal combustion by-product such as fly ash, bottom ash, fluidized bed ash, boiler ash and flue gas desulfurization by-products) in a cement manufacturing process, both as a fuel and combined with the raw material feed to the kiln. the inorganic material content is about 25 to 75 weight percent. the mixture is used as a raw material feed in an amount of 10 to 50 weight percent based on the total weight of the raw material feed. a fibre cement material is not mentioned, nor a method of production of a cement clinker.[0006] the use of fibre cement material, wherein the fibres don't comprise organic fibres but asbestos fibres, in the production of cement clinker is disclosed in the article "cement-bound asbestos products successfully disposed of and recycled in the clinker burning process", zkg international, bauverlag b v., gettersloh, d e, vol. 48, no. 11, 1 jan. 1995. shredded asbestos cement sheets were fine-ground to particle sizes corresponding to a cement raw meal. the asbestos cement meal was injected in the flame of a rotary kiln through the inner pipe of a multi-channel burner in a quantity corresponding to an input of 2 percent of the raw meal feed to a kiln plant. due to the very high temperature of more than 1600 degrees centigrade, the asbestos components were destructed. moreover, no asbestos fibres could be detected in the exhaust gas dust. a drawback of such a destruction method is that the heat exchanging properties of the cyclone tower are not used to preheat the asbestos cement material resulting in higher energy requirements of the kiln, especially when larger amounts of asbestos fibres would be used. indeed, at the flame of the rotary kiln a certain maximum temperature should be achieved in the clinker production process whilst the addition of relatively cold asbestos cement in this zone of the kiln reduces the temperature in that maximum temperature zone.[0007] in order to avoid fine milling of the fibre cement material, in particular asbestos cement material, wo 98/02392 proposes to only crush the fibre cement material in order to obtain a coarser granulate which can be fed via the inlet feed end into the rotary kiln. due to the high temperature of about 800 degrees centigrade at this inlet, no non-destroyed asbestos fibres were exhausted from the kiln.[0008] a method, wherein organic fibre cement material is used as a raw material in the production of cement clinker in a cement manufacturing process as a supplemental source of raw material up to 2 weight percent of the total weight of the meal, has been disclosed in global cement magazine, october 2010, pp. 12-16. it is described that the fibre cement material is fed into a hopper from where it is fed into the feeder of a raw clinker meal mill, i.e. it is mixed with and processed along with the conventional clinker meal. at said concentration of 2 weight percent, it was concluded that the quality of the clinker still met all quality requirements, especially in terms of amounts of al, si, ca and fe, and to a lesser extent mg, k, na and s, and the emissions to the atmosphere at the kiln's chimney still met all emission limiting values as required by the exploitation permit. an advantage of this method is that by adding to organic fibre cement waste material to the raw clinker materials before grinding them to produce the raw clinker meal, the organic fibre cement material is also preheated in the cyclone tower (which is heated by the kiln gas evacuated from the rotary kiln to recuperate the heat thereof) so that the fibre cement waste material is added, in the same energy efficient way as the other raw materials, to the inlet at the top of the heat exchanging cyclone tower.[0009] the current application discloses however the effects of using large amounts of recuperated organic fibre cement materials as alternative raw material for portland clinker production and further describes possible boundary conditions and/or limitations. in particular adding larger amounts of organic fibre cement material either to the raw clinker meal feed or directly into the rotary kiln appeared to produce organic compounds which increase the total organic carbon (toc) content of the exhaust gasses from the clinker production installation and/or which may be deposited onto the inner walls of the cyclone tower (pre-heater). description of the invention [0010] it is the object of the invention to provide a method for the production of cement clinker in a cement manufacturing process using organic fibre cement as a supplemental source of raw material, such that a cement clinker can be made based on more than 2 weight percent of organic fibre cement material relative to the total weight of the raw material feed (=raw clinker meal and organic fibre cement material), without imparting neither the quality of the clinker, nor the emissions to the atmosphere and without causing clogging/pollution of the cyclone tower.[0011] the inventors have now found that organic fibre cement can be used as a supplemental raw material for cement clinker production, in particular portland cement clinker production, wherein the cement clinker is produced in a system comprising a cyclone tower with heat exchanging cyclones and with a pre-calciner unit wherein fuel is combusted to feed the cyclone tower with heat and a rotating drum kiln which has at least one feed end and which is heated by means of further fuel. in this system the raw clinker meal is passed through the cyclone tower to preheat it, the fuel is combusted in said pre-calciner unit to produce a hot zone in the cyclone tower wherein the raw clinker meal is heated to a temperature of at least 800 degrees centigrade to calcine it, the heated and calcined raw clinker meal is fed from the cyclone tower via the feed end of the rotating drum kiln into this rotating drum kiln wherein the raw clinker meal is further heated to be molten and the molten raw clinker meal is subsequently cooled to produce the cement clinker. in order to enable the use of larger amounts of organic fibre cement m (Results 9)

Title: USE OF ORGANIC FIBRE CEMENT AS A RAW MATERIAL IN THE PRODUCTION OF CEMENT CLINKER

Abstract: Source: US2014366779A Fibre cement material, which contains organic fibres, is used as an additional raw material for the production of cement clinker. The cement clinker is produced in a system which comprises a cyclone tower (11) and a rotating drum kiln (15). The cyclone tower (11) comprises cyclones (1-5) and a pre-calciner unit (10) wherein fuel is combusted to feed the cyclone tower with heat. The raw clinker meal is passed through the cyclone tower to preheat it. By the combustion of the fuel in the pre-calciner unit (10) a hot zone is produced in the cyclone tower wherein the raw clinker meal is calcined. In order to be able to add larger amounts of the fibre cement material without causing a too high total organic carbon content of the exhaust gasses and/or without causing depositions of organic matter onto the inner walls of the cyclone tower (11), the organic fibre cement material is added in a dry powdered form in said hot zone, in particular in the pre-calciner unit (10) to be heated in less than 5 seconds to a temperature of at least 800 degrees centigrade

Classifications:**International (IPC 8-9):** C04B16/02 C04B16/06

C04B7/24 (Advanced/Invention);

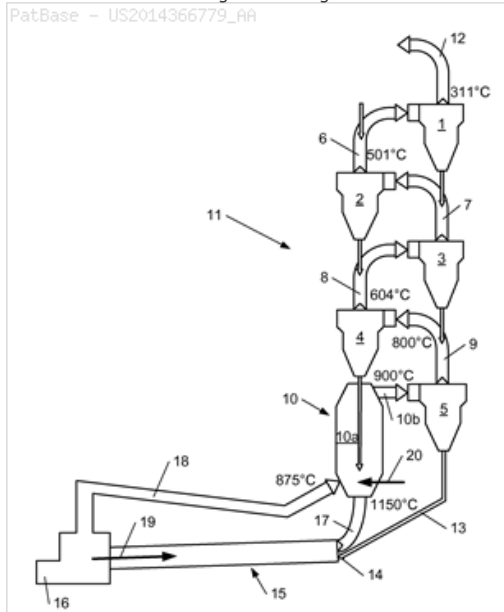
C04B7/24 (Core/Invention)

CPC: C04B16/0641 C04B16/02 C04B16/0633 C04B7/246

Y02P40/145

US: 106/805 524/4 524/8

PatBase - US2014366779_RA

**Family:**

Publication number	Publication date	Application number	Application date
AU2013213556 AA	20130801	AU20130213556	20130128
AU2013213556 BB	20160225	AU20130213556	20130128
CL2014001933 A1	20141103	CL20140001933	20140722
CO7020901 A2	20140811	CO20140156330	20140718
EA025760 B1	20170130	EA20140091415	20130128
EA201491415 A1	20141230	EA20140091415	20130128
EP2807128 A1	20141203	EP20130706931	20130128
PE21042014 A1	20141220	PE20140001121	20130128
TH148796 A	20160418	TH20141003698	20130128
US2014366779 AA	20141218	US20130373609	20130128
WO13110810 A1	20130801	WO2013EP51577	20130128

Priority:

EP20120152942 20120127

EP20130706931 20130128

WO2013EP51577 20130128

Probable Assignee: CIMENTERIES CBR**Assignee(s):** (std): CBR CEMENTBEDRIJVEN NV ; REDCO ; REDCO NV**Assignee(s):** CIMENTERIES CBR**Inventor(s):** (std): SCHOON JORIS ; HEYDEN LUC VAN D**Inventor(s):** JORIS SCHOON ; LUC VAN D HEYDEN**Agent(s):** BALDWIN'S INTELLECTUAL PROPERTY; JOHANSSON AND LANGLOIS LTDA; JAIME EDUARDO DELGADO VILLEGAS; GEVERS PATENTS; VAN REET JOSEPH ET AL

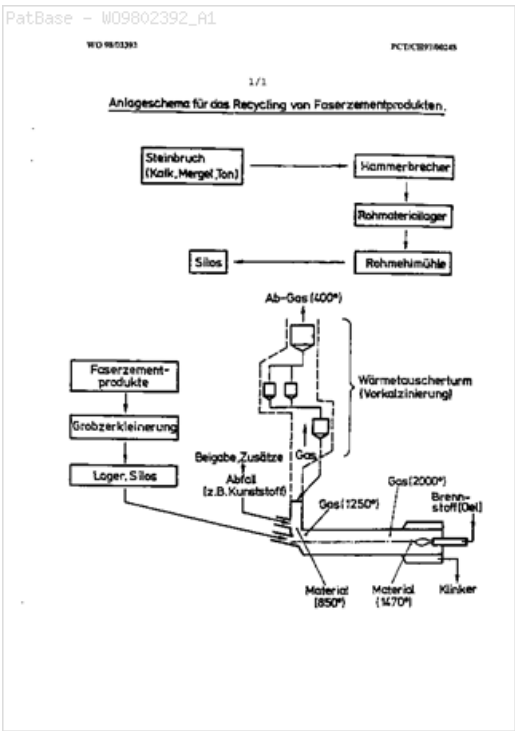
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Title: METHOD FOR DISPOSING OF FIBRE CEMENT WASTE PRODUCTS

Abstract: In a method for disposing of fibre cement waste products, in particular asbestos cement products, the products are simply coarsely crushed (less energy expended) and the resulting product is inserted in the entry zone of a revolving tubular kiln at a minimum temperature of 800 DEG C, preferably adding it to the normal stream for main materials used in cement production. The advantage lies in that, on the one hand, less energy is used and that, on the other hand, protection measures against fibres coming free whilst being coarsely crushed are easier to draw up than when crushing the products into a flour.

Classifications:

International (IPC 8-9): A62D3/00 B09B3/00 C04B7/24 (Advanced/Invention); A62D3/00 B09B3/00 C04B7/00 (Core/Invention)
International (IPC 1-7): A62D3/00 C04B7/24
CPC: Y02P40/145 C04B7/246 B09B3/0066 B09B3/0083
European: B09B3/00H B09B3/00T C04B7/24B



Family:

Publication number	Publication date	Application number	Application date
AT195305 E	20000815	AT19970925812T	19970624
AU199730866 A1	19980209	AU19970030866	19970624
DE59702141 D1	20000914	DE19975002141	19970624
DK0850205 T3	20001120	DK19970925812T	19970624
EP0850205 A1	19980701	EP19970925812	19970624
EP0850205 B1	20000809	EP19970925812	19970624
ES2149598 T3	20001101	ES19970925812T	19970624
PT850205 T	20010131	PT19970925812T	19970624
SI0850205 T1	20001231	SI19970030086T	19970624
WO9802392 A1	19980122	WO1997C H00248	19970624

Priority:

CH19960001771 19960715 EP19970925812 19970624 WO1997CH00248 19970624

Probable Assignee: ETERNIT AG

Assignee(s): (std): CALUORI ANDRE ; ETERNIT AG ; ETERNIT AG NIEDERURNEN ; ETERNIT NIEDERURNEN AG ; FETZ LINUS B

Inventor(s): (std): CALUORI ANDRE ; FETZ B ; FETZ LINUS B ; LINUS B FETZ

Inventor(s): ANDRE CALUORI

Designated states: AL AM AT AU AZ BA BB BE BG BR BY CA CH CN CU CZ DE DK EE ES FI FR GB GE GH GR HU IE IL IS IT JP KE KG KP KR KZ LC LI LK LR LS LT LU LV MC MD MG MK MN MW MX NL NO NZ PL PT RO RU SD SE SG SI SK SL SZ TJ TM TR TT UA UG US UZ VN YU ZW

Title: PROCESS FOR THE ENVIRONMENTALLY TOLERABLE DISPOSAL OF MINERAL FIBRES AND SUBSTANCES CONTAINING MINERAL FIBRES AND THEIR CONVERSION INTO MATERIALS OF VALUE

Abstract: Source: DE4330551A1 Technical problem. The disposal of mineral fibres and substances containing mineral fibres, some of which are carcinogenic, in particular asbestos types, is still a great problem. Previous processes (dissolution in acids, fusion into glasses, burning in furnaces) are either highly energy-consuming or produce additional wastes. The end products obtained in all of these processes are in general waste materials which then must for the most part be stored in landfills. (As in, e.g.: DE 4035358 A1, DE 4027844 A1, DE3827157 A1, DE 3718000 A1; PCT/US89/00057 and 0372084, DE 4004201 A1; DE 3931686 A1, DE 4034026 A1). The aim of the invention is therefore a process which converts these mineral fibre materials into valuable materials. The process is moreover to be energy-effective and cost-effective. Solution of the problem. A process is described by which asbestos types and asbestos-containing materials (e.g. sprayed asbestos, asbestos-containing cements) and industrially produced mineral fibres (e.g. rock fibres, basalt fibres, slag fibres, ceramic fibres, glass fibres) and materials which have been produced from these, such as composite materials, felts, mats, insulating materials, can be converted by heating with additives in a tubular rotary furnace into valuable materials such as Portland cement and cement clinker. The process comprises the following part-steps: a) grinding and homogenising the materials to the particle size necessary for cement manufacture, either dry or with the addition... Original abstract incomplete.

Classifications:

International (IPC 8-9): A62D3/00 B09B3/00 C04B18/16 C04B20/02 C04B7/24 (Advanced/Invention);

A62D3/00 B09B3/00 C04B18/04 C04B20/00 C04B7/00 (Core/Invention)

International (IPC 1-7): A62D3/00 B09B3/00 C04B14/00 C04B14/40 C04B18/16 C04B7/00 E04B1/88

CPC: Y02W30/20 Y02W30/95 C04B20/02 B09B3/0066 C04B7/246 C04B18/167 Y02P40/145

European: A62D3/00 B09B3/00H C04B18/16R C04B20/02 C04B7/24B

Family:

Publication number	Publication date	Application number	Application date
DE4330551 A1	19950316	DE19934330551	19930909

Priority:

DE19934330551 19930909

Probable Assignee: RAMMENSEE WERNER PROF DR

Assignee(s): (std): RAMMENSEE WERNER PROF DR

Assignee(s): RAMMENSEE WERNER PROF DR 51105 KOELN DE

Inventor(s): (std): RAMMENSEE WERNER PROF DR

Abstract: Source: US5614016A PCT No. PCT/DK94/00207 Sec. 371 Date Oct. 19, 1995 Sec. 102(e) Date Oct. 19, 1995 PCT Filed May 27, 1994 PCT Pub. No. WO94/29231 PCT Pub. Date Dec. 22, 1994A method and plant for burning sludge or filter cakes during the cement clinker manufacture where the cement is manufactured in known manner by the cement raw meal being preheated, calcined and burned into clinker with subsequent cooling of the clinker and where the sludge is dried and finely divided prior to burning. The drying heat is provided by feeding hot raw meal from either the preheater or a separating cyclone installed in connection with the calciner to the drier unit, which may be a drier crusher. Applicable types of sludge include sewage sludge, beaching earth, paper sludge, fibre rejects, combustible chemical residues, e.g. waste derived from the manufacture of nylons and pesticides, and drill sludge resulting from oil exploration.

US: 106/745 106/747 106/756
432/13 432/139 432/14 432/58



Publication number	Publication date	Application number	Application date
AT159927 E	19971115	AT19940917569T	19940527
BRPI9406782 A	19960206	BR1994PI06782	19940527
CA2160354 AA	19951011	CA19942160354	19940527
CA2160354 C	20040127	CA19942160354	19940527
DE69406661 D1	19971211	DE19946006661	19940527
DE69406661 T2	19980604	DE19946006661T	19940527
DK14594 A	19950804	DK19940000145	19940203
DK172049 B1	19970929	DK19940000145	19940203
DK63293 A0	19930603	DK19930000632	19930603
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FI114393 B	20041015	FI19950005799	19951201
FI955799 A	19951201	FI19950005799	19951201
FI955799 A0	19951201	FI19950005799	19951201
JP3522274 B2	20040426	JP19950501201T	19940527
JP8510985 T2	19961119	JP19950501201T	19940527
US5614016 A	19970325	US19950535285	19951019
WO9429231 A1	19941222	WO1994DK00207	19940527

DK19930000632 19930603 DK19940000145 19940203 WO1994DK00207 19940527

Assignee(s): FL SMIDTH AND CO A S VALBY DK ; HUNDEBOL SOREN ; F L SMIDTH AND CO A S ; F L SMIDTH AND CO A S VALBY DK ; FL SMIDTH AND CO ; FL SMIDTH AND CO A S

Designated states: AT BE BR CA CH DE DK ES FI FR GB GR IE IT JP LU MC NL PT SE US

Title: USE OF ORGANIC WASTE/MINERAL BY-PRODUCT MIXTURES IN CEMENT MANUFACTURING PROCESSES

Abstract: Source: US2005066860A The use of organic waste/mineral by-product mixtures as raw materials in the manufacture of cement clinker; as alternative or supplemental fuel sources for heating a kiln used in a cement clinker manufacturing process; and, to reduce nitrogen oxide (NOx) emissions generated during cement manufacturing processes are disclosed.

Classifications:

International (IPC 8-9): B01D53/56 C04B7/153 C04B7/24 C04B7/36 C04B7/44 (Advanced/Invention); B01D53/56 C04B7/00 (Core/Invention)

International (IPC 1-7): C01B21/00 C04B11/036 C04B2/10 C04B7/45

CPC: C04B7/4423 B01D53/56 C04B7/153 C04B7/243 C04B7/364 Y02P40/126 Y02P40/143 Y02P40/145

European: B01D53/56 C01B21/02 C04B7/153 C04B7/24A C04B7/36E C04B7/44B2

US: 106/745 106/758 106/763 106/764 423/235

Family:

Publication number	Publication date	Application number	Application date
US2005066860 AA	20050331	US20030669463	20030925

Priority:

US20030669463 20030925

Probable Assignee: N VIRO INT CORP

Assignee(s): (std): FAULMANN ERVIN L ; LOGAN TERRY J ; NICHOLSON TIM

Assignee(s): N VIRO INT ; N VIRO INT CORP

Inventor(s): (std): FAULMANN ERVIN L ; LOGAN TERRY J ; NICHOLSON TIM

Inventor(s): LOGAN TERRY ; FAULMANN ERVIN

Agent(s): KENYON AND KENYON

Title: Mineralogical conversion of asbestos waste

Abstract: Source: US5096692A There is provided a process for the mineralogical conversion of waste asbestos to a non-asbestos product. The waste asbestos is treated with a mineralizing agent and then heated for a period of time sufficient to convert the asbestos to the non-asbestos product. The mineralizing agent is preferably a water-soluble alkali metal borate or alkali metal silicate.

Classifications:

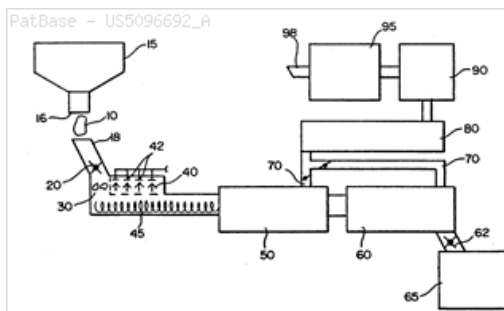
International (ipc 8-9): A62D3/00 A62D3/36 A62D3/40 B09B3/00 C01B33/24 (Advanced/Invention);
A62D3/36 A62D3/40 (Advanced/Non-invention);
A62D3/00 B09B3/00 (Core/Invention)

International (ipc 1-7): A62D3/00 A62D3/00 B09B3/00 C01B33/24 C04B14/40 C04B41/46

CPC: A62D3/36 A62D3/40 A62D2101/41 B09B3/0066

European: A62D3/00 A62D3/36 A62D3/40 B09B3/00H K62D101/41

US: 423/167 423/167.1 423/331 423/335 423/659 423/DIG.20 588/254



Family:

Publication number	Publication date	Application number	Application date
AT118366 E	19950315	AT19900911088T	19900629
AU199060389 A1	19910117	AU19900060389	19900629
AU629968 B2	19921015	AU19900060389	19900629
CA2063386 AA	19911227	CA19902063386	19900629
CA2063386 C	19991012	CA19902063386	19900629
DE69017026 D1	19950323	DE19906017026	19900629
DE69017026 T2	19950601	DE19906017026T	19900629
DK0479894 T3	19950710	DK19900911088T	19900629
EP0479894 A1	19920415	EP19900911088	19900629
EP0479894 B1	19950215	EP19900911088	19900629
ES2067750 T3	19950401	ES19900911088T	19900629
US5096692 A	19920317	US19910652299	19910205
WO9100123 A1	19910110	WO1990US03803	19900629

Priority:

US19890374404 19890629 US19910652299 19910205 WO1990US03803 19900629

Probable Assignee: ARI TECHNOLOGIES INC

Assignee(s): (std): EK ROGER B ; ROGER B EK

Assignee(s): ARI TECHNOLOGIES INC ; EK ROGER B ISSAQUAH WASH US

Inventor(s): (std): EK ROGER B

Inventor(s): ROGER B EK

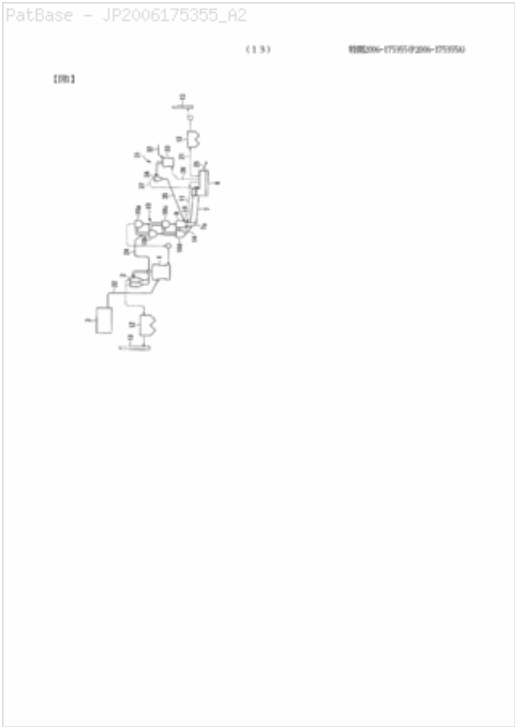
Agent(s): DAVIES COLLISON CAVE; DAVIES COLLISON CAVE PTY LTD; OYEN WIGGS GREEN AND MUTALA LLP

Designated states: AT AU BE CA CH DE DK ES FI FR GB IT JP LI LU NL NO SE

Title: TREATMENT METHOD AND TREATMENT FACILITY FOR ORGANIC SLUDGE

Abstract: Source: JP2006175355A PROBLEM TO BE SOLVED: To provide a treatment method and a treatment facility for organic sludge by which organic sludge can be effectively utilized as fuel in cement firing equipment, and further, influence exerted on the operation of the cement firing equipment can be reduced. SOLUTION: In the treatment method for organic sludge, organic sludge having a high water content and exhaust gas exhausted from a clinker cooler 8 and subjected to steam extraction are introduced into a drying-crushing machine 33, so as to dry/crush the organic sludge, the organic sludge and exhaust gas subjected to the drying/crushing are separated by a separation catching facility 34, only the organic sludge subjected to the drying/crushing is caught, the organic sludge is fed to a burner 14 in a calcining furnace 9 as powder fuel, so as to be burned, and further, the residual material produced by burning the organic sludge is used as a cement clinker raw material.

Classifications:
International (IPC 8-9): C02F11/00 C02F11/06 C02F11/12 C04B7/36 C04B7/44 (Advanced/Invention)
CPC: Y02W10/40 Y02P40/121



Family:

Publication number	Publication date	Application number	Application date
JP2006175355 A2	20060706	JP20040371226	20041222
JP4628773 B2	20110209	JP20040371226	20041222

Priority:

JP20040371226 20041222

Probable Assignee: SUMITOMO OSAKA CEMENT CO LTD
Assignee(s): (std): SUMITOMO OSAKA CEMENT CO LTD
Inventor(s): (std): HOSODA KEISUKE ; KUNINISHI TAKESHI ; OISHI HIDEO

Title: INJECTION OF WASTE-DERIVED MATERIALS INTO PRE-CALCINING STAGE OF A CLINKER PRODUCTION SYSTEM

Abstract: Source: US2007122762A A method for producing clinker in a system having a rotary kiln and a pre-calciner, waste material is introduced into the inlet end of the pre-calciner to serve as secondary fuel for pre-calcining raw mix also fed into the pre-calciner. The waste material is substantially completely combustible and exothermic. In a preferred embodiment, the waste material includes tires, plastics and other combustible waste that has been shredded or chipped to a size that is sufficiently small to ensure substantially complete combustion of the particles as they fall through the pre-calciner.

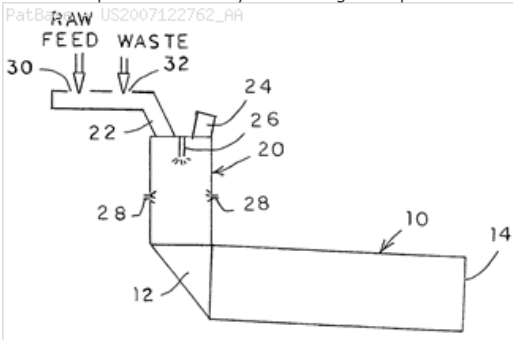
Classifications:

International (IPC 8-9): F27B15/00 F27B7/02 (Advanced/Invention); F27B15/00 F27B7/00 (Core/Invention)

CPC: F27B7/2033 F27B7/32

European: F27B7/20B1A F27B7/32

US: 432/106 432/13 432/58



Family:

Publication number	Publication date	Application number	Application date
US2007122762 AA	20070531	US20050273788	20051115
US7361014 BB	20080422	US20050273788	20051115

Priority:

US20050273788 20051115

Probable Assignee: BUZZI UNICEM USA INC

Assignee(s): (std): BUZZI UNICEM USA INC

Inventor(s): (std): HOFFIS LAWRENCE L ; MORICAL GREGORY J

Agent(s): MAGINOT MOORE AND BECK LLP, CHASE TOWER; MAGINOT MOORE AND BECK

Title: Method and apparatus for calcining pulverulent raw material

Abstract: Source: US4557688A A method and an apparatus for calcining pulverulent raw material, in particular cement raw meal, wherein the material is calcined suspended in a stream of hot gas in a calcining zone (4) in an overheated atmosphere by burning fuel in a stream of oxygen-containing gas in the zone, and precipitated in a precipitation zone (9). The rate of combustion of the fuel is accelerated by maintaining a temperature within the range 900 DEG -1250 DEG C. in the calcining zone by dividing the raw material into two streams (22',22) introducing and calcining only the first stream of material (22') in the calcination chamber (4). The temperature of the hot suspension withdrawn from the calcining zone is reduced by 100 DEG -300 DEG C. to a level within the range 800 DEG -1000 degrees C. by suspending the second stream of material (22) in the hot suspension during withdrawal thereof from the calcination chamber (4) and before the calcined material is precipitated in the precipitator (9).

Classifications:

International (IPC 8-9): B01J6/00 C04B2/10 C04B7/44 F27B15/00

F27B7/02 F27B7/04 F27B7/20 (Advanced/Invention);

B01J6/00 (Advanced/Non-invention);

B01J6/00 C04B2/00 C04B7/00 F27B15/00 F27B7/00

F27B7/20 (Core/Invention)

International (IPC 1-7): B01J6/00 C04B1/00 C04B2/02 C04B2/10

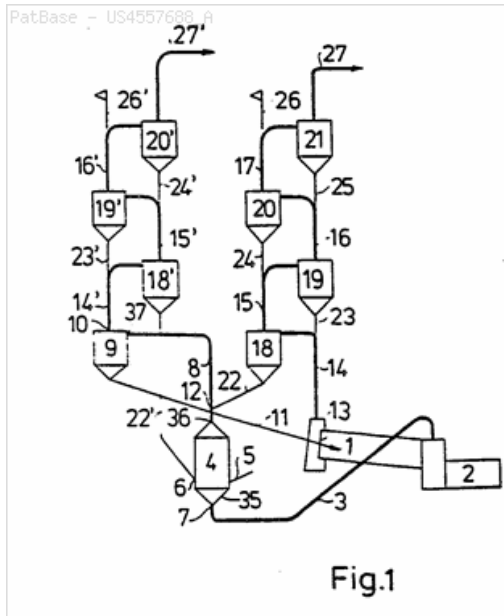
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F27B7/04 F27B7/2 F27B7/20

CPC: C04B7/44 F27B7/205

European: C04B7/44 F27B7/20B2A

US: 432/106 432/14



Family:

Publication number	Publication date	Application number	Application date
AU198317898 A1	19840308	AU19830017898	19830811
AU555359 B2	19860918	AU19830017898	19830811
BR8304767 A	19840410	BR19830004767	19830901
CA1211932 A1	19860930	CA19830434644	19830815
DE3369962 D1	19870409	DE19833369962	19830817
EG15978 A	19890130	EG19830000540	19830903
EP0102789 A1	19840314	EP19830304759	19830817
EP0102789 B1	19870304	EP19830304759	19830817
ES525285 A1	19841001	ES19830525285	19830901
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GR79614 B	19841031	GR19830172314	19830801
IE54483 B	19891025	IE19830001857	19830805
IE831857 L	19840302	IE19830001857	19830805
IN159327 A	19870502	IN1983CA00909	19830721
JP5007057 B4	19930128	JP19830161180	19830901
JP59062336 A2	19840409	JP19830161180	19830901
MX162130 A	19910401	MX19830198251	19830801
PT77233 A	19830901	PT19830077233	19830823
PT77233 B	19860204	PT19830077233	19830823
US4557688 A	19851210	US19830522395	19830811

Priority:

CA19830434644 19830815

DK19820003925 19820902

DK19820003925 19820912

Probable Assignee: SMIDTH AND CO F L AS

Assignee(s): (std): SMIDTH AND CO AS F L ; SMIDTH COMERC IND SA ; SMIDTH AND CO F L AS

Assignee(s): FL SMIDTH AND CO ; SMIDTH F L AND CO A S ; FL SMIDTH AND CO A S ; NIELSEN PETER B ; SMIDTH FL AND CO A S ; FL SMIDTH AND CO ANS ; FL SMIDTH AND CIA S A DE C V ; FL SMIDTH AND CO A S ; FL SMIDTH AND CO ANS ; FL SMIDTH AND CO AS ; FL SMIDTH S A ; FL SMIDTH S A COMERCIO E INDUSTRIA ; FL SMITH AND CO AS ; FL SMIDTH AND CIA DE CV SA

Inventor(s): (std): NIELSEN PETER BECHTOFT ; NIELSEN PETER B

Inventor(s): PETER BECHTOFT NIELSEN ; PEETAA BETSUCHITOFUTO NIIRUSEN

Agent(s): PHILLIPS ORMONDE FITZPATRICK; BORDEN LADNER GERVAIS LLP

Designated states: BE CH DE FR GB IT LI SE