

1) Family number: 7288035 (EP0337073A2)

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**Title:** PROCESS FOR THE REMOVAL OF NITROGEN OXIDE FROM A FLUE GAS STREAM AND FURNACE WITH ELEMENTS FOR PERFORMING THE PROCESS.

**Abstract:** In selective nuncatalytic denitrification, a flue gas stream is brought into contact with a reagent, e.g. ammonia, in a homogeneous gas phase reaction. It is important that the contact zone coincides exactly with the zone in which the flue gas passes through a narrow range, normally termed the "temperature window", in the vicinity of 1000 degrees C. Particularly in the retrofitting of existing furnaces with denitrification equipment it is often difficult to bring the reagent into contact with the flue gas at exactly the right position. The reagent solution in the form of drops of variable size is blown into the flue gas stream using jets of a carrier gas. The drops are produced by bringing together an aqueous reagent solution and a carrier gas jet at an edge. With large drops the place at which the reagent evaporates is further downstream than with small drops. Therefore by altering the size of the drops, the zone in which the reagent in the gaseous state is mixed with the flue gas may be moved. The drop size is altered by changing the path length covered by the liquid in the carrier gas jet, before this exits from the nozzle opening. For this purpose a nozzle (1) is used which has a coaxial inner tube (12) movable in the direction of the axis. Nuncatalytic denitrification of flue gases from large scale furnaces.

**Classifications:**

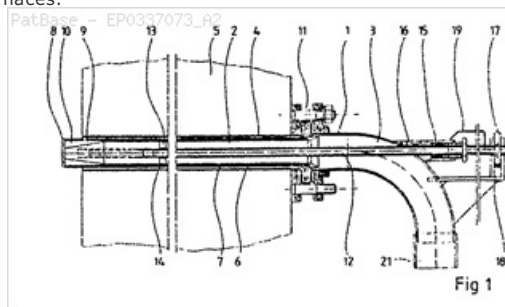
**International (IPC 8-9):** B01D53/56 B01J19/26 F23J15/00 (Advanced/Invention);

B01D53/56 B01J19/26 F23J15/00 (Core/Invention)

**International (IPC 1-7):** A62D3/00 B01D53/34 F23J15/00

**CPC:** B01D53/56 B01J19/26 B01J2219/00094 B01J2219/00155 F23J15/003

**European:** B01D53/56 B01J19/26 F23J15/00F L01J219/00B2D4D L01J219/00B2P4



**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| DE3811636 C1       | 19890316         | DE19883811636      | 19880407         |
| EP0337073 A2       | 19891018         | EP19890102474      | 19890323         |
| EP0337073 A3       | 19910206         | EP19890102474      | 19890323         |

**Priority:**

DE19883811636 19880407

**Probable Assignee:** BABCOCK ANLAGEN AG

**Assignee(s):** (std): BABCOCK ANLAGEN AG

**Assignee(s):** DEUTSCHE BABCOCK ANLAGEN AG 4200 OBERHAUSEN DE ; DEUTSCHE BABCOCK ANLAGEN AKTIENGESellschaft

**Inventor(s):** (std): VOJE HEINZ HELMUT

**Inventor(s):** VOJE HEINZ HELMUT 4224 HUENXE DE

**Designated states:** AT BE CH DE FR GB GR IT LI NL SE

2) Family number: 34082743 (US2009229462A)

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**Title:** POWDERED LIME COMPOSITION, METHOD OF PERPARING SAME AND USE THEREOF

**Abstract:** Powdered lime composition having a BET specific surface area that is equal to or greater than 25 m2/g and a BJH total pore volume obtained from nitrogen desorption that is equal to or greater than 0.1 cm3/g, and furthermore comprising an alkali metal. Method of preparing the composition and use thereof to reduce flue gases.

**Classifications:**

**International (IPC 8-9):** B01D53/48 B01D53/68 C04B2/02

B01D53/02 B01D53/04 B01D53/50 B01D53/81 B01D59/26

B01J20/04 B01J20/30 C01F11/02 C04B2/04

C04B2/06 (Advanced/Invention);

B01D53/02 B01D53/50 B01D53/68 B01D53/81 B01D59/00

B01J20/04 C01F11/00 C04B2/00 (Core/Invention);

B01D B01J C01F C04B (Subclass/Invention)

**International (IPC 1-7):** B01D53/50 B01D53/50 B01D53/68

B01J20/04 C01F11/02 C04B2/06

**CPC:** B01J20/041 B01J20/045 B01J20/046 B01J20/048 B01J20/28059

B01J20/28071 B01J20/3085 C04B2/06 B01D2251/404

B01D2251/604 B01J20/043 C01F11/02 C01P2004/61 C01P2006/12

C01P2006/14 C01P2006/80 B01D53/50 B01D53/685 B01D53/81

B01D2251/304 B01D2257/2042 B01D2257/2045 B01D2257/2047

B01D2258/0283

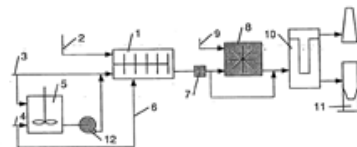
**European:** B01J20/04 B01J20/04D C01F11/02 C04B2/06

L01D251/404 L01D251/604 L01J20/04D M01P4/61 M01P6/12

M01P6/14 M01P6/80

**US:** 423/240S 423/244.01 423/640 502/400 502/400S 95/116

95/116S 95/131 95/131P 95/137

**Fig. 1****Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| AR056662 AA        | 20071017         | AR2006P102757      | 20060627         |
| AT492514 E         | 20110115         | AT20060763882T     | 20060626         |
| BE1016661 AD       | 20070403         | BE20050000328      | 20050628         |
| BRPI0614047 A2     | 20110607         | BR2006PI14047      | 20060626         |
| BRPI0614047 B1     | 20180522         | BR2006PI14047      | 20060626         |
| CA2613186 AA       | 20071221         | CA20062613186      | 20060626         |
| CA2613186 C        | 20130827         | CA20062613186      | 20060626         |
| CL2006001665 A1    | 20070209         | CL20060001665      | 20060628         |
| CL46093 B          | 20091209         | CL20060001665      | 20060628         |
| CN101370735 A      | 20090218         | CN200680023135     | 20060626         |
| CN103626216 A      | 20140312         | CN201310505481     | 20060626         |
| CN106927491 A      | 20170707         | CN201610649652     | 20060626         |
| DE602006019090 D1  | 20110203         | DE200660019090T    | 20060626         |
| DK1896364 T3       | 20110228         | DK20060763882T     | 20060626         |
| EP1896364 A2       | 20080312         | EP20060763882      | 20060626         |
| EP1896364 B1       | 20101222         | EP20060763882      | 20060626         |
| ES2356388 T3       | 20110407         | ES20060763882T     | 20060626         |
| HR20110057 T1      | 20110430         | HR20110000057      | 20110124         |
| IN00455CN2008 A    | 20080919         | IN2008CN00455      | 20080128         |
| IN255390 B         | 20130222         | IN2008CN00455      | 20080128         |
| JP2008546631 T2    | 20081225         | JP20080518808T     | 20060626         |
| JP5144509 B2       | 20130213         | JP20080518808T     | 20060626         |
| MA29642 B1         | 20080701         | MA20080030590      | 20080123         |
| MX2008000096 A1    | 20080311         | MX20080000096      | 20060626         |
| NO20080485 A       | 20080227         | NO20080000485      | 20080125         |
| PT1896364 T        | 20110222         | PT20060763882T     | 20060626         |
| RS51632 B          | 20110831         | RS20110000078      | 20060626         |
| RU2008102986 A     | 20090810         | RU20080102986      | 20060626         |
| RU2425000 C2       | 20110727         | RU20080102986      | 20060626         |
| SI1896364 T1       | 20110429         | SI20060030909T     | 20060626         |
| TW200708480 A      | 20070301         | TW20060123143      | 20060627         |
| TWI395713 B        | 20130511         | TW20060123143      | 20060627         |
| UA93682 C2         | 20110310         | UA20080001027      | 20060626         |
| US2009229462 AA    | 20090917         | US20060922167      | 20060626         |
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| WO07000433 A2      | 20070104         | WO2006EP63542      | 20060626         |
| WO07000433 A3      | 20070315         | WO2006EP63542      | 20060626         |
| ZA2008000781 A     | 20090624         | ZA20080000781      | 20060626         |

**Priority:**

BE20050000328 20050628  
EP20060763882 20060626

CN200680023135 20060626

WO2006EP63542 20060626

**Probable Assignee:** LHOIST RECHERCHE ET DEVELOPPEMENT SA

**Assignee(s):** (std): GAMBIN AMANDINE ; LAUDET ALAIN ; LHOIST RECH AND DEV SA ; LUAST RESHERSH EH DEVELOPMEN SA ; S A LHOIST RECH ET DEVELOPPEMENT

**Assignee(s):** S A LHOIST RECHERCHE ET DEVELOPPEMENT ; SA LHOIST RECHERCHE ET DEVELOPPEMENT ; S A LHOIST RECHERCHE ET DEVELOPMENT ; S A LUAST RESHERSH EH DEVELOPMEN ; LHOIST RECHERCHE ET DEVELOPMENT SA ; LHOIST RECHERCHE ET DEVELOPPEMENT SA

**Inventor(s):** (std): ALAIN LAUDET ; AMANDINE GAMBIN ; GAMBEHN AMANDIN ; GAMBIN AMANDINE ; LAUDET ALAIN ; LODE ALEN ; GAMBIN AMANDIN

**Inventor(s):** LAUDET ALAIN GAMBIN AMANDINE

**Agent(s):** OGILVY RENAULT LLP SENCRL SRL; NORTON ROSE FULBRIGHT CANADA LLP SENCRL SRL; SARGENT;

**Designated states:**

**Abstract:** The nozzle for introducing and for metered addition of a treatment medium into the exhaust gas stream in combustion processes comprises a nozzle tube (2) and an inner displacement body (1) having a round cross section to form a nozzle ring gap (14). The displacement body (1) borders a mixing chamber (18) inside the nozzle tube (2) and on this end has a tapered area (3) with which it is held exclusively on a feed tube (5) for the treatment medium. The feed tube (5) crosses through a pressure chamber (6.1), which has two axial bordering walls (4, 7). The feed tube is held in these bordering walls, with a holder (12) being provided in the bordering wall (4), allowing the carrier medium from the pressure chamber (6.1) to flow through to the nozzle gap (14).

**US:** 239/11 239/11P 239/418 239/419 239/419.3 239/419.300S  
239/421 239/424 239/425 239/426 239/432 239/433 239/434



**Priority:**

**Probable Assignee:** MARTIN GMBH FÜR UMWELT U. ENERGIE-TECHNIK

**Assignee(s):** MARTIN GMBH FUER UMWELT UND ENERGIETECHNIK ; MARTIN GMBH FUER UMWELT and ENERGIETECHNIK ; MARTIN GMBH F UMWELT UND ENERGIETECHNIK ; MARTIN GMBH F UMWELT AND ENERGIETECHNIK

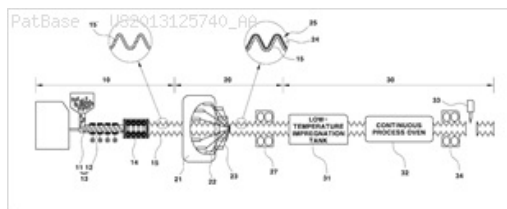
**Inventor(s):** (std): MARTIN JOHANNES ; HAMMLER DIRK

**Agent(s):** SIM AND MCBURNEY; CASTELL KLAUS; SAEZ ANA; WILLIAM COLLARD COLLARD AND ROE PC;  
COLLARD AND ROE PC

**Designated states:** AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL PL PT  
RO RS SE SI SK TR

**Abstract:** Disclosed is a corrugated plastic composite spring for a vehicle suspension and an apparatus and method for manufacturing the same. The apparatus includes a corrugated extrusion part, a braiding part, and a pultrusion part. The corrugated extrusion part forms a preform having a hollow corrugated structure. The braiding part weaves a three-dimensional woven fabric on the preform. The pultrusion part impregnates the three-dimensional woven fabric with thermosetting resin.

**US:** 87/23 87/34 87/62



#### Family:

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| CN103133583 A      | 20130605         | CN201210044973     | 20120224         |
| CN103133583 B      | 20160831         | CN201210044973     | 20120224         |
| DE102012202625 A1  | 20130523         | DE201210202625     | 20120221         |
| KR101293962 B1     | 20130808         | KR20110122702      | 20111123         |
| KR20130057007 A    | 20130531         | KR20110122702      | 20111123         |
| US2013125740 AA    | 20130523         | US20120367518      | 20120207         |
| US8490530 BB       | 20130723         | US20120367518      | 20120207         |

#### Priority:

KR20110122702 20111123

**Probable Assignee:** HYUNDAI MOTOR CO

**Assignee(s):** (std): HAN DO SUCK ; HYUNDAI MOTOR CO LTD ; KIA MOTORS CORP ; KYOUNG WOO MIN ; KANG HYUN MIN ; KIA MOTORS CO

**Assignee(s):** KIA MOTORS CORPORATION ; HYUNDAI MOTOR COMPANY ; HYUNDAI MOTOR CO

**Inventor(s):** (std): HAN DO SUCK ; KANG HYUN MIN ; KYOUNG WOO MIN

**Agent(s):** PETER F; EDWARDS WILDMAN PALMER LLP

#### 5) Family number: 53750865 (US2013125749A)

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**Title:** BOOSTED NO-LANCE INJECTION SYSTEMS AND METHODS

**Abstract:** A boosted no-lance injection system (BNLS) and methods of operating a combustion system to reduce acid gas or metal emissions in the flue gas is shown and described. In one embodiment, a BNLS includes an injection device, a high volumetric flow air mover, a transport air mover, a sorbent hopper and a mounting apparatus. In other embodiments, a method of operating a combustion system includes positioning the BNLS to inject into the ductwork, applying transport air and sorbent into the ductwork, and applying the high volumetric flow air into the ductwork. The result is methods and systems for reducing acid or metal emissions in the flue gas.

#### Classifications:

**International (IPC 8-9):** B01D53/02 B01D53/12 B01D53/83

B01D53/90 F23J15/00 F23J7/00 (Advanced/Invention)

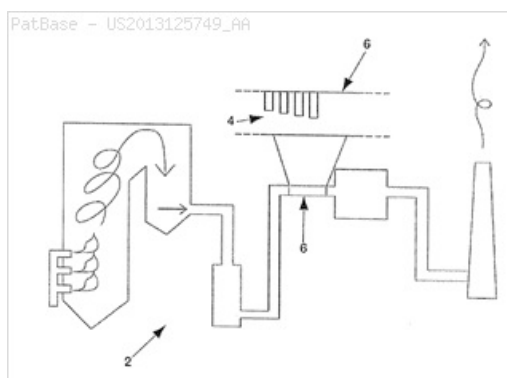
**CPC:** B01D53/12 B01D53/83 B01D53/90 B01D2251/304

B01D2251/402 B01D2251/404 B01D2257/2022 B01D2257/2025

B01D2257/2042 B01D2257/2045 B01D2257/2047 B01D2257/60

B01D2257/602 B01D2258/0283 F23J7/00 F23J15/003

**US:** 110/203 110/345 423/210 95/107 95/108 96/150



#### Family:

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| US2013125749 AA    | 20130523         | US20120605322      | 20120906         |
| US8900354 BB       | 20141202         | US20120605322      | 20120906         |

#### Priority:

US20110532378P 20110908 US20120605322 20120906

**Probable Assignee:** POWER INDUSTRIAL GROUP LTD

**Assignee(s):** (std): BENSON LEWIS B ; HIGGINS BRIAN S ; POWER IND GROUP LTD

**Assignee(s):** POWER INDUSTRIAL GROUP LTD ; NALCO MOBOTEC LLC

**Inventor(s):** (std): BENSON LEWIS B ; HIGGINS BRIAN S

**Agent(s):** MORGAN LEWIS AND BOCKIUS LLP

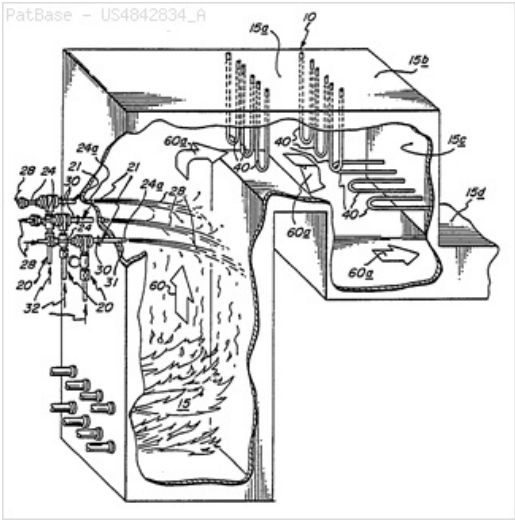
#### 6) Family number: 2958925 (US4842834A)

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**Title:** Process for reducing the concentration of pollutants in an effluent

**Abstract:** A process and apparatus for reducing the concentration of pollutants in an effluent from the combustion of a fuel is presented. The process and apparatus enables injection of an effluent treatment fluid at independently variable droplet sizes and distance of injection to a wide variety of distribution patterns within an effluent passage. An atomization conduit, positioned coaxially around a treatment fluid conduit, extends into the effluent and supplies an atomization fluid. The supply conduit is axially slidable with respect to the atomization conduit and supplying a treatment fluid through the supply conduit. The relative axial position of supply conduit and the atomization conduit is adjusted and the rate of flow of the atomization fluid is selected to inject droplets of a size effective to a desired distance within the passage.

**Classifications:**  
**International (IPC 8-9):** B01D53/56 B05B1/12  
C10L10/00 (Advanced/Invention);  
B01D53/56 B05B1/00 C10L10/00 (Core/Invention);  
B01D (Subclass/Invention)  
**International (IPC 1-7):** B01D53/34 B01J10/00 B01J8/00 B05B1/12  
B29C59/00 C01B17/00 C01B21/00 C10L10/00  
**CPC:** B01D53/56  
**European:** B01D53/56  
**US:** 423/235 423/239 423/239.1



**Family:**

| Publication number | Publication date | Application number | Application date |
|--------------------|------------------|--------------------|------------------|
| AU198812972 A1     | 19880824         | AU19880012972      | 19880202         |
| AU593983 B2        | 19900222         | AU19880012972      | 19880202         |
| DK546588 A         | 19881025         | DK19880005465      | 19880930         |
| DK546588 A0        | 19880930         | DK19880005465      | 19880930         |
| EP0300028 A1       | 19890125         | EP19880902016      | 19880202         |
| EP0300028 A4       | 19900205         | EP19880902016      | 19880202         |
| FI884495 A         | 19880930         | FI19880004495      | 19880930         |
| FI884495 A0        | 19880930         | FI19880004495      | 19880930         |
| JP1502495 T2       | 19890831         | JP19880501912T     | 19880202         |
| NO884370 A         | 19881129         | NO19880004370      | 19880930         |
| NO884370 A0        | 19880930         | NO19880004370      | 19880930         |
| US4842834 A        | 19890627         | US19870009696      | 19870202         |
| WO8805762 A1       | 19880811         | WO1988US00300      | 19880202         |

**Priority:**

US19870009696 19870202      WO1988US00300 19880202

**Probable Assignee:** FUEL TECH INC

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**Inventor(s):** (std): ALOYIUS BURTON ALBERT ; BURTON ALBERT A ; BURTON ALBERT ALOYLUS ; BURTON ALBERT ALOYIUS

**Inventor(s):** ALBERT ALOYIUS BURTON

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