

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO	
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DEP: 2020 DIRECCION DE NUEVAS CREACIONES	EVE: 379 FASE NACIONAL INCLUIDO CAPITULO II
TRA: 11 PCT-PATENTE DE INVENCION CAPITULOS I Y II	FOLIOS: 14
ACT: 519 TRASLADOINFORME	

DIRECCIÓN DE NUEVAS CREACIONES

2020
Bogotá, D.C.,

Abogado(a)/Señor(a)
MAURICIO JARAMILLO CAMPUZANO

Asunto: Radicación: 14-132579- -11
Trámite: 11
Evento: 379
Actuación: 519
Oficio: 6222
Folios: 14

Patente de Invención	X			Patente de Modelo de Utilidad	
Vía Nacional					
Vía PCT (Fase Nacional)	X	Capítulo I		Capítulo II	X
No. Solicitud Internacional	PCT/EP2012/005082				
Fecha de Presentación Internacional	08/12/2012				

Como resultado del examen de fondo realizado, con fundamento en el Artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se comunica:

1. Documentos estudiados

Descripción:	Rad. N° 14-132579-00000-0000	18/junio/2014
Reivindicaciones:	Rad. N° 14-132579-00009-0000	26/abril/2016
Dibujos:	Rad. N° 14-132579-00000-0000	18/junio/2014
Prioridad:	DE 10/2011/121188	16/diciembre/2011

2. Análisis de la Prioridad

Se acepta la reivindicación de prioridad porque ésta solicitud fue presentada dentro del plazo establecido (Art. 9 D 486) y su contenido técnico corresponde con el de la prioridad reivindicada.

3. Objeto de la invención

De acuerdo con lo establecido en el numeral 1.2.2.2 del Capítulo Primero del Título X de la Circular Única para efectos del examen de patentabilidad, se tendrá en cuenta la tasa pagada por el solicitante al momento de comenzar el examen para las reivindicaciones adicionales; esto es que cuando la solicitud contenga más de diez (10) reivindicaciones y no se haya pagado la tasa complementaria, sólo se estudiarán las cubiertas por la tasa pagada. Por lo tanto, se estudiaran las reivindicaciones 1 a 17 (Páginas 7 a 12, radicado N° 14-132579-00009-0000).

Título de la solicitud: “Dispositivo y procedimiento para la eliminación de NO_x y N_2O ” (Página 1, radicado N° 14-132579-00000-0000).

El problema planteado en esta solicitud, consiste la necesidad de proporcionar un dispositivo y un procedimiento para la separación lo mas amplia posible de N_2O y NO_x a partir de gases, en los que pase a emplearse para la descomposición catalítica de N_2O una combinación de catalizadores de DeNO_x seleccionado con catalizadores hasta ahora no utilizables o solo utilizables en una medida limitada que puedan ser hechos de una manera sencilla e industrialmente favorable.

Para resolver este problema técnico, la solicitud en estudio proporciona dispositivo y un procedimiento para reducir el contenido de NO_x y N_2O en gases, el dispositivo comprende un recipiente, dos etapas de reacción dispuestas una tras otra para la separación de NO_x (etapa de DeNO_x) mediante reducción de NO_x con un agente reductor con contenido en nitrógeno y dispuesta a continuación, para la separación de N_2O mediante descomposición catalítica de N_2O en N_2 y O_2 (etapa de DeN_2O) que en cada caso se componen de uno o varios lechos de catalizador y que son recorridas por el gas a purificar, en donde al menos un lecho de catalizador de la etapa de DeNO_x contiene un catalizador para la reducción de NO_x con agentes reductores con contenido en nitrógeno, que contiene zeolitas dotadas con metales de transición, incluidos los lantánidos, al menos un lecho de catalizador de la etapa de DeN_2O contiene un catalizador para la descomposición de N_2O en N_2 y O_2 que contiene uno o varios compuestos catalíticamente activos de elementos elegidos de los grupos 5 a 11 del Sistema Periódico de los Elementos, exceptuadas zeolitas dotadas con hierro y delante de la etapa de DeNO_x está previsto un dispositivo para incorporar un agente reductor con contenido en nitrógeno en la corriente del gas con contenido en NO_x y N_2O , la combinación de catalizadores utilizada de acuerdo con la invención permite una estructura muy sencilla y un funcionamiento muy rentable del reactor.

El objeto de la presente solicitud se relaciona con la Clasificación Internacional de Patentes B01D53/86.

4. De la solicitud de patente

Reivindicaciones (Art 30 D 486)

El capítulo reivindicatorio no es claro porque:

- La reivindicación 1 no se encuentra correctamente definida, por cuanto su preámbulo indica “*dispositivo*”, sin embargo, no nombra las características técnicas esenciales estructurales de carácter tangible las cuales definen la invención en una reivindicación de un dispositivo, puesto que, menciona: “*que incluye con un agente reductor con contenido en nitrógeno*”, “*mediante reducción de NO_x* ”, “*mediante descomposición catalítica de N_2O en N_2 y O_2* ”, “*que definen un recorrido para el gas a purificar*”, “*con agentes reductores con contenido en nitrógeno*”, se sugieren realizar aclaraciones al caso.
- En las reivindicaciones 1, 3, 5, 6, 10, 12 y 15, las expresiones: “*dos secciones de reacción*”, “*agente reductor con contenido en nitrógeno*”, “*con agentes reductores con contenido en nitrógeno*”, “*compuestos catalíticamente activos de elementos elegidos de los grupos 5 a 11 del Sistema Periódico de los Elementos*”, “*dispositivo incorporador*”, “*sectores medidores*”; “*una unidad de control o de regulación*”, “*dispositivo de ajuste*”, “*válvula controlable o regulable*”, “*está configurado o dispuesto formando un recorrido lateral*”, “*recorrido radialmente de una o dos secciones de reacción*”, “*están contenidos en forma pura o están aplicados sobre materiales de soporte adecuados o están mezclados con los mismos*”, “*conducción*”, “*lecho de catalizador*”, “*un catalizador*”, “*metales de transición*”, “*haciéndose*”, “*compuestos catalíticamente activos*”, “*con contenido*”, son generales y no definen con claridad las cantidades o productos a los

cuales se refieren, por lo tanto, incluyen todas las posibles alternativas presentes o futuras, se sugiere remplazarlo por las características esenciales para definir con precisión lo que se desea proteger.

- Los términos de las reivindicaciones 1, 2, 6, 12, 13 y 15, “uno o varios”, “menos de”, “delante”, “al menos”, “no más de”, “por completo o casi por completo”, “cantidad tal”, son imprecisos, por lo cual no permite distinguir la invención del estado de la técnica. Se sugiere sustituirlo por un término preciso o un rango concreto.
- Las reivindicaciones 1, 2, 3, 5, 12, presentan características funcionales como lo son: “mediante reducción de NO_x”, “mediante descomposición catalítica de N₂O en N₂ y O₂”, “que definen un recorrido para el gas a purificar”, “que forma una conducción para el gas con contenido en NO_x y N₂O, así como el agente reductor, y luego de la mezcla a fondo define una conducción a la sección de DeNO_x (7)”, “determinación de la concentración de NO_x o de uno de sus componentes individuales en el gas, estando dispuesto un sector medidor”, “para la determinación de la cantidad del agente reductor alimentado”, “para la reducción del NO_x”, “para la reducción del NO_x por parte del agente reductor”, “para la descomposición del N₂O en N₂ y O₂”, es importante recordar que aunque estas características funcionales pueden ir dentro de las reivindicaciones, su función es dar claridad a las mismas, por lo que no le pueden dar novedad o nivel inventivo, puesto que, no se consideran características técnicas esenciales.
- En la reivindicación 13 y 15, los términos: “de modo que no resulte fuga alguna del agente reductor de la sección de DeNO_x (7) a la sección de DeN₂O (8) o resulte una fuga menor que 25 ppmv”, “que el grado de degradación en NO_x, referido a la concentración de entrada de NO_x, asciende a más de 70%, preferiblemente a más de 80%, de manera particularmente preferida a más de 90%, en particular a más de 95%”, “y/o por que en la sección de DeN₂O (8) la velocidad espacial, la temperatura y la presión se eligen de manera que el gas en la salida de la sección de DeN₂O (8) presenta un contenido en N₂O menor que 100 ppmv, preferiblemente menor que 50 ppmv, de manera particularmente preferida menor que 30 ppmv y de manera muy particularmente preferida menor que 15 ppmv”, están representados como un efecto o resultados a obtener, por lo cual no se puede aceptar, debido a que, equivaldría a definir el problema técnico a resolver, además el alcance de esta reivindicación incluiría todas las alternativas presentes o futuras que lleguen a ese resultado se sugiere remplazarlos por las características esenciales o eliminarlos para dar concisión a las reivindicaciones.
- En la reivindicación 12 el término: “bara”, se sugiere realizar una mejor traducción / redacción.

5. Determinación del Estado de la Técnica

El estado de la técnica se determinó con base en la fecha de presentación de la solicitud: diciembre 16 de 2011, y se encontraron los siguientes documentos que anticipan el objeto de esta solicitud:

Ítem	Documento	Título	Fecha de Publicación
D1	WO 03/105998	“Method and device for reducing the NO _x and N ₂ O of gases”	24/12/2003
D2	US2002/127163	“Selective catalytic reduction of N ₂ O”	12/09/2002

El documento D¹¹ divulga un método que comprende los siguientes pasos: la conducción del gas que contiene N₂O y NO_x a través de una serie de dos lechos catalíticos que consisten en una o más zeolitas cargadas con hierro; adición de un agente de reducción para NO_x entre los lechos de catalizador; ajuste de una temperatura de menos de 500 °C en el lecho primero y segundo catalizador; establecimiento de una presión de gas de al

1 http://worldwide.espacenet.com/publicationDetails/biblio?CC=WO&NR=03105998A1&KC=A1&FT=D&ND=3&date=20031224&DB=EPODOC&locale=en_EP

menos 2 bar en los dos lechos de catalizador; y la selección de una velocidad espacial en el primero y segundo lecho de catalizador que logra una degradación del contenido de N₂O del gas en la primera lecho de (Resumen).

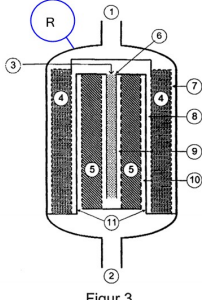
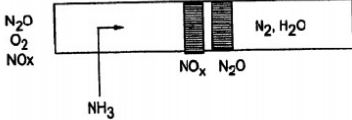
El documento D2² divulga un método donde una corriente de gas que contiene óxido nitroso y amoníaco se pone en contacto con una composición de catalizador que contiene una zeolita. N₂O se reduce a N₂ y H₂O a bajas temperaturas de una manera altamente eficiente. El amoníaco reducción mediada por el óxido nitroso puede efectuarse de corrientes de gas que tienen concentraciones de N₂O tan bajas como 1%. La corriente de gas también puede ponerse en contacto con una composición catalítica selectiva para la reducción de NO_x. De esta manera, N₂O y NO_x tratamiento puede ser efectuado en una sola corriente de proceso (Resumen).

6. Examen de Patentabilidad (Art 14 D486)

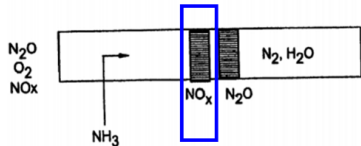
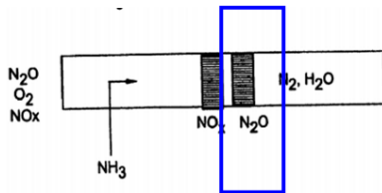
Nivel inventivo (Art18 D486)

La reivindicación 1, consiste en: “Dispositivo para reducir el contenido de NO_x y N₂O en gases, que comprende: (...)” (Ver Pág. 7 del Radicado N° 14-132579-00009-0000).

Comparación de las características técnicas esenciales, con las del estado de la técnica:

Características esenciales	D1	D2
Dispositivo para reducir el contenido de NO _x y N ₂ O en gases, que comprende:	Un aparato para reducir el contenido de NO _x y N ₂ O los gases, en particular en gases y gases residuales de proceso, que comprende (Reivindicación 15).	Esquema del aparato para el control simultáneo de N ₂ O y NO _x (Párr. 0051).
A) un recipiente (1) y, dispuestos en él	En la figura 3 se observa que todo esta contenido en un recipiente (R).  Figur 3	No menciona
B) dos secciones de reacción dispuestas en serie una tras otra,	A) dos lechos de catalizador conectados en serie que contienen uno o más zeolitas cargadas de hierro, donde se hace fluis un gas que contiene NO _x y N ₂ O (Reivindicación 15).	En la figura 10 se observa dos lechos uno para la reducción de NO _x y el otro para la reducción de N ₂ O.
siendo dichas secciones de reacción secciones de separación de NO _x (sección de DeNO _x) mediante reducción de NO _x , que incluye con un agente reductor con contenido en nitrógeno y, dispuesta a continuación, sección de separación de N ₂ O mediante descomposición catalítica de N ₂ O en N ₂ y O ₂ (sección de DeN ₂ O), que en cada caso	No menciona que la sección de DeNO _x este seguida de la sección DeN ₂ O.	En la figura 10 se observa que las secciones se encuentran en forma de que la sección de NO _x es antes de la sección de N ₂ O 

²[http://worldwide.espacenet.com/publicationDetails/biblio?](http://worldwide.espacenet.com/publicationDetails/biblio?DB=EPODOC&II=0&ND=3&adjacent=true&locale=en_EP&FT=D&date=20020912&CC=US&NR=2002127163A1&KC=A1)
DB=EPODOC&II=0&ND=3&adjacent=true&locale=en_EP&FT=D&date=20020912&CC=US&NR=2002127163A1&KC=A1

presentan uno o varios lechos de catalizador (7, 8), y que definen un recorrido para el gas a purificar, en donde		
C) un lecho de catalizador de la sección de DeNO _x (7) contiene un catalizador de reducción de NO _x con agentes reductores con contenido en nitrógeno, que contiene zeolitas dotadas con metales de transición, 1, incluidos los lantánidos,	B) dispuesto entre el aparato de lechos de catalizador para La introducción de un agente de reducción gaseoso en la corriente de NO_x y N₂O que contiene gas (Reivindicación 15). De acuerdo con los catalizadores de la invención utilizados contienen sustancialmente, preferiblemente 50% en peso, en particular 70 % en peso, de uno o más zeolitas cargadas con hierro (Pág. 11, líneas 27 a 29).	En la figura 10, se observa el lecho catalizador para el NO_x.  Cuando se desea eliminar simultáneamente NO_x y N₂O de un solo flujo de proceso, el amoníaco se introduce en la corriente de proceso aguas arriba del lecho de catalizador. El lecho de catalizador contiene un catalizador situado hacia arriba y un catalizador aguas abajo (Párr. 0033). En este aspecto de la invención, los catalizadores están dispuestos en al menos dos zonas en las que una zona contiene un catalizador selectivo para la reducción de NO_x, y la otra zona contiene un catalizador de zeolita selectivo para la reducción de N₂O (Párr. 0034). En general, cualquier material zeolítico adecuados pueden ser utilizados en las composiciones de catalizador de la invención. Preferiblemente, los materiales zeolíticos son sometida a intercambio iónico con Fe, Cu, Co, Ce, Pt, Rh, Pd, Ir, Mg (Párr. 0030).
D) un lecho de catalizador de la sección de DeN ₂ O (8) contiene un catalizador de descomposición de N ₂ O en N ₂ y O ₂ que no contiene zeolitas o que contiene menos de 15% en peso de zeolitas, y que contiene compuestos catalíticamente activos de elementos elegidos de los grupos 5 a 11 del Sistema Periódico de los Elementos, exceptuadas zeolitas dotadas con hierro, y	En el primer lecho de catalizador para la descomposición N₂O puro de ese modo acelera el fuego está todavía en el gas NO_x espera que el deseado degradación N₂O por un efecto activador (Pág. 7, líneas 11 a 13). No menciona que las zeolitas no estén dotadas con hierro.	En la figura 10, se observa el lecho catalizador para el N₂O.  Para la reacción entre NH₃ y N₂O. zeolitas útiles para la práctica de la presente invención incluyen zeolitas cristalinas que, al menos en parte, de los cuales cinco miembros que tienen un tipo de estructura seleccionada del grupo que consiste de BETA, MOR, MFI, ZSM, MEL, FER y de estos, BETA, ZSM, MOR es particularmente preferidos el beta; compuestos de intercambio iónico adecuados incluyen Fe, Cu, Co, Ce, Pt, Rh, Pd, Ir, y Mg, con Fe, Cu, Co, Ce, Pd, Rh y Fe, Ce, Cu, Co y sus combinaciones (Párr. 0030).
E) delante de la sección de DeNO _x (7) está provisto un dispositivo incorporador de un agente reductor con contenido en nitrógeno en la corriente del	El agente reductor se añade en una cantidad tal como se requiere para la reducción del NO _x . Incluso en el marco de esta descripción se entiende	No menciona

gas con contenido en NO _x y N ₂ O.	que la cantidad de agente necesario reductor para reducir la proporción de NO_x en la mezcla de gas o completamente a la concentración final deseada sin produce una marcada reducción de la N20 (Pág. 10, líneas 12 a 16). El agente reductor que debe estar íntimamente mezclado con el gas que va a tratarse de flujo, a fin de asegurar la eficacia más alta posible del agente reductor (para evitar el deslizamiento y reacciones secundarias) (Pág. 6, líneas 13 a 16). En la figura 3, se observa el mezclador (3).	
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El documento D1 se consideran el estado de la técnica más cercano a la invención definida en la reivindicación 1, porque divulga un aparato para reducir el contenido de NO_x y N₂O en los gases, en particular en gases de proceso y gases de escape (D1: Reivindicación 15).

La diferencia entre la invención definida en la reivindicación 1 y el aparato para reducir el contenido de NO_x y N₂O divulgado en D1, consiste en que este último no menciona que la sección de DeNO_x este seguida de la sección DeN₂O, ni que las zeolitas en el lecho catalizador de DeN₂O no estén dotadas con hierro.

El efecto que logra proveer que la etapa de DeNO_x se encuentre antes que la etapa de DeN₂O, es permitir una degradación acelerada de N₂O en la etapa de DeN₂O de una forma sencilla y extremadamente rentable, por otro lado con respecto a que las zeolitas en el lecho catalizador de DeN₂O no estén dotadas con hierro, no se evidencia un efecto técnico que logre la diferencia entre tener un lecho de zeolita dotado con hierro y otro que contenga menos del 15% en zeolita no dotada con hierro, puesto que, la solución de la presente solicitud ya fue divulgada en D1 al mencionar un aparato para reducir el contenido de NO_x y N₂O los gases, en particular en gases y gases residuales de proceso caracterizado por bajos costos de operación y de inversión mínimos.

Por lo tanto, el problema técnico objetivo que pretende resolver esta invención se puede formular así: “¿Como modificar el aparato de D1 con el fin de permitir una degradación acelerada de N₂O en la etapa de DeN₂O de una forma sencilla y extremadamente rentable?”.

Sin embargo, ya era conocido en el estado de la técnica, la aplicación de un paso para eliminar óxidos de nitrógeno antes de la etapa para eliminar N₂O, puesto que, en el documento D2 menciona un aparato para el control simultáneo de N₂O y NO_x (Párr. 0051), donde cuando se desea eliminar simultáneamente NO_x y N₂O de un solo flujo de proceso, el amoníaco se introduce en la corriente de proceso aguas arriba del lecho de catalizador (Párr. 0033), en el cual comprende un catalizador en dirección ascendente que es selectivo para la reducción de NO_x (SCR de NO_x) y un catalizador situado hacia abajo que es selectivo para la reducción de N₂O, esta disposición es ventajosa para el tratamiento de corrientes que contienen altas concentraciones de NO_x en relación con N₂O, puesto que, el amoniaco no convertido saliendo del catalizador selectivo para la reducción de NO_x se utiliza para promover la reducción de N₂O sobre el catalizador aguas abajo (Párr. 0033), por otro menciona que para la reacción entre NH₃ y N₂O las zeolitas útiles para la práctica de la presente invención incluyen zeolitas cristalinas que, al menos en parte, de los cuales cinco miembros que tienen un tipo de estructura seleccionada del grupo que consiste de BETA, MOR, MFI, ZSM, MEL, FER y de estos, BETA, ZSM, MOR es particularmente preferidos el beta; compuestos de intercambio iónico adecuados incluyen Fe, Cu, Co, Ce, Pt, Rh, Pd, Ir, y Mg con Fe,

Cu, Co, Ce, Pd, Rh y Fe, Ce, Cu, Co y sus combinaciones (Párr. 0030), las cuales muestran otra gamma de posibilidades diferente a la zeolita dotada con hierro.

En consecuencia, la persona del oficio normalmente versada en la materia enfrentada al problema técnico modificar el aparato de D1 con el fin de permitir una degradación acelerada de N_2O en la etapa de DeN_2O de una forma sencilla y extremadamente rentable, estaría motivado a colocar la etapa de reducción de NO_x antes de la etapa de reducción de N_2O para mejorar la reducción de NO_2 como es divulgado en D2, en el aparato que se divulga en D1, llegando así al objeto de la reivindicación 1, por lo cual se considera obvia.

Asimismo, el documento D1 divulga las características de la reivindicación dependientes así:

- La reivindicación 2. El aparato según la reivindicación 15, caracterizado porque el mezclador está diseñado como un mezclador estático o un mezclador dinámico, preferiblemente en la forma de un tubo de paso de flujo (Reivindicación 12); además dicho mezclador se encuentra en la parte anterior del lecho (5) o etapa para eliminar NO_x tal como se evidencia en la figura 3.
- La reivindicación 3, 4, 5. Es conocimiento del técnico medianamente versado en la materia aplicaciones de sistemas de control que utilizan un medidor y un sistema de ajuste, puesto que, es conocimiento del técnico medianamente versado en la materia de dispositivos para analizar composición de gases los cuales pueden medir hasta cuatro tipos diferentes de componentes en el gas utilizando las técnicas de análisis de infrarrojo sin dispersión, análisis ultravioleta, análisis térmico entre otros^[3] (Pág. 0015, Col. 1, Párr. 0008), dichos medidores pueden estar conectados a un sistema de control donde puede disparar procedimientos de calibración, controlar remotamente válvulas, bomba de gas etc. (Pág. 0026, Col. 1, Párrs. 0005 y 0006); por otro, lado al tener un medidor conectado a un sistema de control, significa que el medidor (sensor) transforma una observación física en una señal eléctrica, ahora bien hay un transmisor que recoge la señal del sensor, que la compara con la señal consigna del sistema y produce una señal de error que es enviada al controlador, donde se toma la acción para corregir el error, que por medio de un actuador se corrige la variable^[4] (Págs. 0031 y 0032, numeral 1.2.1).
- La reivindicación 6. El gas que va a ser purificado pasa a través de la entrada de gas (1) dentro del aparato, fluye a través del primer lecho de catalizador que entra en el intersticio anular (7) radialmente desde el exterior hacia el interior en la salida de la rendija anular (8), desde allí fluye en el mezclador (6), en el lado de entrada una línea de entrada (3) para el agente reductor se abre, el mezclador (6) se abre en el interior del segundo lecho de catalizador (5) que se cierra después por debajo por una pared de partición, el gas fluye entonces a través de la rendija anular de la entrada (9) del segundo lecho de catalizador (5) en la rendija anular de la salida (10) radialmente hacia fuera a través de la segunda lecho de catalizador (incluye la configuración de los lechos reivindicada, puesto que, incluye el recorrido radial) (Pág. 0015, líneas 20 a 29).
- La reivindicación 7. El dispositivo según la reivindicación 15, caracterizado porque dos lechos de catalizador de flujo radial están presentes con diferentes dimensiones, en el que la dimensión exterior de la cama de un catalizador es menor que la dimensión interna del otro lecho de catalizador, además ambos lechos de catalizador están dispuestos concéntricamente entre sí en el que por las interfaces adecuadamente dispuestas entre los lechos de catalizador la trayectoria del gas es de manera que primero entra al primer lecho y luego al segundo lecho de catalizador

³Analizador de Gases; Emerson; 2008; En línea: http://www2.emersonprocess.com/siteadmincenter/PM%20Rosemount%20Analytical%20Documents/PGA_Manual_X-STREAM_X2_Spanish_200907.pdf

⁴ Tecnología en sistemas de control; Angulo, C; 2004; En línea: https://books.google.com.co/books?id=Vbd11zVvk_QC&pg=PA32&dq=sensor.+transmisor.+controlador&hl=es-419&sa=X&ved=0ahUKEwiWqu6IxrjJAhUGox4KHUQcAfsQ6AEIKDAA#v=onepage&q=sensor%2C%20transmisor%2C%20controlador&f=false

(Reivindicación 20). Es conocimiento del técnico medianamente versado en la materia que el tamaño de partícula de catalizadores para lechos fluidizados, comprende valores de 0.794 mm, 1.588mm, 3.175mm, 7. 94 mm (Pág. 0160, Tabla. 4.1), etc. logrando así buena permeabilidad del fluido en el lecho teniendo una baja pérdida de presión en la torre empacada^[5] (Págs. 0158 a 0160).

- La reivindicación 8. Dos lechos de catalizador conectados en serie que contienen uno o más zeolitas cargadas de hierro, donde se hace fluir un gas que contiene NO_x y N₂O (Reivindicación 15).

Asimismo, el documento D2 divulga las características de la reivindicación dependientes así:

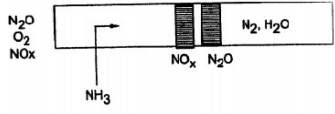
- La reivindicación 9. En general, cualquier material zeolítico adecuados pueden ser utilizados en las composiciones de catalizador de la invención. Preferiblemente, los materiales zeolíticos son sometida a intercambio iónico con Fe, Cu, Co, Ce, Pt, Rh, Pd, Ir, Mg (Párr. 0030).
- La reivindicaciones 10 y 11. En general, cualquier material zeolítico adecuados pueden ser utilizados en las composiciones de catalizador de la invención. Preferiblemente, los materiales zeolíticos son sometida a intercambio iónico con Fe, Cu, Co, Ce, Pt, Rh, Pd, Ir, Mg (Párr. 0030); la reducción de N₂O amoniaco mediada es único a la zeolita catalizadores, se llevaron a cabo los procedimientos descritos en el Ejemplo 2 utilizando otras dos composiciones catalíticas, V₂O₅/TiO₂, y Pt/Au (Párr. 0043),

La reivindicación 12, consiste en: *“Procedimiento para reducir el contenido de NO_x y N₂O en gases, que comprende las etapas de: (...)”* (Ver Págs. 9 y 10 del Radicado N° 14-132579-00009-0000).

Comparación de las características técnicas esenciales, con las del estado de la técnica:

Características esenciales	D1	D2
Procedimiento para reducir el contenido de NO _x y N ₂ O en gases, que comprende las etapas de:	Un proceso para reducir el contenido de NO _x y N ₂ O en los gases, en particular en gases de proceso y gases de escape, que comprende las medidas de a) hacer pasar el gas N ₂ O y NO _x que contiene más de una secuencia de dos unos lechos de catalizador contienen uno o más de hierro cargado Las zeolitas, (Reivindicación 1).	Un método para la reducción de amoníaco mediada por el óxido nitroso comprende poner en contacto una corriente de gas que contiene el óxido nitroso y amoníaco con una composición de catalizador que comprende una zeolita (Reivindicación 1).
a) adición de agente reductor con contenido en nitrógeno a una corriente gaseosa con contenido en N ₂ O y NO _x para la reducción del NO _x ,	b) añadir un agente reductor para NO _x entre los lechos de catalizador (Reivindicación 1).	Cuando se desea eliminar simultáneamente NO _x y N ₂ O de un solo flujo de proceso, el amoníaco se introduce en la corriente de proceso aguas arriba del lecho de catalizador (Párr. 0033).
b) conducción de la corriente gaseosa con contenido en N ₂ O, NO _x y agente reductor a través de al menos un lecho de catalizador de una sección de DeNO _x (7) que contiene un catalizador para la reducción del NO _x por parte del agente	B) dispuesto entre el aparato de lechos de catalizador para La introducción de un agente de reducción gaseoso en la corriente de NO _x y N ₂ O que contiene gas (Reivindicación 15). De acuerdo con los catalizadores	La tercera disposición comprende un catalizador en dirección ascendente que es selectivo para la reducción de NO _x (SCR de NO _x) y un catalizador situado hacia abajo que es selectivo para la reducción de N ₂ O (Párr. 0033).

5 Ingenieríaquímica:operacionesbásicas;Coulson,J;1981;En línea<https://books.google.com.co/books?id=T8lkWIY9yDUC&pg=PA157&dq=partículas+catalítica+que+forman+lecho+de+fluidizado&hl=es-419&sa=X&ved=0ahUKEwjDgseVuNvJAhWESCYKH2vWCX8O6AEIODAF#v=onepage&q=partículas%20catalítica%20que%20forman%20lecho%20de%20fluidizado&f=false>

reductor que contiene zeolitas dotadas con metales de transición, incluidos los lantánidos,	de la invención utilizados contienen sustancialmente, preferiblemente 50% en peso, en particular 70 % en peso, de uno o más zeolitas cargadas con hierro (Pág. 11, líneas 27 a 29).	En la figura 10 se observa el lecho para la reducción de NO _x . 
haciéndose reaccionar NO _x mediante reducción de NO _x con el agente reductor con contenido en nitrógeno, y	En la primera zona de reacción se degrada N ₂ O, entre la primera y la segunda zona de reacción se añadió la mezcla de gas de amoníaco, y en la segunda zona de reducción NO _x se reduce (Pág. 5, líneas 20 a 23).	El amoníaco no convertido se hace reaccionar con NO _x sobre el catalizador de SCR de aguas abajo y se convierte en N ₂ y agua (Párr. 0033).
c) conducción de la corriente gaseosa que sale de la sección de DeNO _x (7) a través de al menos un lecho de catalizador de una sección de DeN ₂ O (8)	En el primer lecho de catalizador para la descomposición N ₂ O puro de ese modo acelera el fuego está todavía en el gas NO _x espera que el deseado degradación N ₂ O por un efecto activador (Pág. 7, líneas 11 a 13). No menciona que la sección de DeNO _x este seguida de la sección DeN ₂ O.	La tercera disposición comprende un catalizador en dirección ascendente que es selectivo para la reducción de NO _x (SCR de NO _x) y un catalizador situado hacia abajo que es selectivo para la reducción de N ₂ O (Párr. 0033).
que contiene un catalizador para la descomposición del N ₂ O en N ₂ y O ₂ , el cual se elige del grupo de los catalizadores que contienen uno o varios compuestos catalíticamente activos de elementos elegidos de los grupos 5 a 11 del Sistema Periódico de los Elementos, con excepción de las zeolitas dotadas con hierro, haciéndose reaccionar N ₂ O mediante descomposición catalítica de N ₂ O en N ₂ y O ₂ ;	De acuerdo con los catalizadores de la invención utilizados contienen sustancialmente, preferiblemente 50% en peso, en particular 70 % en peso, de uno o más zeolitas cargadas con hierro (Pág. 11, líneas 27 a 29). No menciona que las zeolitas no estén dotadas con hierro.	Para la reacción entre NH ₃ y N ₂ O. zeolitas útiles para la práctica de la presente invención incluyen zeolitas cristalinas que, al menos en parte, de los cuales cinco miembros que tienen un tipo de estructura seleccionada del grupo que consiste de BETA, MOR, MFI, ZSM, MEL, FER y de estos, BETA, ZSM, MOR es particularmente preferidos el beta; compuestos de intercambio iónico adecuados incluyen Fe, Cu, Co, Ce, Pt, Rh, Pd, Ir, y Mg, con Fe, Cu, Co, Ce, Pd, Rh y Fe, Ce, Cu, Co y sus combinaciones (Párr. 0030).
y la temperatura en la sección de DeNO _x (7) y en la sección de DeN ₂ O (8) se encuentra entre 300 y 600°C, preferiblemente entre 350 y 550°C y, de manera particularmente preferida, entre 400 y 550°C y	c) el establecimiento de una temperatura de menos de 500°C en la primera lecho de catalizador y segundo lecho de catalizador, d) ajuste de una presión de gas de al menos 2 bar en los dos lechos de catalizador (Reivindicación 1).	Para la reducción de N ₂ O mediada con amoníaco a temperaturas de tratamiento más bajas de lo que se conoce en la técnica. De acuerdo con la presente invención, la reducción de N ₂ O se puede mejorar sobre los procesos convencionales a temperaturas de más de 250°C y preferiblemente aquellos que van desde 350 °C a 600°C y lo más preferiblemente 450°C a 600°C (Párr. 0029).
porque la temperatura en la sección de DeN ₂ O (8) se	el establecimiento de una temperatura de menos de 500°C	No menciona

diferencia en no más de 50°C, preferiblemente en no más de 20°C de la temperatura que predomina en la sección de DeNO _x (7),	en la primera lecho de catalizador y segundo lecho de catalizador (Reivindicación 1), esto dice que la diferencia de temperaturas es de 0°C lo cual es de no mas de 20°C.	
y/o porque la presión en la sección de DeNO _x (7) y en la sección de DeN ₂ O (8) se encuentra en el intervalo de 1 a 50 bara (presión absoluta), preferiblemente de 1 a 25 bara (presión absoluta), de manera particularmente preferida de 4 a 15 bara (presión absoluta),	Un método de acuerdo con la reivindicación 1, caracterizado porque el proceso a una presión en el intervalo de 4 se realiza para 25 bar (Reivindicación 6).	No menciona
y/o por que el procedimiento en la sección de DeNO _x (7) se lleva a cabo a velocidades espaciales de 5.000 a 200.000 h ⁻¹ , preferiblemente de 10.000 a 100.000 h ⁻¹ y, de manera particularmente preferida, de 20.000 a 60.000 h ⁻¹ .	El método de acuerdo con la reivindicación 1, caracterizado porque el gas que contiene el NO _x y N ₂ O se encuentra a una velocidad espacial entre 5000 a 50000 h ⁻¹ basado en el volumen de catalizador añadido de los dos lechos de catalizador a través de esta se pasa (Reivindicación 8).	Una corriente de gas que consiste en variadas concentraciones de N ₂ O y amoníaco, 10% de O ₂ , 10% de H ₂ O, y equilibrada con N ₂ se alimentan a través del catalizador a una velocidad de flujo equivalente a 20.000 h ⁻¹ velocidad espacial (Párr. 0040).

El documento D1 se consideran el estado de la técnica más cercano a la invención definida en la reivindicación 12, porque divulga un proceso para reducir el contenido de NO_x y N₂O en los gases, en particular en gases de proceso y gases de escape, (D1: Reivindicación 1).

La diferencia entre la invención definida en la reivindicación 12 y el proceso para reducir el contenido de NO_x y N₂O divulgado en D1, consiste en que este último no menciona que la sección de DeNO_x este seguida de la sección DeN₂O.

El efecto que logra proveer que la etapa de DeNO_x se encuentre antes que la etapa de DeN₂O, es permitir una degradación acelerada de N₂O en la etapa de DeN₂O de una forma sencilla y extremadamente rentable.

Por lo tanto, el problema técnico objetivo que pretende resolver esta invención se puede formular así: “¿Como modificar el aparato de D1 con el fin de permitir una degradación acelerada de N₂O en la etapa de DeN₂O de una forma sencilla y extremadamente rentable?”.

Sin embargo, ya era conocido en el estado de la técnica, la aplicación de un paso para eliminar óxidos de nitrógeno antes de la etapa para eliminar N₂O, puesto que, en el documento D2 menciona un proceso para reducir el contenido de NO_x y N₂O en los gases, en particular en gases de proceso y gases de escape (Reivindicación 1), donde cuando se desea eliminar simultáneamente NO_x y N₂O de un solo flujo de proceso, el amoníaco se introduce en la corriente de proceso aguas arriba del lecho de catalizador (Párr. 0033), en el cual comprende un catalizador en dirección ascendente que es selectivo para la reducción de NO_x (SCR de NO_x) y un catalizador situado hacia abajo que es selectivo para la reducción de N₂O, esta disposición es ventajosa para el tratamiento de corrientes que contienen altas concentraciones de NO_x en relación con N₂O, puesto que, el amoníaco no convertido saliendo del catalizador selectivo para la reducción de NO_x se utiliza para promover la reducción de N₂O sobre el catalizador aguas abajo (Párr. 0033).

En consecuencia, la persona del oficio normalmente versada en la materia enfrentada al problema técnico modificar el aparato de D1 con el fin de permitir una degradación acelerada de N₂O en la etapa de DeN₂O de una forma sencilla y extremadamente rentable, estaría motivado a colocar la etapa de reducción de NO_x antes de la etapa de reducción de N₂O para mejorar la reducción de NO₂ como es divulgado en D2, en el proceso que se divulga en D1, llegando así al objeto de la reivindicación 12, por lo cual se considera obvia.

Asimismo, el documento D1 divulga las características de la reivindicación dependientes así:

- La reivindicación 13. El amoníaco no convertido saliendo del catalizador selectivo para la reducción de NO_x se utiliza para promover la reducción de N_2O sobre el catalizador aguas abajo (incluye la reacción reivindicada, puesto que, incluye una reacción casi por completo) (Párr. 0033).
- La reivindicación 14. Cuando se desea eliminar simultáneamente NO_x y N_2O de un solo flujo de proceso, el amoníaco se introduce en la corriente de proceso aguas arriba del lecho de catalizador (Párr. 0033), por otro lado es conocimiento del técnico medianamente versado en la materia que para un catalizador de vanadio típico la temperatura de operación y la relación molar NH_3/NO_x de alimentación al proceso de RCS son los parámetros de diseño más importantes, el rendimiento de eliminación de NO_x aumenta al hacerlo en esta relación los valores típicos se sitúan entre 0,6 y 0,9 moles de NH_3 alimentados por mol de NO_x , para los que se obtienen rendimientos de eliminación entre el 60 y 90%, respectivamente, dejando de 1 a 5 ppm(V) de NH_3 sin reaccionar ^[6](Pág. 0008, Párr. 0002), por otro lado se conoce relaciones de $\text{NH}_3:\text{NO}_2$ alrededor de 0.9 – 1.1 para tener un equilibrio entre la conversión del NO_x , la velocidad espacial y la concentración de NH_3 ^[7](Pág. 0135, Figura 6; Pág. 0135, Párr. 0004).
- La reivindicación 16. Es conocimiento del técnico medianamente versado en la materia aplicaciones de sistemas de control que utilizan un medidor y un sistema de ajuste, puesto que, es conocimiento del técnico medianamente versado en la materia de dispositivos para analizar composición de gases los cuales pueden medir hasta cuatro tipos diferentes de componentes en el gas utilizando las técnicas de análisis de infrarrojo sin dispersión, análisis ultravioleta, análisis térmico entre otros^[3] (Pág. 0015, Col. 1, Párr. 0008), dichos medidores pueden estar conectados a un sistema de control donde puede disparar procedimientos de calibración, controlar remotamente válvulas, bomba de gas etc. (Pág. 0026, Col. 1, Párrs. 0005 y 0006); por otro, lado al tener un medidor conectado a un sistema de control, significa que el medidor (sensor) transforma una observación física en una señal eléctrica, ahora bien hay un transmisor que recoge la señal del sensor, que la compara con la señal consigna del sistema y produce una señal de error que es enviada al controlador, donde se toma la acción para corregir el error, que por medio de un actuador se corrige la variable^[4] (Págs. 0031 y 0032, numeral 1.2.1).

Asimismo, el documento D2 divulga las características de la reivindicación dependientes así:

- La reivindicación 17. Una corriente de gas que consiste en variadas concentraciones de N_2O y amoníaco, 10% de O_2 , 10% de H_2O , y equilibrada con N_2 se alimentan a través del catalizador a una velocidad de flujo equivalente a 20.000 h^{-1} velocidad espacial (Párr. 0040).

De igual manera, la reivindicación dependiente 15 no menciona características técnicas tangibles adicionales que puedan brindarle novedad al objeto de la reivindicación 12, puesto que esta se encuentra redactada en términos de resultados a alcanzar.

7. Conclusión

Los requisitos de Patentabilidad de la presente solicitud están afectados así:

6 Catalizadores para la protección del medio ambiente; Universidad de malaga; Alcantara T; 2008; En línea:http://dspace.unia.es/bitstream/handle/10334/2521/07cordero_rodriguez.pdf?sequence=1

7 Química sustentable; Fontes, J; 2004; En línea:https://books.google.com.co/books?id=DkQnfw1MuyUC&pg=PA135&lpg=PA135&dq=relacion+NH3+/+NoX&source=bl&ots=QJ0XGIMSovV&sig=RIA2-fqM6rJ3Mqt7Kv1IBk_xtjg&hl=es-419&sa=X&ved=0ahUKEwiN6ImD-LjJAhXFdR4KHXYmAPQQ6AEIGjAA#v=onepage&q=relacion%20NH3%20%2F%20NoX&f=false

Ítem	Documento	Reivindicaciones afectadas	Requisito que afecta
D1	WO 03/105998	1 a 8, 12 a 16	Nivel inventivo
D2	US2002/127163	1, 9 a 12, 17	Nivel inventivo

8. Respuesta a los argumentos del señor solicitante

Al respecto del argumento de la solicitante, en la cual menciona que *“Las reivindicaciones 1, 5, 7, 13, 15 y 16 han sido objetadas, según la Examinadora, por presentar términos con resultados a obtener. Estas terminologías también han sido modificadas en la medida de lo posible pero, igualmente se quiere destacar que, en base a lo divulgado por la presente invención, puede verse que estos términos suelen ser necesarios para la mejor comprensión de las reivindicaciones o de otro modo se restringiría el alcance de las mismas”*, esta Oficina considera que dichas objeciones persiste en la reivindicación 15, puesto que, el objetivo de la presente solicitud es degradar los compuestos NO_x y N₂O, por lo cual está representada como una ventaja o resultados a alcanzar, lo cual no es permitido, puesto que la citada reivindicación incluiría no sólo la solución propuesta por el solicitante, sino todas las alternativas presentes o futuras que lleguen a ese resultado, por lo cual, no le puede dar novedad a la invención.

Por otra parte, la solicitante hace un comparativo entre la invención y lo revelado en los documentos D1 a D3, en donde enseña las diferencias entre dichos documentos, por lo cual, argumenta que *“En virtud de lo anterior, se entiende que ambos dispositivos no solamente difieren en las realizaciones de sus partes sino que también lo hacen en la secuencia de sus disposiciones. En particular, el dispositivo introductor del agente reductor de la presente invención se encuentra ubicado delante (antes) de la primera sección de reacción, mientras que, el dispositivo de introducción de un agente reductor de D1, se encuentra ubicado entre dos lechos de catalizador, por ejemplo, luego (por detrás) del primer lecho de catalizador y antes de la segunda sección”*, *“Por su parte, en relación a la falta de nivel Inventivo, la nueva reivindicación 1 de la presente invención difiere de D1 por la secuencia de las secciones de catalizador (sección de NO_x vs de N₂O), la ubicación para introducir el agente reductor y particularmente, por la selección del tipo de catalizador utilizado para la descomposición del N₂O en la sección de N₂O. Todas estas características se encuentran interrelacionadas unas con otras, resultando en un efecto técnico que provee un sistema de descomposición de N₂O con una elección amplia y alternativa de catalizadores. De esta manera, se resuelve el problema técnico objetivo de la invención, proveyéndose un sistema de descomposición de N₂O con una elección alternativa y amplia de catalizadores”*, si bien es cierto que pueden existir diferencias entre dichos documentos y la invención, esta Oficina ve la necesidad de evaluar el efecto técnico referente a dichas diferencias, es por tanto, que se realiza un nuevo examen.

Por último, contrario al argumento de la solicitante en cuanto a que: *“A su vez, en forma contraria, D2 claramente enseña en el párrafo 0047 que los catalizadores sin zeolitas no funcionan. ‘Estos resultados muestran que la conversión mutua mejorada de NH₃ y N₂O a N₂ y H₂O es específica de las propiedades catalíticas únicas del catalizador de zeolita’*. Por lo tanto, claramente D2 se encuentra lejos de las enseñanzas del uso de un catalizador libre de zeolita”, al respecto es importante aclarar que D2 menciona que los resultados muestran que la conversión mutuamente mejorada de NH₃ y N₂O a N₂ y H₂O es específico de las propiedades catalíticas únicas del catalizador de zeolita. Está claro que la combinación de la adición de amoníaco y el uso de un catalizador a base de zeolita es esencial para mejorar la tasa de eliminación de N₂O (Párr. 0047), teniendo en cuenta lo anterior es importante aclarar que la zeolita es importante para mejorar la tasa de eliminación de N₂O y dado que la reivindicación menciona que utiliza 15% o menos de zeolita, acoge dicha característica y por lo tanto a la luz de lo anterior, se encuentra que dicha característica no le puede dar nivel a la invención, puesto que ya era conocida en el estado de la técnica.

En cumplimiento del artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se le indica que debe dar respuesta dentro del término de sesenta (60) días contados a partir de la fecha de notificación de la presente comunicación. En caso de no dar respuesta al presente requerimiento, o si a pesar de la respuesta subsistieran los impedimentos para la concesión, se denegará la patente.

Si como respuesta a este requerimiento el solicitante llegara a modificar: i) el capítulo reivindicatorio, ii) la descripción de la invención a proteger, iii) o presente un nuevo capítulo reivindicatorio, y desee que se realice un nuevo examen de patentabilidad a esta modificación, no deberá pagar la tasa de modificación voluntaria pero sí la correspondiente a la tasa de examen de patentabilidad. En todo caso, el número de requerimientos por no patentabilidad estará supeditado a que el término del estudio de patentabilidad no sea superior a 18 meses, contados desde la publicación de la solicitud de patente de invención. Adicionalmente, se le recuerda al solicitante que si como respuesta a este requerimiento llegara a modificar el capítulo reivindicatorio y éste contenga más de diez (10) reivindicaciones deberá pagar la tasa por reivindicación adicional.

Notifíquese el presente oficio conforme a lo dispuesto en el numeral 5.2, literal e), del capítulo quinto del título primero de la Circular Única No. 10 de 2001.



JOSÉ LUIS SALAZAR LÓPEZ
Director de Nuevas Creaciones (c)

El anterior requerimiento fue notificado por fijación en lista, de fecha 2016-05-31

Elaboró: Lady Paola Cortes

Revisó: Olga Ximena Benavides Salazar

Search query (2): [SP]: 1. an apparatus for lowering the content of nox and n₂o in gas to be cleaned, comprising: a vessel having an interior cavity defining a gaseous flow direction from a gas inlet of said vessel to a gas outlet of said vessel, said vessel configured to permit a gas to be cleaned to flow there through from said inlet to said outlet and reduce the amount of nox and n₂o contained in the gas to be cleaned an reducing-agent feed apparatus configured to introduce of a nitrogen-containing reducing agent into a stream of the gas to be cleaned a denox reaction stage through which the gas to be cleaned may flow, said denox reaction stage being disposed within the interior cavity of said vessel and downstream of said reducing-agent feed apparatus and configured to reduce the amount of nox gas present in the gas to be cleaned, said denox stage including at least one catalyst bed, said at least one catalyst bed including at least one nox removal catalyst bed containing a nitrogen-containing reducing agent for the reduction of nox, the nitrogen-containing reducing agent containing zeolites doped with transition metals including the lanthanides and a den₂o reaction stage through which the gas to be cleaned may flow, said den₂o reaction stage being disposed within the interior cavity of said vessel and downstream of and in gaseous communication with the denox stage and configured to reduce the amount of n₂o gas present in the gas to be cleaned, said den₂o stage including at least one catalyst bed, said at least one catalyst bed including at least one n₂o removal catalyst bed containing a catalyst configured to remove n₂o by catalytic breakdown of n₂o into n₂ and o₂, the catalyst in the at least one n₂o removal catalyst bed containing less than 15 percent by weight of zeolites and further containing one or more catalytic active compounds of elements selected from groups 5 to 11 of the periodic table of the elements, excluding iron-doped zeolites. 2. the apparatus of claim 1, further comprising: a mixer in gaseous communication with said vessel and disposed upstream of the denox stage, said mixer configured to mix the gas to be cleaned and the nitrogen-containing reducing agent, and thereafter pass the mixed gas into the denox stage. 3. the apparatus of claim 1, further comprising: a plurality of measuring devices in gaseous communication with said vessel and configured to take measurements of at least one of a flow rate of the gas to be cleaned, a volume of the gas to be cleaned, a concentration of nox in either of a gas to be cleaned or partially cleaned gas, and a concentration of one of the individual components of nox in either of a gas to be cleaned or partially cleaned gas, said measuring devices being disposed in at least one of a location upstream of the denox stage, downstream of the denox stage but upstream of the den₂o stage, or downstream of the den₂o stage. 4. the apparatus of claim 3, wherein one of said measuring devices is positioned upstream of the denox stage in the inlet of said vessel. 5. the apparatus of claim 3, wherein a measuring device configured to determine an amount of reducing agent to be fed to said vessel is controllably coupled to an adjustment device configured to adjust the amount of the reducing agent flowing through said reducing-agent feed apparatus. 6. the apparatus of claim 1, wherein at least one catalyst bed in each of said denox and den₂o reaction stages is a hollow cylinder such that the gas to be cleaned flows through said cylindrical catalyst beds in a radial direction. 7. the apparatus of claim 6, wherein the catalyst beds of said denox and den₂o reaction stages are a pair of concentric hollow cylinders, wherein an outer hollow cylinder contains a catalyst for nox reduction with catalyst particles having an equivalent diameter of about 2 to 5 mm, and wherein an inner hollow cylinder contains a catalyst for n₂o breakdown with catalyst particles having an equivalent diameter of about 1 to 4 mm. 8. the apparatus of claim 1, wherein the at least one catalyst bed in said denox stage includes at least one of co-, cu-, or fe-doped zeolites. 9. the apparatus of claim 1, wherein the at least one catalyst bed in said den₂o stage includes at least one of catalytic active compounds of elements selected from groups 9 to 11 of the periodic table of the elements. 10. the apparatus of claim 9, wherein the catalytic active compounds are present in den₂o catalysts in pure form. 11. a method for lowering the content of nox and n₂o in gases, comprising: adding nitrogen-containing reducing agent to a gas stream containing n₂o and nox to reduce the nox passing the gas stream containing n₂o, nox, and reducing agent through at least one denox stage catalyst bed containing a catalyst for the reduction of nox by the reducing agent, the catalyst containing zeolites doped with transition metals, including lanthanides, with conversion of nox occurring by a reduction of nox with the nitrogen-containing reducing agent and passing the gas stream that is leaving the denox stage through at least one catalyst bed of a den₂o stage that contains a catalyst for the breakdown of n₂o to n₂ and o₂, the den₂o stage catalyst being selected from the group of the catalysts containing one or more catalytic active compounds of elements selected from groups 5 to 11 of the periodic table of the elements, excluding iron-doped zeolites, with conversion of n₂o by catalytic breakdown of n₂o to n₂ and o₂. 12. the method of claim 11, wherein an amount of the reducing agent is selected such that it is converted in the denox stage so as to result in a slippage of less than 25 ppmv of the reducing agent from the denox stage into the den₂o stage. 13. the method of claim 11, wherein the reducing agent for nox is ammonia, and which is added in such an amount as to result in, based on the nh₃ and nox components at the inlet of the denox stage, a molar nh₃/nox ratio of 0.8 to 3. 14. the method of claim 11, wherein the nitrogen-containing reducing agent is added to the gas stream containing n₂o and nox in such an amount that the decomposition level of nox, based on the inlet concentration of nox, is more than 70 percent, and in the den₂o stage, space velocity, temperature, and pressure are selected such that the gas at the output of the den₂o stage has an n₂o content of less than 100 ppmv. 15. the method of claim 11, further comprising: measuring the nox content of gas exiting the den₂o stage by a measuring device disposed at an outlet thereof regulating the amount of reducing agent added for nox based on the measured nox content of gas exiting the den₂o stage, said regulating occurring by use of a regulation unit to control an adjustment device for dosage of the reducing agent, such that the desired nox content is established at the outlet of the den₂o stage. 16. the method of claim 11, wherein the temperature in the denox stage and in the den₂o stage is between 300 and 600 degrees centigrade, and wherein the difference between the temperature of the den₂o stage and the temperature of the denox stage is no greater than 50 degrees centigrade, and wherein the pressure in each of the denox stage and the den₂o stage is in the range from 1 to 50 bara, and wherein the process is conducted in the denox stage at space velocities of 5,000 to 200,000 h⁻¹. 17. the method of claim 11, wherein the process is conducted in the den₂o stage at space velocities of 2,000 to 50,000 h⁻¹.

Results: 39

Search history

Search 1: PN=(WO2013087181) (Results 1)

Search 2: [SP]: 1. an apparatus for lowering the content of nox and n2o in gas to be cleaned, comprising: a vessel having an interior cavity defining a gaseous flow direction from a gas inlet of said vessel to a gas outlet of said vessel, said vessel configured to permit a gas to be cleaned to flow there through from said inlet to said outlet and reduce the amount of nox and n2o contained in the gas to be cleaned an reducing-agent feed apparatus configured to introduce of a nitrogen-containing reducing agent into a stream of the gas to be cleaned a denox reaction stage through which the gas to be cleaned may flow, said denox reaction stage being disposed within the interior cavity of said vessel and downstream of said reducing-agent feed apparatus and configured to reduce the amount of nox gas present in the gas to be cleaned, said denox stage including at least one catalyst bed, said at least one catalyst bed including at least one nox removal catalyst bed containing a nitrogen-containing reducing agent for the reduction of nox, the nitrogen-containing reducing agent containing zeolites doped with transition metals including the lanthanides and a den2o reaction stage through which the gas to be cleaned may flow, said den2o reaction stage being disposed within the interior cavity of said vessel and downstream of and in gaseous communication with the denox stage and configured to reduce the amount of n2o gas present in the gas to be cleaned, said den2o stage including at least one catalyst bed, said at least one catalyst bed including at least one n2o removal catalyst bed containing a catalyst configured to remove n2o by catalytic breakdown of n2o into n2 and o2, the catalyst in the at least one n2o removal catalyst bed containing less than 15 percent by weight of zeolites and further containing one or more catalytic active compounds of elements selected from groups 5 to 11 of the periodic table of the elements, excluding iron-doped zeolites. 2. the apparatus of claim 1, further comprising: a mixer in gaseous communication with said vessel and disposed upstream of the denox stage, said mixer configured to mix the gas to be cleaned and the nitrogen-containing reducing agent, and thereafter pass the mixed gas into the denox stage. 3. the apparatus of claim 1, further comprising: a plurality of measuring devices in gaseous communication with said vessel and configured to take measurements of at least one of a flow rate of the gas to be cleaned, a volume of the gas to be cleaned, a concentration of nox in either of a gas to be cleaned or partially cleaned gas, and a concentration of one of the individual components of nox in either of a gas to be cleaned or partially cleaned gas, said measuring devices being disposed in at least one of a location upstream of the denox stage, downstream of the denox stage but upstream of the den2o stage, or downstream of the den2o stage. 4. the apparatus of claim 3, wherein one of said measuring devices is positioned upstream of the denox stage in the inlet of said vessel. 5. the apparatus of claim 3, wherein a measuring device configured to determine an amount of reducing agent to be fed to said vessel is controllably coupled to an adjustment device configured to adjust the amount of the reducing agent flowing through said reducing-agent feed apparatus. 6. the apparatus of claim 1, wherein at least one catalyst bed in each of said denox and den2o reaction stages is a hollow cylinder such that the gas to be cleaned flows through said cylindrical catalyst beds in a radial direction. 7. the apparatus of claim 6, wherein the catalyst beds of said denox and den2o reaction stages are a pair of concentric hollow cylinders, wherein an outer hollow cylinder contains a catalyst for nox reduction with catalyst particles having an equivalent diameter of about 2 to 5 mm, and wherein an inner hollow cylinder contains a catalyst for n2o breakdown with catalyst particles having an equivalent diameter of about 1 to 4 mm. 8. the apparatus of claim 1, wherein the at least one catalyst bed in said denox stage includes at least one of co-, cu-, or fe-doped zeolites. 9. the apparatus of claim 1, wherein the at least one catalyst bed in said den2o stage includes at least one of catalytic active compounds of elements selected from groups 9 to 11 of the periodic table of the elements. 10. the apparatus of claim 9, wherein the catalytic active compounds are present in den2o catalysts in pure form. 11. a method for lowering the content of nox and n2o in gases, comprising: adding nitrogen-containing reducing agent to a gas stream containing n2o and nox to reduce the nox passing the gas stream containing n2o, nox, and reducing agent through at least one denox stage catalyst bed containing a catalyst for the reduction of nox by the reducing agent, the catalyst containing zeolites doped with transition metals, including lanthanides, with conversion of nox occurring by a reduction of nox with the nitrogen-containing reducing agent and passing the gas stream that is leaving the denox stage through at least one catalyst bed of a den2o stage that contains a catalyst for the breakdown of n2o to n2 and o2, the den2o stage catalyst being selected from the group of the catalysts containing one or more catalytic active compounds of elements selected from groups 5 to 11 of the periodic table of the elements, excluding iron-doped zeolites, with conversion of n2o by catalytic breakdown of n2o to n2 and o2. 12. the method of claim 11, wherein an amount of the reducing agent is selected such that it is converted in the denox stage so as to result in a slippage of less than 25 ppmv of the reducing agent from the denox stage into the den2o stage. 13. the method of claim 11, wherein the reducing agent for nox is ammonia, and which is added in such an amount as to result in, based on the nh3 and nox components at the inlet of the denox stage, a molar nh3/nox ratio of 0.8 to 3. 14. the method of claim 11, wherein the nitrogen-containing reducing agent is added to the gas stream containing n2o and nox in such an amount that the decomposition level of nox, based on the inlet concentration of nox, is more than 70 percent, and in the den2o stage, space velocity, temperature, and pressure are selected such that the gas at the output of the den2o stage has an n2o content of less than 100 ppmv. 15. the method of claim 11, further comprising: measuring the nox content of gas exiting the den2o stage by a measuring device disposed at an outlet thereof regulating the amount of reducing agent added for nox based on the measured nox content of gas exiting the den2o stage, said regulating occurring by use of a regulation unit to control an adjustment device for dosage of the reducing agent, such that the desired nox content is established at the outlet of the den2o stage. 16. the method of claim 11, wherein the temperature in the denox stage and in the den2o stage is between 300 and 600 degrees centigrade, and wherein the difference between the temperature of the den2o stage and the temperature of the denox stage is no greater than 50 degrees centigrade, and wherein the pressure in each of the denox stage and the den2o stage is in the range from 1 to 50 bara, and wherein the process is conducted in the denox stage at space velocities of 5,000 to 200,000 h-1. 17. the method of claim 11,

wherein the process is conducted in the den2o stage at space velocities of 2,000 to 50,000 h⁻¹. (Results 39)

Title: CATALYTIC REACTION APPARATUS

Abstract: Source: US2475855A 1. Catalytic reaction apparatus for conducting alternate endothermic and exothermic reactions which comprises a vertically elongated cylindrical outer shell having an inlet and an outlet at opposite ends thereof, a plurality of annular shaped trays superposed within said shell essentially concentric thereto and in spaced apart relation to each other and adapted each to retain a bed of granular contact material, each of said trays comprising an outer perforate wall of lesser diameter than said outer shell so as to provide an annular space at the outer side of the tray and an inner perforate wall defining the inner side of the tray, an imperforate top cover member for each tray, an imperforate convex bottom member for each tray adapted to carry the weight of the bed without direct support from beneath the bed, circumferential support means for each tray positioned within said outer annular space at one end thereof and adapted to support the weight of the tray upon said outer shell and also to close off said outer annular space at said one end thereof, means for directing the flow of reactants so as to cause the reactants to enter each bed from one of the side spaces and flow therethrough in a generally horizontal direction to the other side space and thence to the inlet side space adjacent the next bed and spray means positioned in the path of flow between trays for introduction of liquid reactants into the flowing stream in the form of a fine spray.

Classifications:

International (IPC 8-9): B01J8/04 (Advanced/Invention);
B01J8/04 (Core/Invention)

CPC: B01J8/0415

European: B01J8/04B2D

US: 422/191 422/192 422/606 422/636 422/637

Family:

Publication number	Publication date	Application number	Application date
US2475855 A	19490712	US19470779518	19471013

Priority:

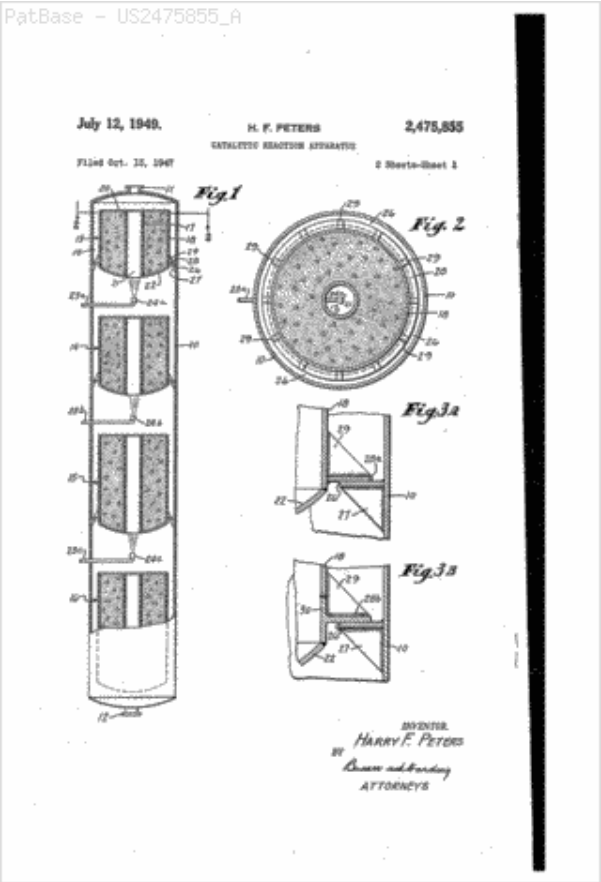
US19470779518 19471013

Probable Assignee: SUN OIL CO

Assignee(s): (std): SUN OIL CO

Assignee(s): SUN OIL COMPANY

Inventor(s): (std): PETERS HARRY F



Title: Axial-radial reactor for heterogeneous synthesis

Abstract: Source: US4372920A Disclosed is a reactor for heterogeneous catalytic reactions of gaseous reactants under pressure, comprising: a container having an inlet for introduction of gaseous reactants and an outlet for the efflux of products of the reactions; a cartridge having a cylindrically shaped wall placed within the container and communicating with the inlet and the outlet; at least two stationary-bed, catalyst-containing baskets supported within the cartridge, each of the baskets including an imperforate bottom section, a cylindrical outer perforated wall, a cylindrical inner concentric perforated wall and an annular opening defined by the inner and outer perforated walls in the upper end of each stationary-bed, catalyst-containing basket, the opening formed in a plane approximately perpendicular to the longitudinal axis of the inner and outer perforated walls, the bottom section and the inner and outer perforated walls cooperating with the cylindrically shaped cartridge wall to form a partially restrictive axial flow means, whereby a portion of the gaseous reactants enters or departs and passes through the annular opening in each of the stationary-bed, catalyst-containing baskets substantially in the axial direction and the remainder of the gaseous reactants enters and passes through the cylindrical outer perforated wall of each of the catalyst-containing baskets substantially in the radial direction.

Classifications:

International (IPC 8-9): B01J8/00 B01J8/04 C01C1/04 C07C27/00 C07C29/15 C07C29/152 C07C31/04 C07C67/00 G06F7/50

G06F7/503 (Advanced/Invention);

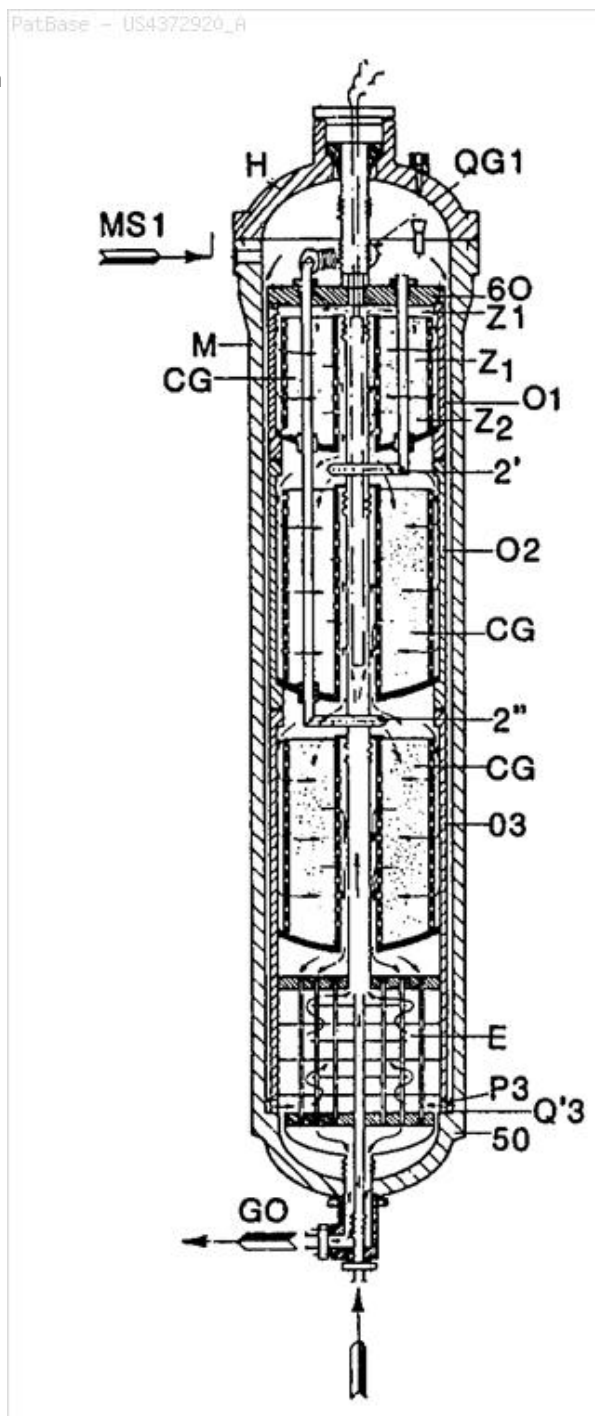
B01J8/00 B01J8/04 C01C1/00 C07C29/00 G06F7/48 (Core/Invention)

International (IPC 1-7): B01J3/04 B01J8/00 B01J8/02 B01J8/04 B01J8/06 C01B21/26 C01C1/02 C01C1/04 C07C29/15 C07C31/04 C07C31/04 G06F7/50

CPC: B01J8/0005 B01J8/0415 B01J8/0469 B01J8/0496 B01J2208/00194 C01C1/0417 C01C1/0423 C07C29/152 C12C11/02 G06F7/503

European: B01J8/00B B01J8/04B2D B01J8/04D3D B01J8/04H C01C1/04B4 C01C1/04B4C C07C29/152 C12C11/02 G06F7/503 L01J208/00C2D4C

US: 422/148 422/191 422/192 422/194 422/195 422/218 422/607



Family:

Publication number	Publication date	Application number	Application date
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MX155877 A	19880106	MX19800183141	19800711
NL188564 B	00000000		00000000
NL188564 C	19920803	NL19800004046	19800714
NL8004046 A	19810115	NL19800004046	19800714
SU1058487 D	19831130	SU19802969153	19800710
US4372920 A	19830208	US19800162436	19800624

Priority:

19540621 IT19790024334 19790713 IT19800022701 19800611

Probable Assignee: AMMONIA CASALE SA

Assignee(s): (std): AMMONIA CASALE S A EN UMBERTO ZARDI BEIDEN TE LUGA ; AMMONIA CASALE S A LUGANO SVIZ ; AMMONIA CASALE SA ; ZARDI UMBERTO ; ZARDI U ; AMMONIA KAZALE S A FA ; UMBERTO ZARDI FA ; ZARDI ; UMBERTO ZARDI ; ZARDI UMBERTO FA ; PHILIPS NV

Assignee(s): ZARDI UMBERTO LUGANO CH ; AMMONIA CASALE S A ; ANMONIA KAZEERU SA ; UNBERUTO ZARUJI ; N V PHILIPS GLOEILAMPENFABRIEKEN ; AMMONIA CASALE S A LUGANO SVIZZERA ; AMMONIA CASALE S A EN UMBERTO ZARDI BEIDEN TE LUGANO ZWITSERLAND

Inventor(s): (std): UMBERTO ZARDI ; UMBERTO ZARDI IT ; UNBERUTO ZARUJI ; ZARDI UMBERTO

Inventor(s): ZARDI UMBERTO LUGANO CH

Title: KLARSICHT-VERPACKUNG. TRANSPARENT PACKAGING. (Machine translation)

Abstract: Source: DE1984895U (Claim 1) 1. Verpackung in der Form eines Quaders, bestehend aus drei Einzelteilen, (Mittelteil mit faltschachtelaehnlichem Deckel, quadratische Fussteilverstaerkung, 5-Seitig geschlossene Klarsichthuelle) dadurch gekennzeichnet, dass durch die an den vier Seitenteilen abgewinkelten Streifen ein jedem Besteckteil entsprechender Raum entsteht.

Machine translation: (claim 1) 1 Packaging in the form of a cuboid, consisting of three individual parts, (middle part with faltschachtelaehnlichem lid, square Fussteilverstaerkung, 5-sided closed Klarsichthuelle) characterized in that by the bent at the four side members each piece of cutlery strip is a result of appropriate space.

Classifications:

International (IPC 1-7): B65D6/00

Family:

Publication number	Publication date	Application number	Application date
DE1984895 U	19680502	DE1967W041166U	19671205

Priority:

DE1967W041166U 19671205

Probable Assignee: WEISSBACH HANS FRIEDRICH

Assignee(s): (std): WEISSBACH HANS FRIEDRICH

Assignee(s): HANS FRIEDRICH WEISSBACH

Inventor(s): (std): WEISSBACH HANS FRIEDRICH

Inventor(s): HANS FRIEDRICH WEISSBACH

Title: CATALYTIC EXHAUST GAS TREATMENT APPARATUS

Abstract: Source: US3733181A ABSTRACT OF THE DISCLOSURE

An apparatus for catalytically treating the exhaust gas from an engine, so as to eliminate noxious components in the exhaust gas. The apparatus features concentric cylindrical inner and outer catalyst beds, means to pass the engine exhaust gas radially outwards through the beds, and means to inject air into the exhaust gas between the inner and the outer bed, so that catalytic reduction of nitrogen oxides to nitrogen takes place in the inner bed and catalytic oxidation of hydrocarbons and carbon monoxide to water vapor and carbon dioxide takes place in the outer bed. B

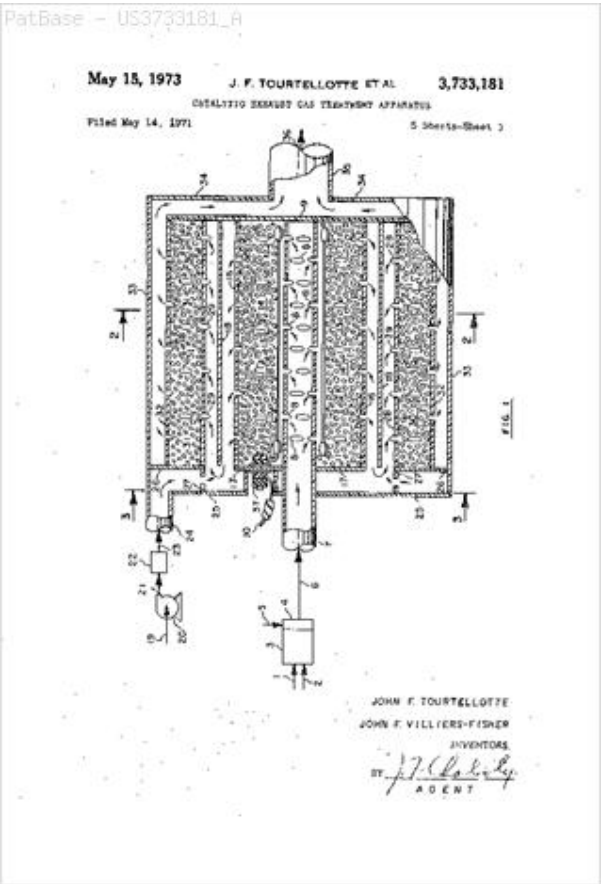
Classifications:

International (IPC 8-9): B01D53/94 B01J8/04 B01J8/06 F01N3/20 F01N3/28 F01N3/32 (Advanced/Invention); F01N13/02 (Advanced/Non-invention)

International (IPC 1-7): B01D53/34 B01J8/04 B01J9/04 F01N3/10 F01N3/14

CPC: F01N13/0097 B01D53/9472 B01D53/9413 B01D53/944 B01D2255/2073 B01D2255/20746 B01D2255/20753 B01D2255/20761 B01J8/0411 B01J8/0496 B01J8/06 B01J2208/00221 B01J2208/00415 B01J2208/00495 B01J2208/0053 F01N3/2013 F01N3/2846 F01N3/32 F01N2240/02 F01N2240/16 F01N2510/06 Y02T10/26

European: B01D53/94F2C B01D53/94H B01D53/94M2Z B01J8/04B2B B01J8/04H B01J8/06 F01N3/20B2 F01N3/28C6 F01N3/32 L01D255/207D L01D255/207F L01D255/207G L01D255/207H L01J208/00C2D4F2 L01J208/00C2L8 L01J208/00C2P4 L01J208/00C2Z R01N13/02S R01N240/02 R01N240/16 R01N37/02 R01N510/06
US: 23/28.8F 422/171 422/172 422/174 422/176 422/181 423/213.2 423/213.7 60/300 60/301



Family:

Publication number	Publication date	Application number	Application date
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FR2217061 A1	19740906	FR19730004696	19730209
GB1366061 A	19740911	GB19730003451	19730123
NL7301678 A	19740808	NL19730001678	19730206
US3733181 A	19730515		19710514

Priority:

US19710143401 19710514 GB19730003451 19730123 FR19730004696 19730209
DE19732306471 19730209

Probable Assignee: CHEMICAL CONSTRUCTION CORP

Assignee(s): (std): CHEMICAL CONSTRUCTION CORP

Assignee(s): CHEMICAL CONSTRUCTION CORP NEW YORK N Y V ST A ; CHEMICAL CONSTRUCTION CORP US

Inventor(s): (std): TOURTELLOTTE J ; TOURTELLOTTE JOHN FRANCIS ; VILLIERS FISHER J ;
VILLIERS FISHER JOHN FREDERICK

Inventor(s): VILLIERS FISHER JOHN FREDERICK KENDALL ; VILLIERS FISHER J US ;
TOURTELLOTTE JOHN FRANCIS WESTFIELD ; TOURTELLOTTE J US

Title: Process and device for hydroconversion of hydrocarbons

Abstract: Source: US4571326A The hydrotreatment of hydrocarbons in the liquid phase is effected in a column containing a catalyst fixed or moving bed supported by a grid, wherethrough passes an ascending stream of the charge admixed with hydrogen. The perforations of the grid are small enough to prevent passage of the catalyst particles but large enough for giving passage to the hydrogen-charge mixture. The reaction effluent is withdrawn from the top of the column.

Classifications:

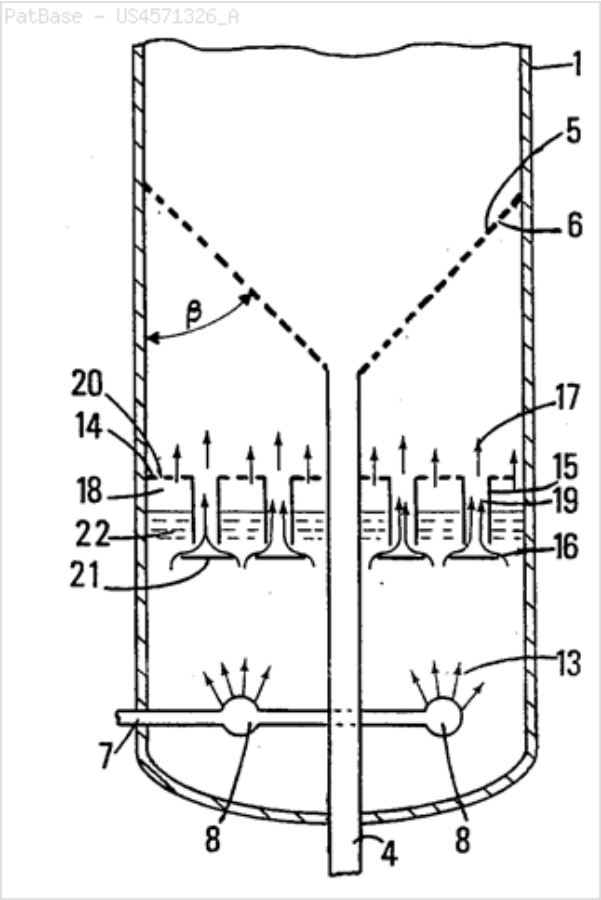
International (IPC 8-9): B01J8/12 C10G11/00 C10G49/00 C10G49/14 (Advanced/Invention); B01J8/08 C10G11/00 C10G49/00 (Core/Invention)

International (IPC 1-7): B01J8/02 B01J8/08 B01J8/12 B01J8/22 C10G11/02 C10G45/14 C10G49/00 C10G49/10 C10G49/14 F28D21/00

CPC: B01J8/12 C10G49/002 C10G49/14

European: B01J8/12 C10G49/00B C10G49/14

US: 261/122 261/122.1 422/207 422/216 422/220 422/311



Family:

Publication number	Publication date	Application number	Application date
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EP0107986 A1	19840509	EP19830401818	19830919
EP0107986 B1	19860129	EP19830401818	19830919
FR2533937 A1	19840406	FR19820016597	19821004
FR2533937 B1	19851011	FR19820016597	19821004
JP59086692 A2	19840518	JP19830186649	19831004
US4571326 A	19860218	US19830539029	19831004

Priority:

FR19820016597 19821004

Probable Assignee: INST FRANCAIS DU PETROLE

Assignee(s): (std): INST FRANCAIS DU PETROL ; INST FRANCAIS DU PETROLE

Assignee(s): INSTITUT FRANCAIS PETROLE ; INSTITUT FRANCAIS DU PETROLE ; FRANCAIS DU PETROLE INST ; INST FR DU PETROLE DES CARBURANTS ET LUBRIFIANTS

Inventor(s): (std): BISCHOFF DIDIER ; COURTEHEUSE GERARD ; DEIDEIE BISHIYOFU ; JIERAARU KURUTOUUZU ; PIEERU RUNAARU ; RENARD PIERRE

Inventor(s): DIDIER BISCHOFF GERARD COURTEHEUSE ET PIERRE ; DIDIER BISCHOFF
GERARD COURTEHEUSE ET PIERRE RENAR

Designated states: BE DE GB IT NL

Title: Ammonia reduction-denitration process and apparatus therefor

Abstract: Source: US4571329A An ammonia reduction-denitration process for exhaust gases containing NOx consisting mainly of NO2, and an apparatus therefor are provided, which process comprises treating the exhaust gases with ammonia using a catalyst which is active to both a reaction of $(\text{NO}_2 + \text{NH}_3 \rightarrow \text{N}_2 + \text{N}_2\text{O} + \text{H}_2\text{O})$ and a reaction of $(\text{N}_2\text{O} + \text{NH}_3 \rightarrow \text{N}_2 + \text{H}_2\text{O})$ at an area velocity of 3 m/h or less and in a concentration ratio of NH_3/NO_2 of 1.3 or more. According to this process, it is possible to reduce NO2 contained in the exhaust gases with ammonia at one stage without by-producing N2O.

Classifications:

International (IPC 8-9):

B01D53/86 (Advanced/Invention);

B01D53/86 (Core/Invention)

International (IPC 1-7): B01J8/00 C01B21/00 C01B21/20

CPC: B01D53/8625 B01D53/8628 Y02C20/10

European: B01D53/86F2 B01D53/86F2C Y02C20/10

US: 422/170 422/171 423/239 423/239.1

PatBase - US4571329_A

U.S. Patent Feb. 18, 1986 Sheet 1 of 4 4,571,329

FIG.1

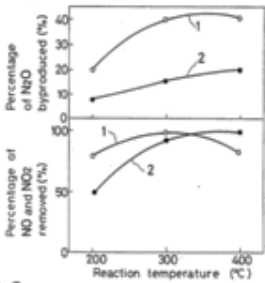
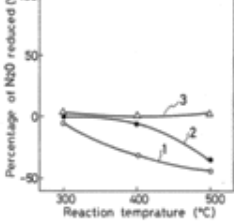


FIG.2



Family:

Publication number	Publication date	Application number	Application date
US4571329 A	19860218	US19840639933	19840813

Priority:

US19840639933 19840813

Probable Assignee: BABCOCK HITACHI KK

Assignee(s): (std): BABCOCK HITACHI KK

Assignee(s): BABCOCK HITACHI KABUSHIKI KAISHA

Inventor(s): (std): KATO YASUYOSHI ; KONISHI KUNIIHIKO ; OHTA MASAO

US: 423/239 423/239.2 423/351

Assignee(s): (std): AIR PROD AND CHEM ; ENGELHARD CORP

Assignee(s): ENGELHARD CORP ISELIN N J US ; ENGLEHARD CORP ; ARMOR JOHN NELSON ;
LI YUEJIN ; AIR PROD AND CHEM INC ; AIR PRODUCTS AND CHEMCIALS INC ;
AIR PRODUCTS AND CHEMICAL INC ; AIR PRODUCTS AND CHEMICALS INC

Inventor(s): (std): ARMOR JOHN N ; ARMOR JOHN NELSON ; JIYON NERUSON AAMOO ; LI YUEJIN
; YUEJIN LI ; YUUN RII

Inventor(s): LI YUEJIN ALLENTOWN PA 18106 US ; JOHN N ARMOR ; JOHN NELSON ARMOR
; ARMOR JOHN NELSON OREFIELD PA 18069 US

Agent(s): SIM AND MCBURNEY

Designated states: BE DE FR GB IT NL

Abstract: Source: JP6126177A PURPOSE:To provide a catalyst for removing efficiently nitrous oxide contained in exhaust gas. CONSTITUTION:Catalysts for removing nitrous oxide in which an alumina carrier formed in a honeycomb structure is loaded with 0.2 weight percent of active metallic Pd or Rh, or with 0.07 weight percent of metallic Rh and 1.3 weight percent of Cu. A carrier in which alumina is mixed with cordierite, mordenite, silica, etc.

International (IPC 8-9): B01D53/94 B01J23/44
B01J23/46 B01J23/89 (Advanced/Invention);
B01D53/94 B01J23/44 B01J23/46
B01J23/89 (Core/Invention)

CPC: Y02C20/10

PatBase - JP6126177_A2

(4)

特開平6-126177

ば、 N_2 、 O の熱分解反応を少ない原料全量で行い、簡単に無害な原料と簡単に分解でき、酸化特性を投入することができる。

【0022】また、原料を数種類のセキユスで構成することによって、原料の成分比、原料特性の向上を図ることができる。

【図面の簡単な説明】

【図1】本発明の実施例の N_2 、 O 除去触媒を光触した触媒層を含む装置の構成を示すブロック図である。

【図2】本発明の実施例の N_2 、 O 除去触媒である Pd 、 Ir

と Mo 触媒の性能評価図表である。

【図3】本発明の実施例の N_2 、 O 除去触媒である Ir と Cu 触媒及び Ir と触媒の温度特性評価図表である。

【符号の説明】

- 1 原料ガス
- 2 酸化触媒
- 3 酸化触媒
- 4 酸化触媒
- 5 触媒

図1

- 1 原料ガス
- 2 酸化触媒
- 3 酸化触媒
- 4 酸化触媒
- 5 触媒

図2

- 0.2% Pd / Al₂O₃
- 0.2% Ir / Al₂O₃
- 0.2% Mo / Al₂O₃

図3

- 0.2% Ir / Al₂O₃
- 0.2% Cu / Al₂O₃

-482-

Publication number	Publication date	Application number	Application date
JP6126177 A2	19940510	JP19920275586	19921014

Inventor(s): (std): HORIMOTO HIROMI ; YAMAMOTO MANABU

Title: Process for decomposing nitrogen oxides.

Abstract: Source: EP0643988A1 Nitrogen oxides are decomposed catalytically at low temperatures by contacting them with carbonaceous adsorbents doped with transition metals, particularly copper, cerium, nickel, manganese, silver and cobalt.

Classifications:

International (IPC 8-9): B01D53/04
B01D53/86 B01D53/94 B01J20/20 B01J23/10
B01J23/34 B01J23/50 B01J23/70
B01J23/76 (Advanced/Invention);
B01D53/86 B01D53/94 B01J23/10 B01J23/16
B01J23/48 B01J23/70 (Core/Invention)

International (IPC 1-7): B01D53/04
B01D53/36 B01D53/56 B01D53/86 B01D53/94
B01J20/20 B01J21/18 B01J23/10 B01J23/34
B01J23/50 B01J23/70 B01J23/76

CPC: B01D53/8628 B01D53/9418
B01D2251/204 B01D2251/208 B01D2255/2065
B01D2255/2073 B01D2255/20746
B01D2255/20753 B01D2255/20761
B01D2255/702

European: B01D53/86F2C B01D53/94F2C2 L01D251/204 L01D251/208 L01D255/206N
L01D255/207D L01D255/207F L01D255/207G L01D255/207H L01D255/70B

Family:

Publication number	Publication date	Application number	Application date
CA2131751 AA	19950317	CA19942131751	19940909
CN1103602 A	19950614	CN19941015109	19940910
DE69403592 D1	19970710	DE19946003592	19940905
DE69403592 T2	19980205	DE19946003592T	19940905
EP0643988 A1	19950322	EP19940306521	19940905
EP0643988 B1	19970604	EP19940306521	19940905
JP7185342 A2	19950725	JP19940246775	19940916

Priority:

US19930122268 19930916 CA19942131751 19940909

Probable Assignee: ROHM AND HAAS CO

Assignee(s): (std): DRAGO RUSSELL S ; ROHM AND HAAS ; BRENDLEY WILLIAM H

Assignee(s): BRENDLEY WILLIAM H JR ; BRENDLEY WILLIAM HARRY JR ; ROHM AND HAAS COMPANY ; ROHM AND HAAS CO ; ROHM AND HAAS CO PHILADELPHIA PA US ; DRAGO RUSSELL STEPHEN

Inventor(s): (std): HARRY BRENDLEY JR WILLIAM ; RATSUSERU SUTEIIBUN DORAGO ; STEPHEN DRAGO RUSSELL ; UIRIAMU HARII BURENDORII JIYUN ; BRENDLEY JNR WILLIAM HARRY ; BRENDLEY WILLIAM H JR ; DRAGO RUSSELL S ; DRAGO RUSSELL STEPHEN

Inventor(s): DRAGO RUSSELL STEPHEN GAINESVILLE FLORIDA 32605 US ; BRENDLEY WILLIAM HARRY JR ; BRENDLEY JNR WILLIAM HARRY HATBORO PENNSYLVANIA 19 ; UIRIAMU HARII BURENDORII JIYUNIA ; BRENDLEY WILLIAM H ; BRENDLEY JR WILLIAM HARRY ; BRENDLEY JNR WILLIAM HARRY HATBORO...

Agent(s): GOWLING LAFLEUR HENDERSON LLP

Designated states: CH DE FR GB IT LI

Title: Selective catalytic reduction of nitrogen oxides using an iron impregnated zeolite catalyst

Abstract: Source: US5451387A An exhaust gas treatment process useful for the removal of nitrogen oxides using an iron containing zeolite as the catalyst and ammonia as a reducing agent. It is desired to extend the effective temperature range for the selective catalytic reduction (SCR) of nitrogen oxides below about 400 DEG C. This is accomplished in the instant invention through the use of an intermediate pore size zeolite, such as ZSM-5, based catalyst which has been treated to incorporate iron into its pores.

Classifications:

International (IPC 8-9): B01D53/54 B01D53/86 B01D53/94 B01J29/072 B01J29/46 B01J37/02 B01J37/08 B01J37/10 B01J37/30 C01B21/04 F01N3/20 (Advanced/Invention);

F02B1/04 (Advanced/Non-invention);

B01D53/86 B01D53/94 B01J29/00 B01J37/00 C01B21/00 F01N3/20 (Core/Invention);

F02B1/00 (Core/Non-invention)

International (IPC 1-7): B01D53/54 B01D53/94 B01J29/06 B01J29/072 B01J29/46 B01J37/10 B01J37/30 B01J8/00 C01B21/00 C01B21/04 C01B21/20

CPC: B01D2255/504 Y02T10/24 B01D53/8628 B01D53/9418 B01D2251/2062 B01J37/086 F02B1/04 F01N3/2066 B01D53/8621 B01D53/865 B01D53/9413 B01D53/9436 B01D2251/208

B01D2255/20738 B01D2255/50 B01D2255/912 B01J29/072 B01J29/46 B01J37/0203 B01J2229/26 B01J2229/42 F01N2610/02

European: B01D53/86F B01D53/86F2C B01D53/86K2C B01D53/94F2C B01D53/94F2C2 B01D53/94F4 B01J29/072 B01J29/46 B01J37/02B2 B01J37/08B4 F01N3/20E L01D251/206A L01D251/208 L01D255/207E L01D255/50 L01D255/504 L01D255/912 L01J229/26 L01J229/42 R01N610/02 R02B1/04

US: 423/239.1 423/239.2

Family:

Publication number	Publication date	Application number	Application date
AU199529149 A1	19960209	AU19950029149	19950705
AU687582 B2	19980226	AU19950029149	19950705
CA2193951 AA	19960125	CA19952193951	19950705
EP0935498 A1	19990818	EP19950924763	19950705
EP0935498 A4	19990915	EP19950924763	19950705
US5451387 A	19950919	US19940271692	19940707
US5482692 A	19960109	US19940271694	19940707
US5520895 A	19960528	US19940271693	19940707
US5552129 A	19960903	US19940271686	19940707
US5589147 A	19961231	US19940271685	19940707
WO9601689 A1	19960125	WO1995US08253	19950705

Priority:

US19940271692 19940707 US19940271694 19940707 US19940335617 19941108
 US19940271685 19940707 US19940271686 19940707 US19940271693 19940707
 WO1995US08253 19950705

Probable Assignee: MOBIL OIL CORP

Assignee(s): (std): MOBIL OIL CORP

Assignee(s): SHIHABI DAVID SAID ; TIMKEN HYE KYUNG CHO ; SHARMA SANJAY BHARDWAJ ; STEVENSON SCOTT ANDREW ; SOCHA RICHARD FRANCIS ; VARTULI JAMES CLARKE ; AUDEH COSTANDI AMIN ; DEGNAN THOMAS FRANCIS ; FARNOS MARI DOLORES ; FARNOS MARIA DOLORES ; HATZIKOS GEORGE HARRY ; MCWILLIAMS JOHN PAUL

Inventor(s): (std): GEORGE HARRY HATZIKOS ; HYE KYUNG CHO TIMKEN ; JAMES CLARKE VARTULI ; JOHN PAUL MCWILLIAMS ; MARIA DOLORES FARNOS ; RICHARD

FRANCIS SOCHA ; SANJAY BHARDWAJ SHARMA ; THOMAS FRANCIS DEGNAN ;
COSTANDI AMIN AUDEH ; VARTULI JAMES CLARKE ; VARTULI JAMES C ;
TIMKEN HYE KYUNG CHO ; STEVENSON SCOTT ANDREW ; STEVENSON SCOTT
A ; SOCHA RICHARD FRANCIS ; SHIHABI DAVID SAID ; SHIHABI DAVID S ;
SHARMA SANJAY BHARDWAJ ; SHARMA SANJAY B ; MCWILLIAMS JOHN PAUL ;
MCWILLIAMS JOHN P ; HATZIKOS GEORGE HARRY ; FARNOS MARIA DOLORES ;
FARNOS MARIA D ; DEGNAN THOMAS FRANCIS ; AUDEH COSTANDI AMIN ;
AUDEH COSTANDI A ; SCOTT ANDREW STEVENSON ; DAVID SAID SHIHABI

Agent(s): PHILLIPS ORMONDE FITZPATRICK; KIRBY EADES GALE BAKER

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

Title: Process for removal of oxides of nitrogen

Abstract: Source: US5547650A An improved process for SNCR of NO_x is provided. The exhaust gases from a combustion source are fed to a reducing reactor. A NO_x reductant is injected into the exhaust to form a mixture. The mixture is then heated by regenerative heating to effect NO_x reduction reactions. The reacted exhaust may then be further heated to remove byproducts, such as N₂O, and unreacted reductant.

Classifications:

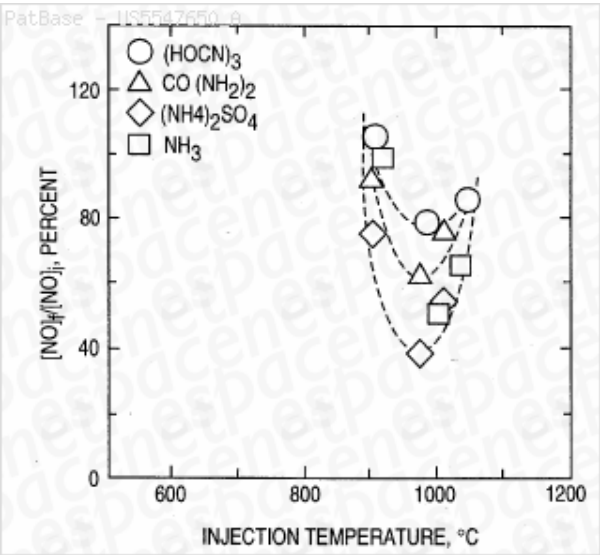
International (IPC 8-9): B01D53/56
B01D53/92 F01N3/08 F01N3/26 F02C6/00
F23J15/02 F23J15/08 (Advanced/Invention);
F01N3/20 (Advanced/Non-invention);
B01D53/56 B01D53/92 F01N3/08 F01N3/26
F02C6/00 F23J15/02 F23J15/08 (Core/Invention);
F01N3/20 (Core/Non-invention)

International (IPC 1-7): C01B21/00

CPC: B01D53/56 B01D53/92 F01N3/08
F01N3/26 F01N2610/02 F02C6/003 F02C6/006
F23J15/02 F23J15/08 F23J2215/10 F23J2215/101 F23J2219/20 F23J2219/201 Y02C20/10
Y02E20/14

European: B01D53/56 B01D53/92 F01N3/08 F01N3/26 F02C6/00B F02C6/00F F23J15/02
F23J15/08 R01N610/02 R23J215/10 R23J215/101 R23J219/20 R23J219/201 Y02C20/10 Y02E20/14

US: 423/212 423/235



Family:

Publication number	Publication date	Application number	Application date
US5547650 A	19960820	US19940217783	19940324

Priority:

US19940217783 19940324

Probable Assignee: UNIV

Assignee(s): (std): UNIV CALIFORNIA

Assignee(s): THE REGENTS OF THE UNIVERSITY OF CALIFORNIA ; UNIV

Inventor(s): (std): DIBBLE ROBERT W ; EDGAR BRADLEY

Title: Iron zeolite for conversion of NOx

Abstract: Source: EP0756891A1 A method for converting NOx to innocuous products which involves providing an iron-ZSM-5 monolithic structure zeolite having a silica to alumina mole ratio of at least about 10/1, wherein the iron content is about 1 percent to 5 percent by weight, and contacting the zeolite with a NOx-containing workstream in the presence of ammonia at a temperature in the range of at least about 200 DEG C.

Classifications:

International (IPC 8-9): B01D53/86

B01D53/94 B01J29/072

B01J29/46 (Advanced/Invention);

B01D53/34 (Advanced/Non-invention);

B01D53/86 B01D53/94

B01J29/00 (Core/Invention)

International (IPC 1-7): B01D53/86

B01D53/94 B01J29/46

CPC: B01D53/8628 B01D2251/2062

B01D2255/20738 B01D2255/504 B01J29/072

B01J35/04 B01J37/0009

European: B01D53/86F2C B01J29/072

L01D251/206A L01D255/207E L01D255/504

L01J35/04 L01J37/00B

PatBase - EP0756891_A1

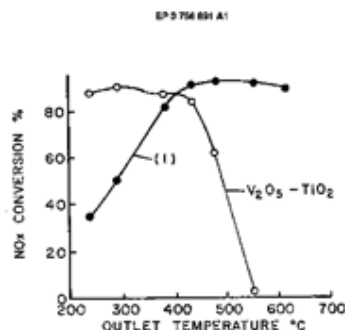


Fig. 1

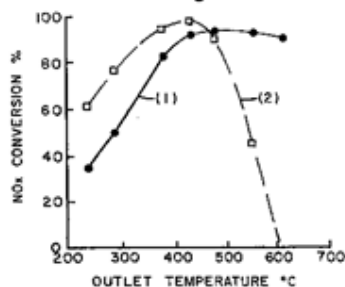


Fig. 2

Family:

Publication number	Publication date	Application number	Application date
EP0756891 A1	19970205	EP19960109578	19960614
JP9103653 A2	19970422	JP19960212194	19960724
KR19970005369 A	19970219	KR19960030310	19960725

Priority:

US19950506715 19950726

Probable Assignee: CORNING INC

Assignee(s): (std): CORNING INC

Inventor(s): (std): RAJIYA RAO USHIRIKA ; SURINIBASU HOSUDAAGU SUWARUUPU ; SWAROOP SRINIVAS HOSDURG ; WURISIKA RAJA RAO

Designated states: BE DE ES FR GB IT SE

Title: METHOD OF REMOVING NITROGEN OXIDES FROM A GAS FLOW

Abstract: Source: US6056928A PCT No. PCT/EP96/03971 Sec. 371 Date Mar. 10, 1998 Sec. 102(e) Date Mar. 10, 1998 PCT Filed Sep. 10, 1996 PCT Pub. No. WO97/10042 PCT Pub. Date Mar. 20, 1997The invention relates to a process for removing nitrogen oxides from a gas stream containing same, which comprises passing the gas stream (A) through a stage for absorbing the nitrogen oxides other than N2O in an absorbent or reacting the nitrogen oxides other than N2O with an absorbent at a pressure of from 1,5 to 20 bar, and (B) through a stage for reducing the amount of N2O, preferably employing the pressure level of step A, and to apparatus therefor and the use thereof.

Classifications:

International (IPC 8-9): B01D53/14 B01D53/34 B01D53/56 B01D53/77 B01D53/86 C01B21/38 C01B21/40 (Advanced/Invention); B01D53/34 B01D53/56 (Advanced/Non-invention); B01D53/56 B01D53/77 B01D53/86 C01B21/00 (Core/Invention)
International (IPC 1-7): B01D53/14 B01D53/26 B01D53/56 B01D53/77 B01D53/86 C01B21/00 C01B21/26 C01B21/38 C01B21/40
CPC: Y02P20/153 C01B21/38 B01D53/56 B01D53/8625 B01D2257/402 Y02C20/10
European: B01D53/56 B01D53/86F2 C01B21/38 L01D257/402 Y02C20/10
US: 423/235 423/239.1 423/392 423/393 423/403

Family:

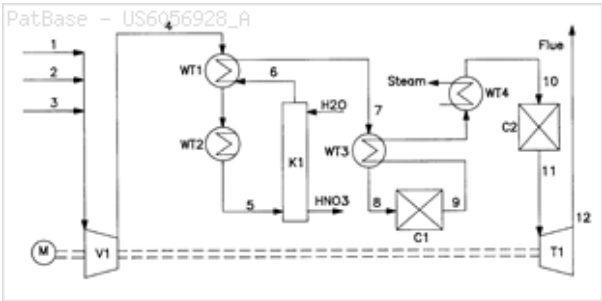
Publication number	Publication date	Application number	Application date
CA2229416 AA	19980311	CA19962229416	19960910
CA2229416 C	20070529	CA19962229416	19960910
CN1090521 C	20020911	CN19961097967	19960910
CN1200681 A	19981202	CN19961097967	19960910
DE19533715 A1	19970313	DE19951033715	19950912
DE59603806 D1	20000105	DE19965003806	19960910
EP0859659 A1	19980826	EP19960931068	19960910
EP0859659 B1	19991201	EP19960931068	19960910
IN196362 B	20060519	IN1996MA01572	19960909
JP11512021 T2	19991019	JP19970510678T	19960910
JP4249258 B2	20090402	JP19970510678T	19960910
KR100457933 B1	20050115	KR19980701843	19980312
KR19990044593 A	19990625	KR19980701843	19980312
PL325600 A1	19980803	PL19960325600	19960910
TW422729 B	20010221	TW19960111115	19960911
UA65527 C2	20040415	UA19980041838	19960910
US6056928 A	20000502	US19980029833	19980310
WO9710042 A1	19970320	WO1996EP03971	19960910

Priority:

DE19951033715 19950912 WO1996EP03971 19960910 DE19965003806 19960910

Probable Assignee: BASF AG

Assignee(s): (std): FETZER THOMAS ; WAGNER ECKHART ; ROETH EMIL ; RUPPEL WILHELM ; WISTUBA HERMANN ; OTTO BERNHARD ; SCHUMACHER VOLKER ; BASF AG ;



BUERGER GERT

Assignee(s): BURGER GERT ; BASF AG 67063 LUDWIGSHAFEN DE ; BASF
AKTIENGESELLSCHAFT ; BASF 67063 LUDWIGSHAFEN DE AG ; ROTH EMIL

Inventor(s): (std): E ROUTH ; E WAGNER ; E WANGER ; T FETZER ; WISTUBA HERMANN AND ;
WISTUBA HERMANN DR ; WISTUBA HERMANN ; WANGER E ; WAGNER
ECKHART DR ; WAGNER ECKHART ; WAGNER E ; SCHUMACHER VOLKER DR ;
SCHUMACHER VOLKER ; RUPPEL WILHELM DR ; RUPPEL WILHELM ; ROUTH E ;
ROTH EMIL ; ROETH EMIL DIPL ING ; ROETH EMIL ; OTTO BERNHARD DR ;
OTTO BERNHARD ; FETZER THOMAS DR ; FETZER THOMAS ; FETZER T ;
BURGER GERT ; BUERGER GERT DR ; BUERGER GERT

Inventor(s): M A BASF AG

Agent(s): ROBIC

Designated states: AT BE CA CH CN CZ DE DK ES FI FR GB GR IE IT JP KR LU MC NL NO PL PT SE
SG SK UA US

Title: METHOD AND DEVICE FOR REDUCING THE NOX AND N2O OF GASES

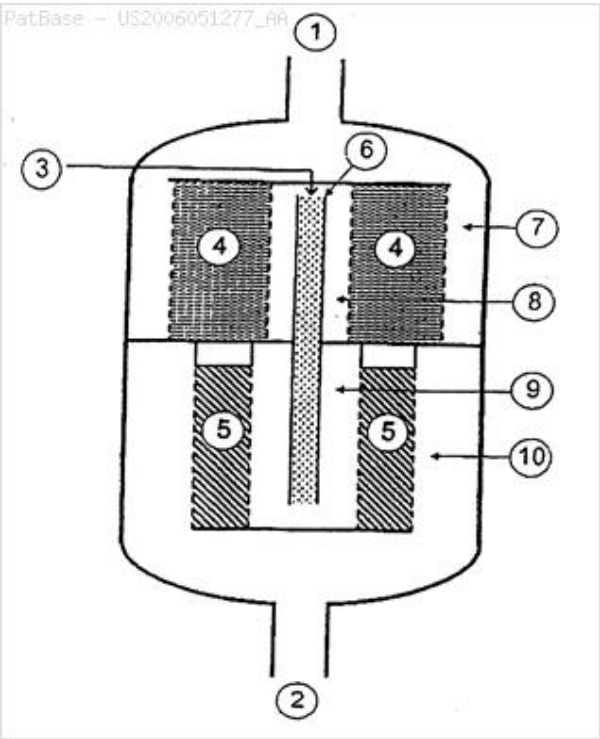
Abstract: Source: US2006051277A The method comprises the following steps: conduction of the gas containing N₂O and NO_x over a series of two catalyst beds consisting of one or more zeolites degrees charged with iron: addition of a reduction agent for NO_x between the catalyst beds; setting of a temperature of less than 500 degrees centigrade in the first and second catalyst bed; setting of a gas pressure of at least 2 bar in the two catalyst beds; and the selection of a space velocity in the first and second catalyst bed that achieves a degradation of the N₂O content of the gas in the first catalyst bed by a maximum of up to 90 percent, in relation to the N₂O content at the entrance to the catalyst bed and an additional degradation of the N₂O content of the gas in the second catalyst bed by at least 30 percent in relation to the N₂O content at the entrance to the second catalyst bed. The first reaction zone is used to degrade the N₂O and the second reaction zone reduces the NO_x and breaks down at least part of the remaining N₂O. The inventive device comprises at least one radially traversed catalyst bed.

Classifications:

International (IPC 8-9): B01D53/00
B01D53/56 B01D53/74 B01D53/75 B01D53/76 B01D53/86 B01J19/30 B01J29/06 B01J29/08 B01J29/14 B01J29/18 B01J29/24 B01J29/46 B01J29/65 B01J29/68 B01J29/70 B01J29/76 B01J8/00 B01J8/02 B01J8/04 (Advanced/Invention);
B01D53/56 B01D53/86 B01J29/14 B01J29/24 B01J29/68 B01J29/76 B01J8/02 (Advanced/Non-invention)
International (IPC 1-7): B01D53/56 B01D53/86 B01J19/30 B01J29/06 B01J8/02 B01J8/04 B31F1/10 B32B27/20
CPC: B01J29/7007 B01D53/8628 B01D2255/20738 B01D2255/50 B01D2257/402 B01D2257/404 B01J8/008 B01J8/0411 B01J8/0415 B01J8/0453 B01J29/08 B01J29/14 B01J29/18 B01J29/24 B01J29/46 B01J29/65 B01J29/68 B01J29/7615 B01J2208/00539 B01J2208/00849 B01J2208/025 Y02C20/10
European: B01D53/86F2C B01J29/08 B01J29/18 B01J29/46 B01J29/65 B01J29/70B B01J8/00L B01J8/04B2B B01J8/04B2D B01J8/04D2D L01D255/207E L01D255/50 L01D257/402 L01D257/404 L01J208/00C4 L01J208/00L4B4 L01J208/02D2B L01J29/14 L01J29/24 L01J29/68 L01J29/76B Y02C20/10
US: 422/168 422/169 422/170 422/171 422/172 422/177 422/177S 422/180 422/181 422/181S 423/239.1 423/239.2 423/239.200P

Family:

Publication number	Publication date	Application number	Application date
AT518579 E	20110815	AT20030735591T	20030610
AU2003236729 AA	20031231	AU20030236729	20030610
AU2003236729 BB	20090507	AU20030236729	20030610
CA2489109 AA	20041209	CA20032489109	20030610
CA2489109 C	20120327	CA20032489109	20030610
CN100337725 C	20070919	CN20038013526	20030610
CN1658956 A	20050824	CN20038013526	20030610



CO5631413 A2	20060428	CO20040123479	20041209
DE10226461 A1	20040122	DE20021026461	20020613
DE50314419 D1	20120906	DE20035014419	20030610
DK1515791 T3	20111114	DK20030735591T	20030610
DK2286897 T3	20121001	DK20030014425T	20030610
EG24866 A	20101102	EG20030060561	20030614
EP1515791 A1	20050323	EP20030735591	20030610
EP1515791 B1	20110803	EP20030735591	20030610
EP2286897 A1	20110223	EP20100014425	20030610
EP2286897 B1	20120711	EP20100014425	20030610
ES2369078 T3	20111125	ES20030735591T	20030610
ES2391380 T3	20121123	ES20100014425T	20030610
HU0600118 U0	20060628	HU20060000118U	20030610
IN02775CN2004 A	20060210	IN2004CN02775	20041209
KR101053426 B1	20110803	KR20047020303	20030610
KR20050020998 A	20050304	KR20047020303	20030610
MX264791 B	19990227	MX2004PA12384	20041209
MX264791 B	19990227	MX2004PA12384	20030610
MXPA04012384 A1	20050225	MX2004PA12384	20030610
NO20050119 A	20050314	NO20050000119	20050110
NO20050119 A0	20050110	NO20050000119	20050110
NO20151383 A	20050314	NO20150001383	20151013
PL209337 B1	20110831	PL20030374320	20030610
PL214529 B1	20130830	PL20030394192	20030610
PL374320 A1	20051017	PL20030374320	20030610
PL394192 A1	20110704	PL20030394192	20030610
PT1515791 T	20111004	PT20030735591T	20030610
PT2286897 T	20121016	PT20100014425T	20030610
RU2005100520 A	20050810	RU20050100520	20030610
RU2318581 C2	20080310	RU20050100520	20030610
US2006051277 AA	20060309	US20050516918	20050708
US7462340 BB	20081209	US20050516918	20050708
WO03105998 A1	20031224	WO2003EP06051	20030610
ZA200409479 A	20051118	ZA20040009479	20041124

Priority:

DE20021026461 20020613 WO2003EP06051 20030610 EP20030735591 20030610
EP20100014425 20030610

Probable Assignee: UHDE GMBH

Assignee(s): (std): GROVES MICHAEL ; MAURER RAINER ; SCHWEFER MEINHARD ; SIEFERT ROLF ;
UHDE GMBH ; UNDE GMBH ; THYSSENKRUPP UHDE GMBH

Assignee(s): THYSSENKRUPP INDUSTRIAL SOLUTIONS AG

Inventor(s): (std): MEINHARD SCHWEFER ; MICHAEL GROVES ; RAINER MAURER ; RAINER
SIEFERT ROLF SCHWEFER M ; ROLF SIEFERT ; SCHWEFER MEINHARD ;
SCHWEFER MEINHARD DR ; SIEFERT ROLF ; SIEFERT ROLF DR ; GROVES
MICHAEL ; MAURER RAINER

Inventor(s): MAURER RAINER ; GROUVZ MAJKL ; SIEFERT ROLF SCHWEFER MEINHARD
GROVES MICHAEL ; SIEFERT ROLF ; SCHWEFER MEINHARD

Agent(s): DAVIES COLLISON CAVE; FETHERSTONHAUGH AND CO; ACKERMANN JOACHIM
KARL WILHELM DIPL CHEM DRERNAT; ACKERMANN JOACHIM; LEHMANN
MARIA ISABEL; CONNOLLY BOVE LODGE AND HUTZ LLP

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BY BZ CA CF CG CH CI CM CN
CO CR CU CY CZ DE DK DM DZ EC EE ES FI FR GA GB GD GE GH GM GN GQ GR

GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LI LK LR LS LT LU LV MA MC
MD MG MK ML MN MR MW MX MZ NE NI NL NO NZ OM PH PL PT RO RU SC SD
SE SG SI SK SL SN SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM
ZW

Title: PROCESS FOR THE REMOVAL FROM GASES OF NITROGEN OXIDES NOX BY SELECTIVE CATALYTIC REDUCTION (SCR) USING AMMONIA OVER ZEOLITE CATALYSTS NOT CAUSING THE FORMATION OF NITROGEN PROTOXIDE

Abstract: Source: US6221324B Zeolites partially exchanged with copper, in particular faujasites, in which the copper does not largely occupy the small cages (for example the sodalite cages of the faujasites), are used as non-nitrogen-protooxide-generating SCR catalysts. Particular attention is drawn to certain mixed rare-earth/copper zeolites. The selectivity of the reduction of NOx to N2 is correlated with the TPR diagram of the catalysts.

Classifications:

International (IPC 8-9): B01D53/86 B01J29/06 B01J29/072 B01J29/14 (Advanced/Invention); B01D53/86 B01J29/00 (Core/Invention)

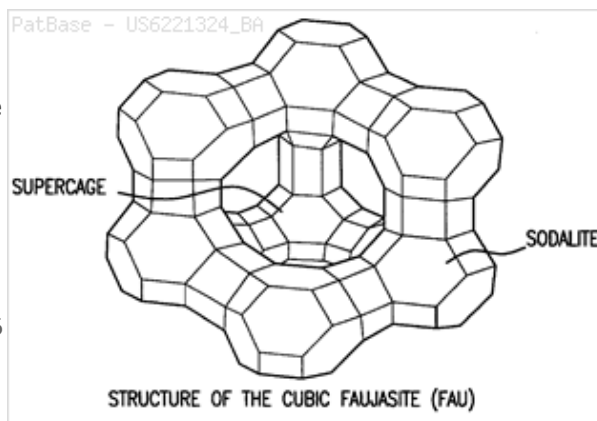
International (IPC 1-7): B01D141/00

B01D175/10 B01D53/56 B01D53/86 B01D53/94 B01J29/04 B01J29/06 B01J29/14 B01J37/18 B01J8/00 C01B39/20 C01B39/22

CPC: B01D53/8628 B01D2255/20761 B01J29/072 B01J29/14 Y02C20/10

European: B01D53/86F2C B01J29/072 B01J29/14 L01D255/207H Y02C20/10

US: 423/213.2 423/239.2 502/65 502/67 502/75



Family:

Publication number	Publication date	Application number	Application date
AT271420 E	20040815	AT19980402666T	19981027
DE69825119 D1	20040826	DE19986025119	19981027
DE69825119 T2	20050811	DE19986025119T	19981027
DK0914866 T3	20041122	DK19980402666T	19981027
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EP0914866 B1	20040721	EP19980402666	19981027
ES2226084 T3	20050316	ES19980402666T	19981027
FR2770418 A1	19990507	FR19970013861	19971104
FR2770418 B1	19991203	FR19970013861	19971104
US6221324 BA	20010424	US19980182649	19981030

Priority:

FR19970013861 19971104 EP19980402666 19981027

Probable Assignee: GRAND PAROISSE SA

Assignee(s): (std): GRAND PAROIESSE S A ; GRANDE PAROISSE SA

Assignee(s): GRAND PAROIESSE SA ; GRAND PAROISSE SA ; GRANDE PAROISSE S A ; GRANDE PAROISSE S A PUTEAUX

Inventor(s): (std): KIEGER ST EACUTE PHANE ; PEUDPIECE JEAN BERNARD ; NEVEU BERNARD ; KIEGER STEPHANE ; FAJULAS FRANCOIS ; DELAHAY GERARD ; COQ BERNARD

Designated states: AT BE CH DE DK ES FR GB IT LI LU NL SE

Title: CATALYST BASED ON FERRIERITE/IRON FOR CATALYTIC REDUCTION OF NITROUS OXIDE CONTENT IN GASES, METHOD FOR OBTAINING SAME AND APPLICATION

Abstract: Source: US2004192538A A catalyst for reducing the nitrous oxide content in gas, which operates at relatively low temperatures, the activity of which is relatively insensitive to the presence of water vapor and which is highly resistant to hydrothermal degradation, is prepared from ferrierite exchanged with iron. Application to the treatment of gases with a low N₂O content, such as gases resulting from plants for the manufacture of nitric acid, and of gases with a high N₂O content, which are emitted during oxidations of organic compounds by nitric acid.

Classifications:

International (IPC 8-9): B01D53/56 B01D53/86 B01J23/58 B01J29/66 B01J29/88 B01L29/65 C01B39/00 C01B39/44 (Advanced/Invention); B01D53/56 (Advanced/Non-invention)

International (IPC 1-7): B01D53/56 B01D53/86 B01J21/00 B01J23/00 B01J23/74 B01J23/745 B01J29/04 B01J29/65 B01J37/02 B01J37/08 B01J37/30 B01J8/00 B01L29/65 C01B21/00 C01B39/44

CPC: Y02P20/153 C01B21/265 B01D53/8628 B01D2257/402 B01J29/88 Y02C20/10

European: B01D53/86F2C B01J29/88 C01B21/26C L01D257/402 Y02C20/10

US: 423/239.1 423/239.2 423/239.200S 423/700 423/700S 502/330 502/338 502/60 502/60P

Family:

Publication number	Publication date	Application number	Application date
AU199917642 A1	19990726	AU19990017642	19981216
AU755129 B2	20021205	AU19990017642	19981216
BG104637 A	20010330	BG20000104637	20000727
BG64728 B1	20060131	BG20000104637	20000727
BRPI9814593 A	20001017	BR1998PI14593	19981216
BRPI9814593 B1	20100309	BR1998PI14593	19981216
CA2315345 AA	20000613	CA19982315345	19981216
CA2315345 C	20080205	CA19982315345	19981216
CN100377764 C	20080402	CN19988012762	19981216
CN1283132 A	20010207	CN19988012762	19981216
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CZ300579 B6	20090617	CZ20000002483	19981216
DZ2694 A1	20030329	DZ19980000304	19981229
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FR2773144 A1	19990702	FR19970016803	19971231
FR2773144 B1	20000204	FR19970016803	19971231
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HR20000512 B1	20090331	HR20000000512	20000731
HU0100604 AB	20010628	HU20010000604	19981216
HU0100604 AC	20100128	HU20010000604	19981216
IL136198 A0	20010520	IL19980136198	19981216
IL136198 A1	20041110	IL20000136198	20000517
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PL194755 B1	20070731	PL19980341287	19981216
PL341287 A1	20010409	PL19980341287	19981216
RO119864 B1	20050530	RO20000000578	19981216
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TNSN98233 A1	20000613	TN1998SN00233	19981225
TR200001841 T2	20001121	TR20000001841T	19981216
US2004192538 AA	20040930	US20030724173	20031201
US6682710 BA	20040127	US20010582622	20010305
US7238641 BB	20070703	US20030724173	20031201
WO9934901 A1	19990715	WO1998FR02747	19981216
ZA9811945 A	19991022	ZA19980011945	19981203

Priority:

FR19970016803 19971231 US19980582622 19981216 US20030724173 20031201
US20010582622 20010305 WO1998FR02747 19981216

Probable Assignee: GPN

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Assignee(s): REGIONAL DES MATARIAUX AVANCES INST ; REGIONAL DES MATARIAUX AVANCES IRMS INST ; INSTITUT REGIONAL DES MATERIAUX AVANCES IRMA ; INSTITUT REGIONAL DES MATARIAUX AVANCES IRMS ; REGIONAL DES MATERIAUX AVANCES INST ; REGIONAL DES MATERIAUX AVANCES (IRMA) INST ; NEVEU BERNARD DECEDE ; GPN ; GRANDE PAROISSE 4 8 COURS MICHELETF 92800 ; GRANDE PAROISSE S A

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Inventor(s): NEVEU LEGAL REPRESENTATIVE GENEVIEVE ; NEVEU BERNARD DECEDE ; CHRISTIAN M HAMON ; NEVEU ; LEGAL REPRESENTATIVE GENEVIEVE ; BERNARD NEVEU FALECIDO ; BERNARD M NEVEU

Agent(s): SPRUSON AND FERGUSON; ASPEN PHARMA PTY LTD; ROBIC; DILIA MARIA RODRIGUEZ DALEMAN; ARKEMA FRANCE; REINHOLD COHN AND PARTNERS

Designated states: AL AM AT AU AZ BA BB BE BF BG BJ BR BY CA CF CG CH CI CM CN CU CY CZ DE DK EE ES FI FR GA GB GE GH GM GN GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LK LR LS LT LU LV MC MD MG MK ML MN MR MW MX NE NL NO NZ PL PT RO RU SD SE SG SI SK SL SN SZ TD TG TJ TM TR TT UA UG US UZ VN YU ZW

Title: Process to prepare a catalyst for exhaust gas purification

Abstract: A catalytic material is prepared by: (A) dry mixing (i) ammonium salts, NH₃/NH₄-zeolites or N-containing compounds, (ii) high silicate zeolite structures having a Si-Al ratio of more than 5, and (iii) copper, iron, cobalt, manganese, palladium, rhodium and/or platinum as active component, in a mill under normal pressure and temperature; (B) tempering at at least 300o C until complete ion exchange has occurred; and then (C) cooling to room temperature.

Classifications:

International (IPC 8-9): B01D53/94 B01J29/06 B01J37/30 (Advanced/Invention);

B01D53/94 B01J29/00 B01J37/00 (Core/Invention)

International (IPC 1-7): B01D53/56 B01D53/86 B01D53/94 B01J103/60 B01J29/06 B01J29/064

B01J29/076 B01J29/20 B01J29/24 B01J29/26 B01J29/42 B01J29/46 B01J29/48 B01J29/72

B01J29/76 B01J29/78 B01J37/30

CPC: B01D53/9413 B01J29/061 Y02C20/10

European: B01D53/94F2C B01J29/06D Y02C20/10

Family:

Publication number	Publication date	Application number	Application date
DE19820515 A1	19991111	DE19981020515	19980508
DE59901983 D1	20020814	DE19995001983	19990319
EP0955080 A1	19991110	EP19990105632	19990319
EP0955080 B1	20020710	EP19990105632	19990319

Priority:

DE19981020515 19980508 DE19995001983 19990319

Probable Assignee: ALSI PENTA ZEOLITHE GMBH

Assignee(s): (std): ALSI PENTA ZEOLITHE GMBH

Inventor(s): (std): SCHWIEGER WILHELM PROF DR ; TISSLER ARNO DR ; TUREK THOMAS DR ; TUREK THOMAS ; TISLER ARNO ; KOEGEL MARKUS ; SCHWIEGER WILHELM ; RAUSCHER MARCUS ; MOENNIG RONNY ; KISNADUTH KESORE

Designated states: DE FR GB IT SE

Title: Apparatus for the catalytic reaction of a fluid in the gas phase

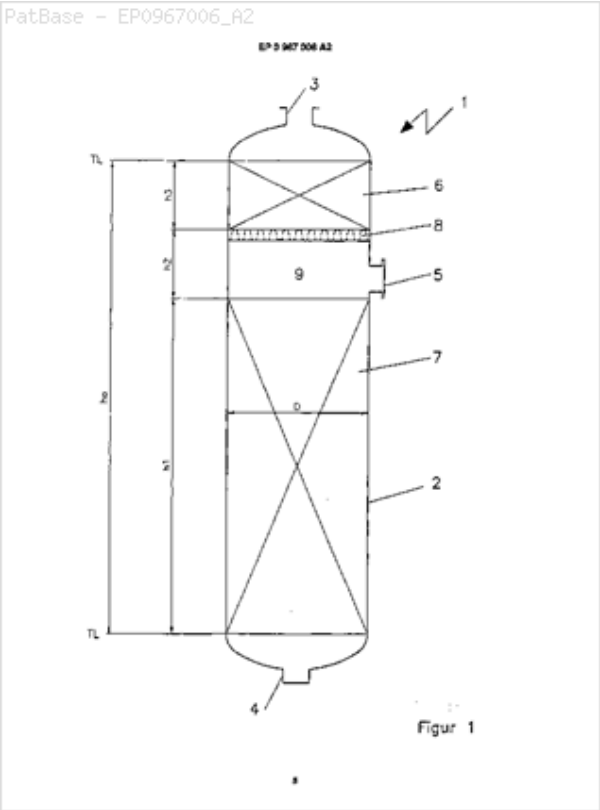
Abstract: The first catalyst bed (6) is smaller in volume than the second catalyst bed (7). Both are cylindrical. The outer cylindrical wall (12) of the first, inner bed forms the cylindrical inner wall of the second. Flow is radial through the first bed and axial through the second. Preferred Features: Mounting dimensions of the beds are coordinated such that filling heights of both in the overall casing (2) are essentially the same. The second catalyst bed is formed for axial flow. At the domed top of the overall casing, there is a supply standpipe (3) to the inner catalyst bed (6). Nearby, a second standpipe (3') bypasses the inner catalyst bed.

Classifications:

International (IPC 8-9): B01J8/04 B01J8/26 C10L3/10 (Advanced/Invention); B01J8/04 B01J8/24 C10L3/00 (Core/Invention) **International (IPC 1-7):** B01J8/04 B01J8/26 C10L3/10

CPC: B01J8/0411 B01J8/0465 B01J8/0492 C10L3/10

European: B01J8/04B2B B01J8/04D3B B01J8/04F C10L3/10



Family:

Publication number	Publication date	Application number	Application date
AT246038 E	20030815	AT19990111405T	19990611
CA2276221 AA	19991227	CA19992276221	19990625
DE19828777 A1	19991230	DE19981028777	19980627
DE59906415 D1	20030904	DE19995006415	19990611
DK0967006 T3	20031103	DK19990111405T	19990611
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EP0967006 A3	20000524	EP19990111405	19990611
EP0967006 B1	20030730	EP19990111405	19990611
ES2201596 T3	20040316	ES19990111405T	19990611
JP2000033258 A2	20000202	JP19990180577	19990625

Priority:

DE19981028777 19980627 DE19995006415 19990611 CA19992276221 19990625

Probable Assignee: UHDE GMBH

Assignee(s): (std): KRUPP UHDE GMBH ; UHDE GMBH

Assignee(s): MARSCH HANS DIETER

Inventor(s): (std): MARSCH HANS DIETER

Agent(s): FETHERSTONHAUGH AND CO

Designated states: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

Title: Installation for treatment of fluids comprising multiple beds of particles supported by a separation grid

Abstract: The installation is an improved version of the classical form and is used in pressure swing adsorption techniques, in particular vacuum pressure swing adsorption(VPSA), for the separation of gases. The installation comprises a treatment vessel (R) containing a primary bed (L1) with particles(P1) of size g1, and a secondary bed (L2) with particles (P2) of size g2. The beds are adjacent and separated by a perforated structure with orifices (OG) for passage of the fluid and of dimension(d) such that g1 is greater than d which is greater than g2. An Independent claim is also included for the treatment process.

Classifications:

International (IPC 8-9): B01D53/04
B01D53/047 B01D53/86 B01D53/88 B01J8/00
B01J8/04 C10K1/20 C10K1/24
C10K3/04 (Advanced/Invention);
B01D53/04 B01D53/047 B01D53/86 B01D53/88
B01J8/00 B01J8/04 C10K1/00
C10K3/00 (Core/Invention)

International (IPC 1-7): B01D171/10
B01D171/20 B01D171/40 B01D179/00
B01D185/10 B01D53/04 B01D53/047
B01D53/86 B01D53/88 B01J8/00 B01J8/04
C10K1/20 C10K1/24 C10K3/04 F25J3/00
F25J3/08

CPC: B01D53/02 B01D53/0431 B01D53/047
B01D53/0476 B01D53/86 B01D53/885
B01D2253/108 B01D2253/304 B01D2259/4148 B01J8/008 B01J8/0085 B01J8/0411 B01J8/0415
B01J2208/00884 C10K1/205 C10K1/24 C10K3/04

European: B01D53/04C6 B01D53/86 B01D53/88B B01J8/00L B01J8/00L2 B01J8/04B2B
B01J8/04B2D C10K1/20B C10K1/24 C10K3/04 L01D253/108 L01D253/304 L01D259/414B4D
L01D53/02 L01D53/047 L01D53/047V L01J208/00L6

Family:

Publication number	Publication date	Application number	Application date
EP1022056 A1	20000726	EP20000400003	20000103
FR2788450 A1	20000721	FR19990000576	19990120
FR2788450 B1	20020426	FR19990000576	19990120

Priority:

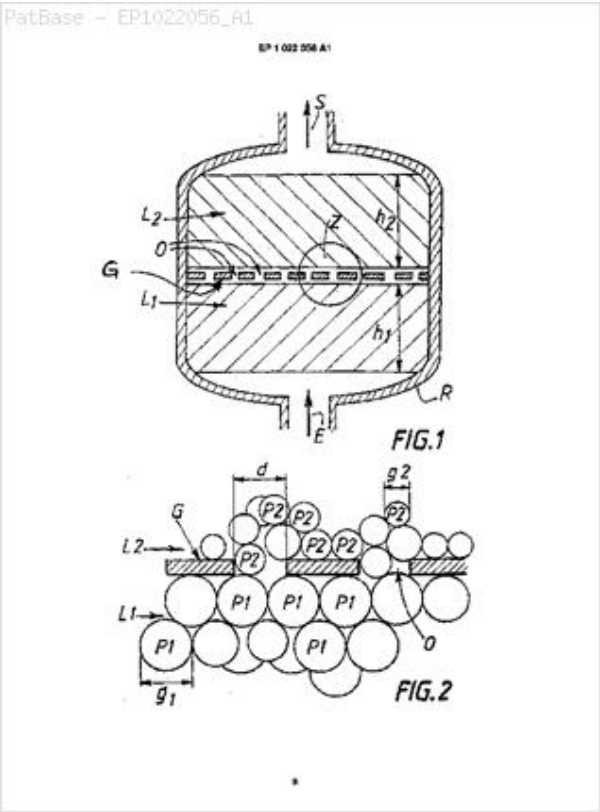
FR19990000576 19990120

Probable Assignee: AIR LIQUIDE

Assignee(s): (std): AIR LIQUIDE

Assignee(s): L AIR LIQUIDE SOC ANONYME POUR ; L AIR LIQUIDE SOC ANONYME POUR L ETUDE ET L EX ; L AIR LIQUIDE SOC ANONYME POUR L ETUDE ET L EXP ; L AIR LIQUIDE SOCIETE ANONYME POUR ; L AIR LIQUIDE SOCIETE ANONYME POUR L ETUDE ET L EXPLOITATION DES PROCEDES GEORGES CLAUDE

Inventor(s): (std): BELOT JEAN MARC ; LABASQUE JACQUES ; MONEREAU CHRISTIAN



Designated states: DE FR GB IT

Title: REMOVAL OF LAUGHING GAS IN NITRIC ACID PRODUCTION

Abstract: Source: US2004105803A A method and device for removal of N₂O in nitric acid production are disclosed. The device is arranged after a heat exchanger, post ammonia burning, before the absorption tower and contains a catalyst, which essentially comprises one or several iron-loaded zeolites.

Classifications:

International (IPC 8-9): B01D53/02

B01D53/56 B01D53/86 B01J29/06 B01J29/072

B01J29/42 B01J29/46 C01B21/22 C01B21/26

C01B21/28 C01B21/38

C01B21/40 (Advanced/Invention);

B01D53/02 B01D53/86 (Advanced/Non-invention)

International (IPC 1-7): B01D53/56

B01D53/86 B01J29/06 B01J29/42 C01B21/26

C01B21/38 C01B21/40

CPC: Y02P20/129 Y02P20/153 C01B21/265

B01D53/8628 B01D2255/20738 B01D2255/50

B01D2255/504 B01D2257/402 B01J29/46

Y02C20/10

European: B01D53/86F2C B01J29/46

C01B21/26C L01D255/207E L01D255/50

L01D255/504 L01D257/402 Y02C20/10

US: 422/168 422/173 422/177 423/235

423/239.2 423/239.200P 502/64 502/66 502/71

502/74 502/77

PatBase - US2004105803_AA

Patent Application Publication Jun. 3, 2004

US 2004/0105803 A1

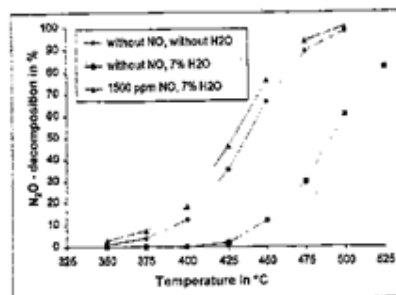


Fig. 1: Decomposition of N₂O over Fe-ZSM-5



Fig. 2: Diagram of inventive N₂O reduction

Family:

Publication number	Publication date	Application number	Application date
AT262485 E	20040415	AT20010900401T	20010109
AU200125141 A5	20010724	AU20010025141	20010109
AU775254 B2	20040722	AU20010025141	20010109
CA2397274 AA	20020712	CA20012397274	20010109
CA2397274 C	20090602	CA20012397274	20010109
CN1199710 C	20050504	CN20018003683	20010109
CN1395542 A	20030205	CN20018003683	20010109
CZ20022434 A3	20030514	CZ20020002434	20010109
CZ301091 B6	20091104	CZ20020002434	20010109
DE10001540 A1	20010802	DE20001001540	20000114
DE10001540 B4	20050623	DE20001001540	20000114
DE50101768 D1	20040429	DE20015001768	20010109
DK1261547 T3	20040705	DK20010900401T	20010109
EP1261547 A1	20021204	EP20010900401	20010109
EP1261547 B1	20040324	EP20010900401	20010109
HU0204236 AB	20030428	HU20020004236	20010109
HU0204236 AC	20040830	HU20020004236	20010109

HU228394 B1	20130328	HU20020004236	20010109
IL150688 A0	20030212	IL20010150688	20010109
IL150688 A1	20051120	IL20010150688	20010109
IN212824 B	20080215	IN2002CH01047	20020708
KR100801451 B1	20080211	KR20027008999	20020711
KR20020081252 A	20021026	KR20027008999	20020711
MX226784 B	20050317	MX2002PA06926	20020712
MX226784 B	20050317	MX2002PA06926	20010109
MXPA02006926 A1	20021129	MX2002PA06926	20010109
NO20023340 A	20020827	NO20020003340	20020711
NO20023340 A0	20020711	NO20020003340	20020711
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PL201158 B1	20090331	PL20010356211	20010109
PL356211 A1	20040628	PL20010356211	20010109
RU2002121782 A	20040127	RU20020121782	20010109
RU2237010 C2	20040927	RU20020121782	20010109
US2004105803 AA	20040603	US20030181120	20030108
US7906091 BB	20110315	US20030181120	20030108
WO0151415 A1	20010719	WO2001EP00158	20010109
ZA200205466 A	20031126	ZA20020005466	20020709

Priority:

DE20001001540 20000114 DE20015001768 20010109 WO2001EP00158 20010109

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Assignee(s): THYSSENKRUPP UHDE GMBH ; UHDE GMBH WAS KRUPP UHDE GMBH.. ; UHDE GMBH DORTMUND

Inventor(s): (std): M SCHWEFER ; MAURER R ; MAURER RAINER ; MAURER RAJNER ; MEINHARD SCHWEFER ; R MAURER ; RAINER MAURER ; SCHWEFER M ; SCHWEFER MEINHARD ; SHVEFER MAJNKHARD ; T TUREK ; THOMAS TUREK ; TUREK T ; TUREK THOMAS ; TUREK TOMAS

Agent(s): DAVIES COLLISON CAVE; FETHERSTONHAUGH AND CO; EITAN PEARL LATZER AND COHEN ZEDEK; GE EHRLICH 1995 LTD; CONNOLLY BOVE LODGE AND HUTZ LLP

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BY BZ CA CF CG CH CI CM CN CR CU CY CZ DE DK DM DZ EE ES FI FR GA GB GD GE GH GM GN GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NE NL NO NZ PL PT RO RU SD SE SG SI SK SL SN SZ TD TG TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW

Title: METHOD FOR REMOVAL OF NOX AND N2O

Abstract: Source: US2003143141A An apparatus and a process are described for reducing the content of NOx and N2O in process gases and waste gases. The apparatus encompasses at least one catalyst bed comprising a catalyst which is substantially composed of one or more iron-loaded zeolites, and two reaction zones, where the first zone (reaction zone I) serves for decomposing N2O and in the second zone (reaction zone II) NOx is reduced, and, located between the first and second zone, there is an apparatus for the introduction of NH3 gas.

Classifications:

International (IPC 8-9): F21V9/06 G02B1/10 G02F1/13357 B01D53/56 B01D53/86 B01J29/06 B01J29/072 B32B5/16 C03C17/02 F21S2/00 F21V3/04 G02B1/00 G02B1/14 G02B5/00 G02B5/02 G02B5/20 G02B5/22 G02B6/00 G02F1/133 G02F1/1335 G03B21/00 H01J61/35 (Advanced/Invention); B01D53/56 F21Y103/00 G02F1/1335 (Advanced/Non-invention); B32B5/16 C03C17/02 F21S2/00 F21V3/00 F21V9/00 G02B1/00 G02B1/10 G02B5/00 G02B5/02 G02B5/20 G02B5/22 G02B6/00 G02F1/13 G03B21/00 H01J61/35 (Core/Invention)

International (IPC 1-7): B01D53/56 B01D53/86 B01J29/06 B32B5/16 F21V3/04 F21V9/06 G02B1/00 G02B5/00 G02B5/02 G02B5/22 G02F1/133 H01J61/35

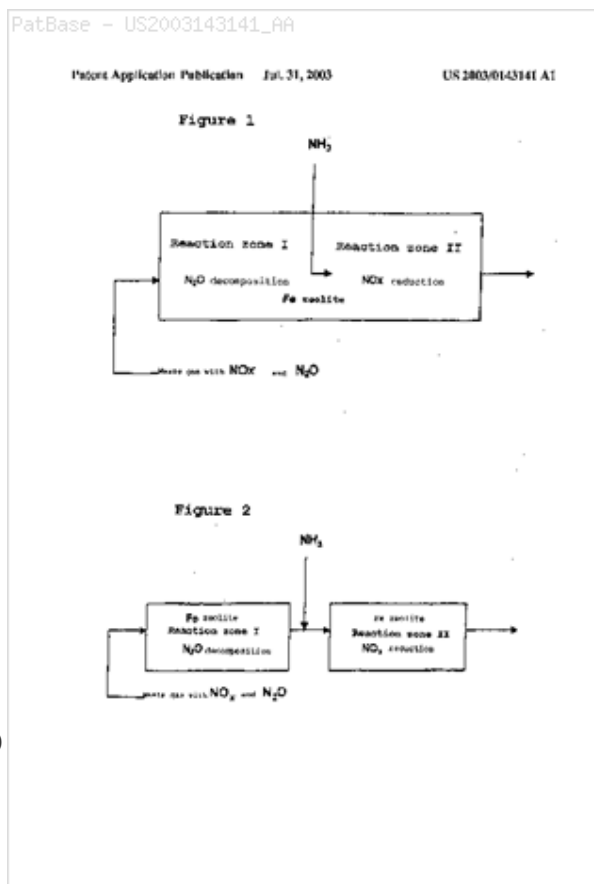
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European: B01D53/86F2C B01D53/86F2D B01J29/072 C03C17/02 F21V9/06 G02B1/00 G02B1/10 G02B5/02D4P G02B5/02U2 G02B5/02U8 G02B5/20V G02F1/133 G02F1/13357 G02F1/13357D G02F1/1336B4 L01D255/207E L01D255/50 L01D255/504 L01D257/402 L01D257/404 S02F201/08U Y02C20/10

US: 349/119 349/119P 422/172 422/172S 422/177 422/177S 423/235 423/235P 423/237 423/237S

Family:

Publication number	Publication date	Application number	Application date
AU200133688 A5	20010724	AU20010033688D	20010109
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Priority:

DE20001001539 20000104 DE20001001539 20000114 FR20050050381 20050209
WO2001EP00156 20010109

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Assignee(s): (std): TUREK THOMAS ; SCHWEFER MEINHARD ; SZONN ERICH ; UHDE GMBH ;
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Assignee(s): SAINT GOBAIN GLASS FRANCE ; SAINT GOBAIN GLASS FRANCE COURBEVOIE ; SAINT GOBAIN GLASS FRANCE SOC ANONYME ; SAINT GOBAIN GLASS FRANCE SOCIETE ANONYME ; SAINT GOBAIN GLASS FRANCE S A ; THYSSENKRUPP UHDE GMBH ; UHDE GMBH DORTMUND ; SAINT GOBAIN GLASS FRANCE SA ; UHDE GMBH WAS KRUPP UHDE GMBH..

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Inventor(s): MICHELE SCHIAVONI ; WATCHI MARIE ISABELLE SCHIAVONI MICHELE ; WATCHI MARIE ISABELLE SCHIAVONI MICHELE MARANDON F ; WATCHI MARIE ISABELLE SCHIAVONI MICHELE MARANDON FRANCK ; TUREX THOMAS ; MARIE ISABELLE WATCHI ; FRANCK MARANDON ; FRANCK MARANDON

Agent(s): DAVIES COLLISON CAVE; FETHERSTONHAUGH AND CO; EITAN PEARL LATZER AND COHEN ZEDEK; OBLON SPIVAK MCCLELLAND MAIER AND NEUSTADT PC

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BY BZ CA CF CG CH CI CM CN CR CU CY CZ DE DK DM DZ EE ES FI FR GA GB GD GE GH GM GN GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NE NL NO NZ PL PT RO RU SD SE SG SI SK SL SN SZ TD TG TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW

Title: METHOD FOR THE REMOVAL OF NOX AND N2O FROM THE RESIDUAL GAS IN NITRIC ACID PRODUCTION

Abstract: Source: US2003143142A A process is described for reducing the NOx concentration and N2O concentration from the residual gas from nitric acid production. The process encompasses the passing of the residual gas leaving the absorption column, prior to entry into the residual gas turbine, through a combination of two stages. The first stage here reduces the NOx content and the second stage the N2O content of the gas, the NOx/N2O ratio prior to entry of the gas into the second stage being in the range from 0.001 to 0.5, and this gas being brought into contact in the second stage with a catalyst which is substantially composed of one or more iron-loaded zeolites.

Classifications:

International (IPC 8-9): B01D53/14
B01D53/34 B01D53/56 B01D53/74 B01D53/86
B01J29/00 B01J29/06 B01J29/072 C01B21/40
C01B21/46 C01B39/02 (Advanced/Invention);
B01D53/56 (Advanced/Non-invention);
B01D53/14 B01D53/34 B01D53/56 B01D53/74
B01D53/86 B01J29/00 C01B21/00
C01B39/00 (Core/Invention)

International (IPC 1-7): B01D53/56
B01D53/86 B01J29/06 C01B21/38 C01B21/40
CPC: Y02P20/153 C01B21/265 B01D53/8628
B01D2255/20738 B01D2255/50 B01D2255/504
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European: B01D53/86F2C B01J29/072
C01B21/26C L01D255/207E L01D255/50
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US: 423/235 423/239.1 423/239.2
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Family:

Publication number	Publication date	Application number	Application date
AT286775 E	20050115	AT20010942327T	20010109
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PatBase - US2003143142_AA

Patent Application Publication Jul. 31, 2003

US 2003/0143142 A1

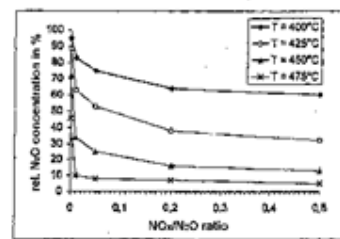


Figure 1

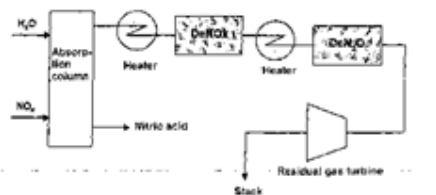


Figure 2

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Priority:

DE20001001541 20000114 DE20015005064 20010109 EP20010942327 20010109
WO2001EP00157 20010109

Probable Assignee: KRUPP UHDE GMBH

Assignee(s): (std): KRUPP UHDE GMBH ; MAURER RAINER ; SCHWEFER MEINHARD ; UHDE GMBH ;
TUREK THOMAS ; KOEGEL MARKUS

Assignee(s): THYSSENKRUPP UHDE GMBH ; KOEGEL MARKUS ; UHDE GMBH WAS KRUPP
UHDE GMBH..

Inventor(s): (std): KOEGEL MARKUS ; KOEGEL MARKUS ; M SCHWEFER ; M SCHWEFER R MAURER T
TUREK ; MARKUS KOEGEL ; MARKUS KOEGEL ; MAURER R ; MAURER RAINER ;
MAURER RAJNER ; MEINHARD SCHWEFER ; R MAURER ; RAINER MAURER ;
SCHWEFER M ; SCHWEFER MEINHARD ; SHVEFER MAJNKHARD ; T TUREK ;
THOMAS TUREK ; TUREK M SCHWEFER R MAURER T ; TUREK T ; TUREK
THOMAS ; TUREK TOMAS ; KEGEL MARKUS

Inventor(s): KEGEL' MARKUS

Agent(s): DAVIES COLLISON CAVE; FETHERSTONHAUGH AND CO; EITAN PEARL LATZER
AND COHEN ZEDEK; CONNOLLY BOVE LODGE AND HUTZ LLP

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BY BZ CA CF CG CH CI CM CN CR
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TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW

Title: CATALYST FOR DECOMPOSING N₂O, ITS USE AND METHOD FOR THE PRODUCTION THEREOF

Abstract: Source: US2003144142A A process is described for the decomposition of N₂O during nitric acid production by bringing the N₂O-containing waste gas leaving the absorption column into contact with a catalyst which comprises at least one oxidic cobalt compound and at least one oxidic magnesium compound, under conditions which permit conversion of N₂O to gaseous nitrogen and oxygen. The content of oxidic cobalt compounds is in the range from 0.1 to 50 percent by weight and the content of oxidic magnesium compounds is in the range from 50 to 99.9 percent by weight, based in each case on the total weight of the catalyst, and at least 30 percent of the Co atoms present in the catalyst are present in the trivalent state. The preparation of the catalyst involves dry mixing of the oxidic cobalt compounds and the oxidic magnesium compounds or of appropriate precursors which are converted into the oxidic compounds by heat treatment, and compacting the mix, with exclusion of water, so that the resultant catalyst has the desired envelope density.

Classifications:

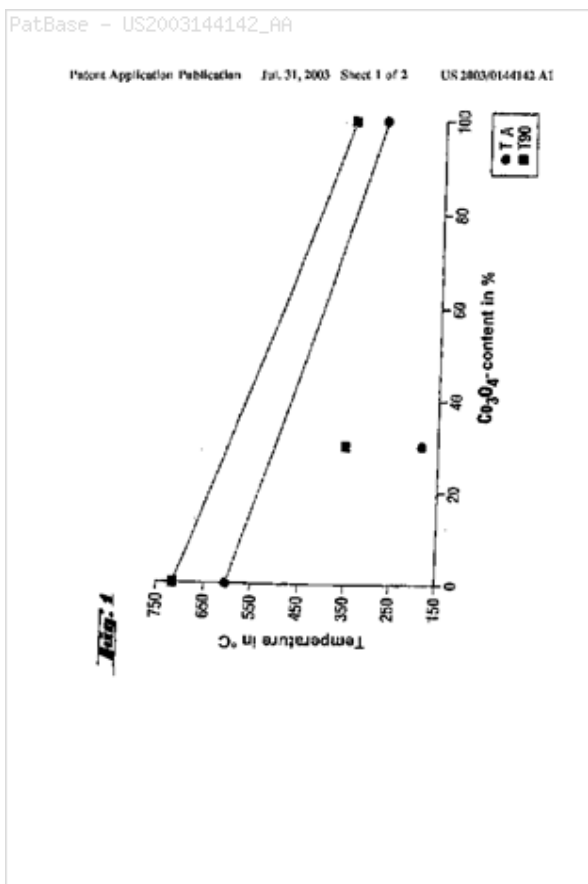
International (IPC 8-9): B01D53/86 B01J23/75 B01J23/78 C01B21/00 (Advanced/Invention); B01D53/02 (Advanced/Non-invention); B01D53/86 B01J23/75 B01J23/76 C01B21/00 (Core/Invention)

International (IPC 1-7): B01D53/02 B01D53/56 B01D53/86 B01J101/10 B01J23/75 B01J23/78 C01B21/00 C01B21/28

CPC: B01D53/8628 B01J23/78 C01B21/265 Y02C20/10

European: B01D53/86F2C B01J23/78 C01B21/26C Y02C20/10

US: 423/239.1 423/239.100S 502/328



Family:

Publication number	Publication date	Application number	Application date
AT311240 E	20051215	AT20010903711T	20010207
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CA2399466 AA	20020809	CA20012399466	20010207
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Priority:

DE20001006103 20000211 DE20015008238 20010207 WO2001EP01307 20010207

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Assignee(s): (std): KRUPP UHDE GMBH ; SCHWEFER MEINHARD ; UHDE GMBH

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Inventor(s): (std): M SCHWEFER ; MEINHARD SCHWEFER ; SCHWEFER M ; SCHWEFER MEINHARD ; SHVEFER MAJNKHARD

Agent(s): DAVIES COLLISON CAVE; FETHERSTONHAUGH AND CO; EITAN PEARL LATZER AND COHEN ZEDEK; PEARL COHEN ZEDEK LATZER BARATZ; CONNOLLY BOVE LODGE AND HUTZ LLP

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BY BZ CA CF CG CH CI CM CN CR CU CY CZ DE DK DM DZ EE ES FI FR GA GB GD GE GH GM GN GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NE NL NO NZ PL PT RO RU SD SE SG SI SK SL SN SZ TD TG TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW

Title: CATALYST FOR DECOMPOSING NITROUS OXIDE AND METHOD FOR PERFORMING PROCESSES COMPRISING FORMATION OF NITROUS OXIDE

Abstract: Source: US2004023796A The present invention relates to a catalyst comprising 0.1-10 mol percent $\text{Co}_3\text{-xMxO}_4$, where M is Fe or Al and $x=0\text{-}2$, on a cerium oxide support for decomposition of N_2O in gases containing NO . The catalyst may also contain 0.01-2 weight percent ZrO_2 . The invention further comprises a method for performing a process comprising formation of N_2O . The N_2O containing gas is brought in contact with a catalyst comprising 0.1-10 mol percent $\text{Co}_3\text{-xMxO}_4$, where M is Fe or Al and $x=0\text{-}2$, on a cerium oxide support, at 250-1000 degrees centigrade. The method may comprise that ammonia is oxidized in presence of an oxidation catalyst and that the thereby formed gas mixture is brought in contact with the catalyst comprising the cobalt component on cerium oxide support at a temperature of 500-1000 degrees centigrade.

Classifications:

International (IPC 8-9): B01D53/56

B01D53/58 B01D53/86 B01D53/94 B01J21/00

B01J23/00 B01J23/10 B01J23/56 B01J23/745

B01J23/75 B01J23/83

B01J32/00 (Advanced/Invention)

International (IPC 1-7): B01D53/56

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B01J32/00 C01B21/22

CPC: Y10S502/524 B01J23/83 B01D53/8628

B01D53/9427 B01D2255/2065

B01D2255/20746 B01J23/002 B01J23/75

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European: B01D53/86F2C B01D53/94F2C6 B01J23/00B B01J23/75 B01J23/83 L01D255/206N

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502/338 502/355 502/524

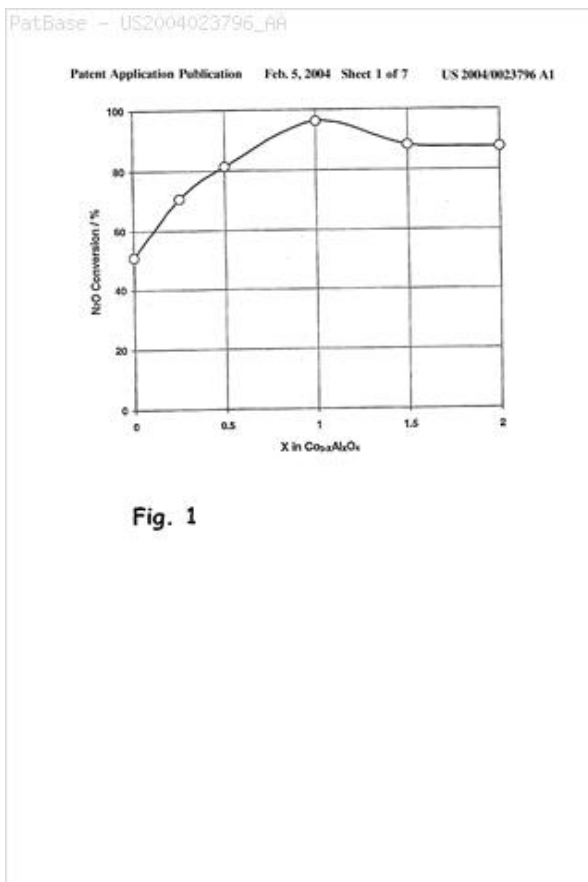


Fig. 1

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HR20021004 A2	20050228	HR20020001004	20021213
HR20021004 B1	20100331	HR20020001004	20021213
HU0301430 AB	20030828	HU20030001430	20010704
HU228480 B1	20130328	HU20030001430	20010704
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NO313494 B1	20021014	NO20000003467	20000705
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PL359369 A1	20040823	PL20010359369	20010704
RO120889 B1	20060929	RO20020001660	20010704
RU2003103290 A	20040810	RU20030103290	20010704
RU2237514 C1	20041010	RU20030103290	20010704
UA75362 C2	20030415	UA20030200998	20010704
US2004023796 AA	20040205	US20030312993	20030321
US2010098611 AA	20100422	US20090588722	20091026
US2011110835 A9	20110512	US20090588722	20091026
US7700519 BB	20100420	US20010312993	20010704
US8992870 BB	20150331	US20090588722	20091026
WO0202230 A1	20020110	WO2001NO00283	20010704

Priority:

NO20000003467 20000705 WO2001NO00283 20010704 US20030312993 20030321
US20090588722 20091026

Probable Assignee: YARA INTERNATIONAL ASA

Assignee(s): (std): JARA INT ASA ; JARA INTERNAT ASA ; NIRISEN OEYSTEIN ; NIRISEN OYSTEIN ;
NORSK HYDRO AS ; SCHOFFEL KLAUS ; WALLER DAVID ; OEVREBOE DAG ;
YARA INT ASA ; YARA INTERNAT ASA ; OVREBO DAG ; YARA INT ASA OSLO ;
YARA INTERNAT ASA OSLO

Assignee(s): YARA INTERNATIONAL ASA ; YARA INTERNATIONAL ASA OSLO ; YARA INT ;
SCHOFFEL KLAUS ; NORSK HYDRO ASA ; JARA INTERNATIONAL ASA

Inventor(s): (std): EHVREBE DAG ; IVREB DAG ; NIRISEN EHJSTEJN ; NIRISEN IYSTEIN ; NIRISEN
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YSTEIN ; OEVREBOE DAG ; OVREBO DAG ; SCHEFEL K ; SCHOFFEL KLAUS ;
SHEFFEL KLAUS ; UOLLER DEHVID ; VREB DAG ; WALLER D ; WALLER DAVID ;
WALLER O NIRISEN K SCHEFEL D ; SCHOFFEL KLAUS ; FFEL KLAUS SCH

Inventor(s): DAG OEVREBOE ; DAG IVREB degrees ; KLAUS SCHOFFEL ; KLAUS SCH 247
FFEL ; SHEFFEL' KLAUS ; OYSTEIN NIRISEN ; OEYSTEIN NIRISEN ; O NIRISEN ;
O NIRISEN K SCHEFEL D WALLER ; IYSTEIN NIRISEN ; K SCHEFEL ; KLAUS SCH
AND 247 FFEL ; KLAUS SCHOFFEL ; D WALLER ; DAG OEVVREBOE ; DAG
OVREBO ; DAVID WALLER

Agent(s): WENDEROTH LIND AND PONACK LLP

Designated states: AE AL AM AT AU AZ BA BB BE BF BG BJ BR BY CA CF CG CH CI CM CN CR CU CY
CZ DE DK DM EE ES FI FR GA GB GD GE GH GM GN GR GW HR HU ID IE IL IN
IS IT JP KE KG KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR
MW MX MZ NE NL NO NZ PL PT RO RU SD SE SG SI SK SL SN SZ TD TG TJ TM
TR TT TZ UA UG US UZ VN YU ZA ZW

Title: COMPOSITION AND COMPOUND BASED ON SALT (S) OF METALS AND OF ACID EXHIBITING A SULFONYL GROUP CARRIED BY A PERHALOGENATED CARBON AND THEIR USE AS LEWIS ACID

Abstract: Source: US2004116733A The present invention relates to a bismuth-type promoter and its use as a Lewis acid catalyst for acylation reactions of aromatic compounds. The promoter corresponds to the formula MY_{mu}-qx_iq, where M represents a mu-valent and at least trivalent element in the cationic form, preferably known to give Lewis acids, where Y is a monovalent anion or a monovalent anionic functional group, where x_i<-> represents an anion or an anionic functional group carrying a sulfonyl functional group carried by a perhalogenated atom, preferably a perfluorinated atom, more preferably a perfluoromethylene (-CF₂-); and where q is an integer advantageously chosen within the closed range (comprising the limits) ranging from 1 to (mu-1) (that is to say, 1 or 2 when mu is 3). The present application also relates to processes for the preparation of the promoter.

Classifications:

International (IPC 8-9): B01J31/02 B01J31/12 C07B41/06 C07C309/06 C07C311/03 C07C315/00 C07C45/46 C07C45/51 C07C47/54 C07F5/00 C07F7/22 C07F9/90 C07F9/94 (Advanced/Invention); C07C317/14 (Advanced/Non-invention); B01J31/02 B01J31/12 C07B41/00 C07C309/00 C07C311/00 C07C315/00 C07C45/00 C07C47/52 C07F5/00 C07F7/00 C07F9/00 (Core/Invention); C07C317/00 (Core/Non-invention)

International (IPC 1-7): B01J27/02 B01J27/06 B01J27/125 B01J27/128 B01J31/02 B01J31/12 B01J31/36 C07B41/06 C07B45/04 C07C309/00 C07C309/06 C07C311/03 C07C311/48 C07C45/46 C07C47/54 C07F19/00 C07F5/00 C07F7/00 C07F7/22 C07F9/90 C07F9/94

CPC: B01J31/0224 B01J31/0227 B01J31/0237 B01J31/0252 B01J31/0271 B01J2231/342 B01J2231/4205 C07B41/06 C07C45/46 C07C45/511 C07C309/06 C07C315/00 B01J31/0225 B01J31/0247 B01J2231/341 B01J2231/4277 B01J31/0222

European: B01J31/02C10 B01J31/02C10B B01J31/02C8 B01J31/02C8B B01J31/02E2D B01J31/02E2L2 B01J31/02E2M B01J31/02E6 C07B41/06 C07C309/06 C07C315/00 C07C45/46 C07C45/51B L01J231/34B2 L01J231/42B

US: 562/78 562/78P

Family:

Publication number	Publication date	Application number	Application date
AU2001276447 AA	20020130	AU20010276447	20010713
CA2409421 AA	20021115	CA20012409421	20010713
CN1441702 A	20030910	CN20018012528	20010713
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FR2811592 A1	20020118	FR20000009213	20000713
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FR2818980 A1	20020705	FR20000017310	20001229
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FR2827195 A1	20030117	FR20010009213	20010711
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JP2004503379 T2	20040205	JP20020511882T	20010713
US2004116733 AA	20040617	US20010903635	20010713
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Priority:

FR20000009213 20000713 US20000217923P 20000713 FR20000017310 20001229
WO2001FR02289 20010713 FR20010009213 20010711 US20010903635 20010713

Probable Assignee: RHODIA CHIMIE

Assignee(s): (std): DUBAC JACQUES ; LE ROUX CHRISTOPHE ; MAESTRO JEAN PIERRE ; MAZIERES STEPHANE ; PEYRONNEAU MAGALI ; RHONE POULENC CHIMIE ; ROQUES

NICOLAS ; REPICHET SIGRID ; VIDAL THIERRY ; PICOT ALEXANDRE ; RHODIA
CHIMIE ; BERNARD JEAN MARIE

Assignee(s): CHIMIE RHODIA ; N A

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MAESTRO JEAN PIERRE ; PEYRONNEAU MAGALI ; PICOT ALEXANDRE ;
REPICHET SIGRID ; ROQUES N ; ROQUES NICOLAS ; ROUX C LE ; ROUX
CHRISTOPHE LE ; MAZIERES STEPHANE ; VIDAL THIERRY

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STEPHANE MAZIERES ; THIERRY VIDAL ; MAGALI PEYRONNEAU ; C LE ROUX ;
CHRISTOPHE LE ROUX ; J DUBAC ; JACQUES DUBAC ; JEAN MARIE BERNARD ;
JEAN PIERRE MAESTRO

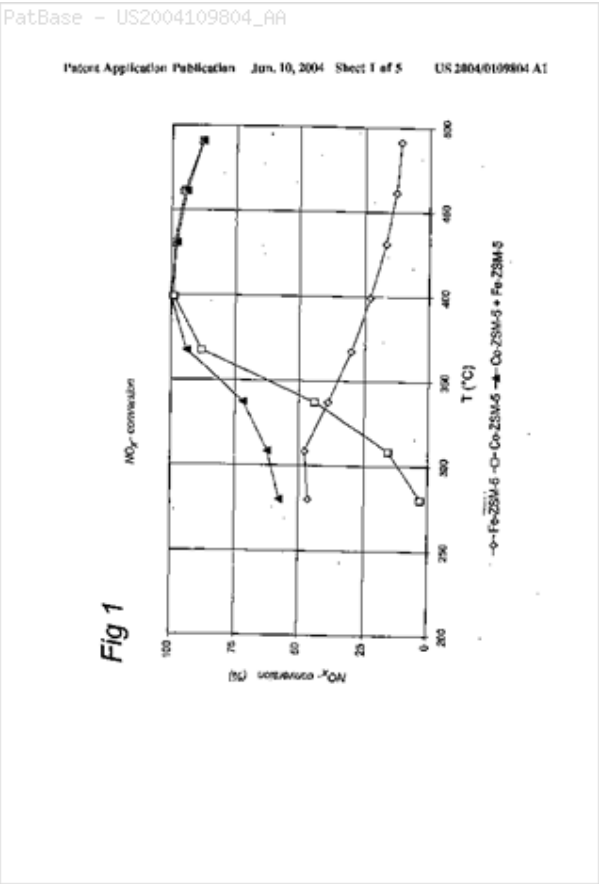
Agent(s): ROBIC; TSURUTA JUNICHI; NISHIYAMA MASAYA; HIGUCHI SOTOJI; ISHIDA
TAKASHI

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BY BZ CA CF CG CH CI CM CN
CO CR CU CY CZ DE DK DM DZ EC EE ES FI FR GA GB GD GE GH GM GN GR GW
HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LI LK LR LS LT LU LV MA MC MD
MG MK ML MN MR MW MX MZ NE NL NO NZ PL PT RO RU SD SE SG SI SK SL SN
SZ TD TG TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW

Title: METHOD FOR THE SIMULTANEOUS REMOVAL OF NITROGEN OXIDES AND LAUGHING GAS FROM A GAS STREAM CONTAINING NITROGEN OXIDES AND LAUGHING GAS

Abstract: Source: US2004109804A A method for the simultaneous removal of nitrogen oxides and laughing gas stream containing nitrogen oxides and laughing gas, wherein a first catalyst that contains cobalt and, as support, an inorganic metal oxide, and a second catalyst that contains iron and, as support, an inorganic metal oxide, are used. In particular the method is carried out in such a way that (a) the gas stream containing nitrogen oxides and laughing gas is reacted with a reducing gas, the reducing gas comprising a saturated hydrocarbon, in the presence of the first catalyst and (b) the gaseous product from step (a) is reacted with a reducing gas, the reducing gas comprising a saturated hydrocarbon, in presence of a second catalyst. The catalyst system can be used for the treatment of off-gases from a nitric acid plant.

Classifications:
International (IPC 8-9): B01D53/86 B01J8/00 C01B21/00 (Advanced/Invention); B01D53/86 B01J8/00 C01B21/00 (Core/Invention)
International (IPC 1-7): B01D53/56 B01D53/86 B01J23/74 B01J29/46
CPC: B01D53/8628 B01D2257/402 Y02C20/10
European: B01D53/86F2C L01D257/402 Y02C20/10
US: 423/235 423/239.1 423/239.2 502/338



Family:

Publication number	Publication date	Application number	Application date
AT280631 E	20041115	AT20020700886T	20020131
AU2002233821 AA	20020812	AU20020233821	20020131
BG108046 A	20050430	BG20030108046	20030731
DE60201730 D1	20041202	DE20026001730	20020131
DE60201730 T2	20050310	DE20026001730T	20020131
DK1355725 T3	20050207	DK20020700886T	20020131
EP1355725 A1	20031029	EP20020700886	20020131
EP1355725 B1	20041027	EP20020700886	20020131
ES2231665 T3	20050516	ES20020700886T	20020131
NL1017245 C2	20020801	NL20011017245	20010131
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NO20033231 A0	20030717	NO20030003231	20030717
PL363860 A1	20041129	PL20020363860	20020131
PT1355725 T	20050131	PT20020700886T	20020131
US2004109804 AA	20040610	US20040470756	20040107
US7011801 BB	20060314	US20020470756	20020131

Priority:

NL20011017245 20010131 WO2002NL00075 20020131

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Agent(s): YOUNG AND THOMPSON

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NE NL NO NZ OM PH PL PT RO RU SD SE SG SI SK SL SN SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VN YU ZA ZM ZW

Title: SELECTIVE CATALYTIC REDUCTION OF N2O

Abstract: Source: US2002127163A A gas stream containing nitrous oxide and ammonia is contacted with a catalyst composition containing a zeolite. N2O is reduced to N2 and H2O at low temperatures in a highly efficient manner. Ammonia-mediated reduction of nitrous oxide can be effectuated from gas streams having N2O concentrations as low as 1 percent. The gas stream may also contact a catalytic composition selective for the reduction of NOx. In this way, N2O and Nx treatment may be effectuated in a single process stream.

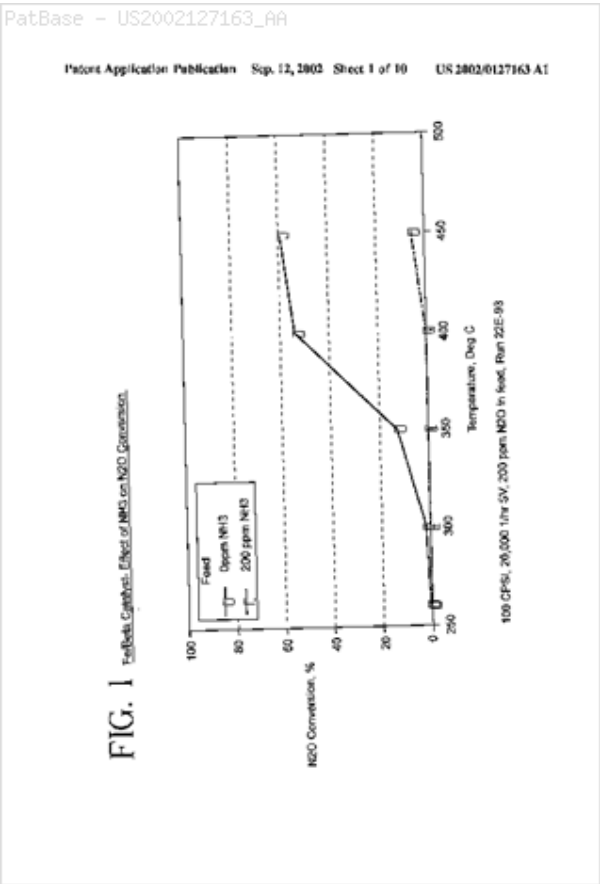
Classifications:

International (IPC 8-9): B01D53/56
B01D53/86 B01D53/94 B01J29/06 B01J29/072
B01J29/76 B01J37/30 (Advanced/Invention);
B01D53/86 (Advanced/Non-invention);
B01D53/56 B01D53/86 B01D53/94 B01J29/00
B01J37/00 (Core/Invention)

International (IPC 1-7): B01D53/56
B01D53/86 B01D53/94 B01J29/76 B01J37/30
CPC: B01D53/8625 B01D2257/402 Y02C20/10

European: B01D53/86F2 L01D257/402
Y02C20/10

US: 423/235 423/239.1 423/239.2 502/64
502/66 502/66P



Family:

Publication number	Publication date	Application number	Application date
AU2002242317 AA	20020924	AU20020242317	20020301
EP1385602 A2	20040204	EP20020707952	20020301
JP2004524962 T2	20040819	JP20020571200T	20020301
KR20040010608 A	20040131	KR20037011922	20030909
US2002127163 AA	20020912	US20010804328	20010312
US2009011927 AA	20090108	US20080208569	20080911
US7438878 BB	20081021	US20010804328	20010312
US7951742 BB	20110531	US20080208569	20080911
WO02072245 A2	20020919	WO2002US06463	20020301
WO02072245 A3	20021212	WO2002US06463	20020301

Priority:

US20010804328 20010312 WO2002US06463 20020301 US20080208569 20080911

Probable Assignee: BASF CORP

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Inventor(s): MICHAEL DURILLA ; PASCALINE H TRAN ; STANLEY S MACK ; JAMES M CHEN

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Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NE NL NO NZ PL PT RO RU SD SE SG SI SK SL SN SZ TD TG TJ TM TR TT TZ UA UG UZ VN YU ZA ZM ZW

Title: METHOD OF REDUCING THE N2O CONTENT OF GASES AND SELECTED CATALYSTS

Abstract: Source: US2004110627A Method of reducing the N2O content of gases and selected catalysts A method of reducing the N2O content in gases is described. A selected zeolite catalyst is used in the method. This catalyst is present in the H form and/or contains exchanged iron and is characterized by the presence of nonlattice aluminum in addition to the lattice aluminum in a molar ratio of from 1:2 to 20:1. The method can be used in nitric acid production for reducing the N2O content of process gases or offgases.

Classifications:

International (IPC 8-9): B01D53/56 B01D53/86 B01J29/04 B01J29/064 B01J29/072 B01J29/46 B01J29/68 C01B21/38 C01G23/00 (Advanced/Invention);

B01D53/86 (Advanced/Non-invention);

B01D53/56 B01D53/86 B01J29/00 C01B21/00 C01G23/00 (Core/Invention)

International (IPC 1-7): B01D53/86 B01J29/00 B01J29/04 B01J29/072 B01J29/46 C01B21/38 C01G23/00

CPC: Y02P20/153 B01J29/46 B01D53/8628 B01D2257/402 B01J2229/16 B01J2229/36 C01B21/265 Y02C20/10

European: B01D53/86F2C B01J29/46 C01B21/26C L01D257/402 L01J229/16 L01J229/36 Y02C20/10

US: 423/239.1 423/239.2 423/239.200S 423/7 423/70 423/70S 502/60 502/60P 502/74 502/77 502/86

Family:

Publication number	Publication date	Application number	Application date
AT327028 E	20060615	AT20020727362T	20020306
AU2002257618 AA	20020924	AU20020257618	20020306
AU2002257618 BB	20070315	AU20020257618	20020306
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CN1582196 A	20050216	CN20028006454	20020306
DE10112396 A1	20021002	DE20011012396	20010313
DE50206895 D1	20060629	DE20025006895	20020306
DK1372827 T3	20060918	DK20020727362T	20020306
EA005469 B1	20050224	EA20030001000	20020306
EA005788 B1	20050630	EA20040000791	20020306
EP1372827 A2	20040102	EP20020727362	20020306
EP1372827 B1	20060524	EP20020727362	20020306
ES2265501 T3	20070216	ES20020727362T	20020306
IN01436CN2003 A	20051125	IN2003CN01436	20030910
IN223659 B	20081121	IN2003CN01436	20030912
KR100858010 B1	20080911	KR20037011806	20030908
KR20040010605 A	20040131	KR20037011806	20030908
NO20033886 A	20030902	NO20030003886	20030902
NO20033886 A0	20030902	NO20030003886	20030902
NO336143 B1	20150526	NO20030003886	20030902
PT1372827 T	20060929	PT20020727362T	20020306
US2004110627 AA	20040610	US20040469439	20040114
US7259121 BB	20070821	US20040469439	20040114
WO02072244 A2	20020919	WO2002EP02436	20020306
WO02072244 A3	20021212	WO2002EP02436	20020306
ZA200306770 A	20040503	ZA20030006770	20030829

Priority:

DE20011012396 20010313

WO2002EP02436 20020306

DE20025006895 20020306

Probable Assignee: UHDE GMBH

Assignee(s): (std): GEHLEN CARSTEN ; KRUPP UHDE GMBH ; MOTZ JOACHIM ; SCHWEFER MEINHARD ; UHDE GMBH

Assignee(s): THYSSENKRUPP UHDE GMBH

Inventor(s): (std): CARSTEN GEHLEN ; CARSTEN SCHWEFER MEINHARD MOTZ ; GEHLEN CARSTEN ; GENLEN CARSTEN ; JOACHIM MOTZ ; MEINHARD SCHWEFER ; MOTZ JOACHIM ; SCHWEFER MEINHARD ; SIEFERT ROLF

Inventor(s): SCHWEFER MEINHARD MOTZ JOACHIM GEHLEN CARSTEN

Agent(s): DAVIES COLLISON CAVE; CONNOLLY BOVE LODGE AND HUTZ LLP

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NE NL NO NZ OM PH PL PT RO RU SD SE SG SI SK SL SN SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VN YU ZA ZM ZW

Title: METHOD FOR REDUCING THE CONTENT OF N₂O AND NO_x IN GASES

Abstract: Source: US2004109805A A method of reducing the content of NO_x and N₂O in gases using a gaseous reducing agent which is used in the amount required for reduction of the NO_x in the presence of one or more iron-laden zeolites which have no pores or channels having a width of greater than or equal to 7 Angstrom in the crystal structure and at temperatures of less than 450 degrees centigrade in the reaction zone is described. In this method, the flow rate of the gas mixture and/or the amount of catalyst is/are selected so that the desired degree of decomposition of N₂O is achieved. The method can be used, in particular, in nitric acid production, in power stations and in gas turbines.

Classifications:

International (IPC 8-9): B01D53/02 B01D53/56 B01D53/86 B01J29/46

C01B21/38 (Advanced/Invention);

B01D53/86 (Advanced/Non-invention)

International (IPC 1-7): B01D53/56 B01D53/60 B01D53/86 C01B21/38

CPC: Y02P20/153 B01J29/46 B01D53/8625 B01D53/8628 B01D2255/504 B01D2257/402

B01D2257/404 B01D2259/401 B01J2229/16 C01B21/265 Y02C20/10

European: B01D53/86F2 B01D53/86F2C B01J29/28R B01J29/46 C01B21/26C L01D255/504

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US: 423/213.5 423/213.500P 423/239.2 423/239.200P 423/239.200S

Family:

Publication number	Publication date	Application number	Application date
AT308371 E	20051115	AT20020727363T	20020306
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Priority:

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WO2002EP02438 20020306

US20070740608 20070426

DE20025004774 20020306

Probable Assignee: UHDE GMBH

Assignee(s): (std): KRUPP UHDE GMBH ; MOTZ JOACHIM ; SCHWEFER MEINHARD ; SIEFERT ROLF
; UHDE GMBH ; UHDE GMHH

Assignee(s): THYSSENKRUPP UHDE GMBH

Inventor(s): (std): JOACHIM MOTZ ; MEINHARD SCHWEFER ; MOTZ JOACHIM ; MOTZ L ; ROLF
SIEFERT ; SCHWEFER M ; SCHWEFER MEINHARD ; SIEFERT M SCHWEFER L
MOTZ R ; SIEFERT R ; SIEFERT ROLF

Inventor(s): R SIEFERT ; L MOTZ ; M SCHWEFER ; M SCHWEFER L MOTZ R SIEFERT

Agent(s): DAVIES COLLISON CAVE; CONNOLLY BOVE LODGE AND HUTZ LLP

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BY BZ CA CF CG CH CI CM CN
CO CR CU CY CZ DE DK DM DZ EC EE ES FI FR GA GB GD GE GH GM GN GQ GR
GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LI LK LR LS LT LU LV MA MC
MD MG MK ML MN MR MW MX MZ NE NL NO NZ OM PH PL PT RO RU SD SE SG
SI SK SL SN SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VN YU ZA ZM ZW

Title: DENITRIFICATION METHOD

Abstract: Source: US2005244320A A process for reducing the content of NO_x and N₂O in gases, in particular in process gases and offgases, which comprises the measures:

- a) addition of at least one nitrogen-containing reducing agent to the NO_x - and N₂O-containing gas in at least the amount required for complete reduction of the NO_x,
- b) addition of a hydrocarbon, of carbon monoxide, of hydrogen or of a mixture of one or more of these gases to the NO_x - and N₂O-containing gas for the reduction of the N₂O and c) introduction of the gas mixture into at least one reaction zone at temperatures of up to 450 degrees centigrade which contains one or more iron-laden zeolites, is described. The process can be used, in particular, in nitric acid production, for offgases from power stations or for gas turbines.

Classifications:

International (IPC 8-9): B01D53/56 B01D53/86 B01D53/94 B01J29/76 (Advanced/Invention);

B01D53/56 B01D53/86 (Advanced/Non-invention);

B01D (Subclass/Non-invention)

International (IPC 1-7): B01D53/56 B01D53/58 B01D53/86 B01D53/94 B01J29/76

CPC: B01D53/8625 B01D2251/202 B01D2251/204 B01D2251/208 B01D2255/20738 B01D2255/50 B01D2257/402 B01D2257/404 Y02C20/10

European: B01D53/86F2 L01D251/202 L01D251/204 L01D251/208 L01D255/207E L01D255/50

L01D257/402 L01D257/404 Y02C20/10

US: 423/239.1 423/239.2 423/239.200P

Family:

Publication number	Publication date	Application number	Application date
AT328656 E	20060615	AT20030712069T	20030321
AU2003216865 AA	20031020	AU20030216865	20030321
AU2003216865 BB	20080410	AU20030216865	20030321
BRPI0309140 A	20050201	BR2003PI09140	20030321
BRPI0309140 B1	20120626	BR2003PI09140	20030321
CA2481772 AA	20041007	CA20032481772	20030321
CA2481772 C	20101102	CA20032481772	20030321
CN100337724 C	20070919	CN20038007969	20030321
CN1646209 A	20050727	CN20038007969	20030321
DE10215605 A1	20031030	DE20021015605	20020409
DE50303698 D1	20060720	DE20035003698	20030321
DK1497014 T3	20061009	DK20030712069T	20030321
EP1497014 A1	20050119	EP20030712069	20030321
EP1497014 B1	20060607	EP20030712069	20030321
ES2266790 T3	20070301	ES20030712069T	20030321
IL164234 A0	20051218	IL20040164234	20040922
IL164234 A1	20080413	IL20040164234	20040922
IN02229CN2004 A	20070907	IN2004CN02229	20041005
IN241146 B	20100625	IN2004CN02229	20041005
JP2005527350 T2	20050915	JP20030581879T	20030321
JP4313213 B2	20090812	JP20030581879T	20030321
KR100910932 B1	20090806	KR20047016069	20041008
KR20040108710 A	20041224	KR20047016069	20041008
MX247872 B	20070806	MX2004PA09881	20041008
MX247872 B	20070806	MX2004PA09881	20030321
MXPA04009881 A1	20041207	MX2004PA09881	20030321
NO20044858 A	20041220	NO20040004858	20041108
NO331909 B1	20120430	NO20040004858	20041108

PL204071 B1	20091231	PL20030371791	20030321
PL371791 A1	20050627	PL20030371791	20030321
PT1497014 T	20061031	PT20030712069T	20030321
RU2004132835 A	20050420	RU20040132835	20030321
RU2320400 C2	20080327	RU20040132835	20030321
US2005244320 AA	20051103	US20050510490	20050425
US7393512 BB	20080701	US20050510490	20050425
WO03084646 A1	20031016	WO2003EP02958	20030321
ZA200407581 A	20060628	ZA20040007581	20040921

Priority:

DE20021015605 20020409 DE20035003698 20030321 WO2003EP02958 20030321
WO2003EP02958 20041008

Probable Assignee: UHDE GMBH

Assignee(s): (std): GROVES MICHAEL ; SCHWEFER MEINHARD ; UDE GMBKH ; UHDE GMBH

Assignee(s): THYSSENKRUPP UHDE GMBH

Inventor(s): (std): GROVES MICHAEL ; MEINHARD SCHWEFER ; MICHAEL GROVES ; MICHAEL SCHWEFER MEINHARD GROV ; SCHWEFER MEINHARD ; SHVEFER MAJNKHARD ; GROUVZ MAJKL

Inventor(s): SCHWEFER MEINHARD GROVES MICHAEL

Agent(s): DAVIES COLLISON CAVE; FETHERSTONHAUGH AND CO; EITAN PEARL LATZER AND COHEN ZEDEK; CONNOLLY BOVE LODGE AND HUTZ LLP

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NE NI NL NO NZ OM PH PL PT RO RU SC SD SE SG SI SK SL SN SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

Title: METHOD FOR ELIMINATING N₂O DURING NITRIC ACID PRODUCTION

Abstract: The invention concerns a method for eliminating N₂O during nitric acid production, which consists in using as catalysts three-dimensional bodies coated or filled with materials with catalytic effect.

Classifications:

International (IPC 8-9): B01D53/86 B01J19/24 B01J23/80 B01J35/04 B01J35/06 C01B21/26 C01B21/28 (Advanced/Invention);

B01D53/86 B01J19/24 B01J23/76 B01J35/00 C01B21/00 (Core/Invention)

International (IPC 1-7): B01D53/86 B01J19/24 B01J35/04 B01J35/06 C01B21/26 C01B21/28 C01B21/40

CPC: Y02P20/153 B01J19/2495 B01D53/8631 B01D2257/402 B01J23/80 B01J35/04 B01J35/06 C01B21/265 C01B21/28 Y02C20/10

European: B01D53/86F2D B01J19/24R6 B01J23/80 B01J35/04 B01J35/06 C01B21/26C C01B21/28 L01D257/402 Y02C20/10

Family:

Publication number	Publication date	Application number	Application date
DE10350819 A1	20050609	DE20031050819	20031029
WO05042403 A2	20050512	WO2004EP11992	20041023
WO05042403 A3	20060302	WO2004EP11992	20041023

Priority:

DE20031050819 20031029

Probable Assignee: BASF AG

Assignee(s): (std): HELLEMANS KAREL ; KNEUPER HEINZ JOSEF ; SCHACHNER HELMUT ; SPIEGEL ANDREAS ; BASF AG

Assignee(s): BASF AKTIENGESSELLSCHAFT

Inventor(s): (std): HELLEMANS KAREL ; KNEUPER HEINZ JOSEF ; SCHACHNER HELMUT ; SPIEGEL ANDREAS

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NA NE NI NL NO NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

Title: METHOD FOR REDUCING THE NITROGEN OXIDE CONCENTRATION IN GASES

Abstract: Source: US2008241034A The method comprises passing an N₂O- and NO_x -containing gas over a sequence of two catalyst beds, adding reducing agents for NO_x and for N₂O between the catalyst beds in such an amount that not only NO_x but also a predetermined proportion of N₂O is reduced. The reaction conditions are set so that the N₂O content of the gas is reduced by not more than 95 percent, based on the N₂O content at the entrance of the first catalyst bed, by decomposition to nitrogen and oxygen in the first catalyst bed and that not only chemical reduction of NO_x but also chemical reduction of N₂O occurs in the second catalyst bed so that the N₂O content of the gas is reduced by at least 50 percent, based on the N₂O content at the entrance of the second catalyst bed.

Classifications:

International (IPC 8-9): B01D53/56 B01D53/86 B01D53/90 B01D53/94 B01J29/064 B01J29/072 B01J29/14 B01J29/24 B01J29/46 B01J29/68 B01J29/76 (Advanced/Invention);
B01D53/56 B01D53/94 (Advanced/Non-invention);
B01D53/56 B01D53/86 B01D53/94 B01J23/42 B01J29/00 (Core/Invention);
B01D (Subclass/Invention)

International (IPC 1-7): B01D26/56 B01D53/86 B01D53/94 B01J 23/42

CP: B01D53/8628 B01D2251/202 B01D2251/204 B01D2251/2062 B01D2251/208

B01D2255/20738 B01D2255/50 B01D2257/402 B01D2257/404 Y02C20/10

European: B01D53/86F2C L01D251/202 L01D251/204 L01D251/206A L01D251/208 L01D255/207E L01D255/50 L01D257/402 L01D257/404 Y02C20/10

US: 423/239.1 423/239.100S 423/239.2 423/239.200P

Family:

Publication number	Publication date	Application number	Application date
AU2006246034 AA	20061116	AU20060246034	20060427
AU2006246034 BB	20110217	AU20060246034	20060427
CA2607329 AA	20071101	CA20062607329	20060427
CA2607329 C	20130205	CA20062607329	20060427
CN101175551 A	20080507	CN200680016079	20060427
CN105056757 A	20151118	CN201510449448	20060427
DE102005022650 A1	20061116	DE200510022650	20050511
EA014430 B1	20101230	EA20070002466	20060427
EA200702466 A1	20080428	EA20070002466	20060427
EP1881867 A1	20080130	EP20060742714	20060427
HK1117451 A3	20090116	HK20080108516	20080801
IN05081CN2007 A	20080530	IN2007CN05081	20071112
IN266640 B	20150529	IN2007CN05081	20071112
JP2008540094 T2	20081120	JP20080510443T	20060427
JP5356018 B2	20131204	JP20080510443T	20060427
KR101315093 B1	20131008	KR20077026164	20060427
KR20080011188 A	20080131	KR20077026164	20060427
MX2007014097 A1	20080207	MX20070014097	20060427
TH84126 A	20070419	TH20061002082	20060509
US2008241034 AA	20081002	US20060913450	20060427
US7744839 BB	20100629	US20060913450	20060427
WO06119870 A1	20061116	WO2006EP03895	20060427
ZA200708465 A	20081029	ZA20070008465	20071003

Priority:

DE200510022650 20050511

WO2006EP03895 20060427

CN200680016079 20060427

Probable Assignee: UHDE GMBH

Assignee(s): (std): GROVES MICHAEL ; SCHWEFER MEINHARD ; SIEFERT ROLF ; UHDE GMBH

Assignee(s): THYSSENKRUPP UHDE GMBH

Inventor(s): (std): GROVES MICHAEL ; MEINHARD SCHWEFER ; MICHAEL GROVES ; ROLF SIEFERT ; SCHWEFER MEINHARD ; SIEBERT ROLF ; SIEFERT ROLF

Agent(s): DAVIES COLLISON CAVE; FETHERSTONHAUGH AND CO; ACKERMANN
JOACHIM; CONNOLLY BOVE LODGE AND HUTZ LLP

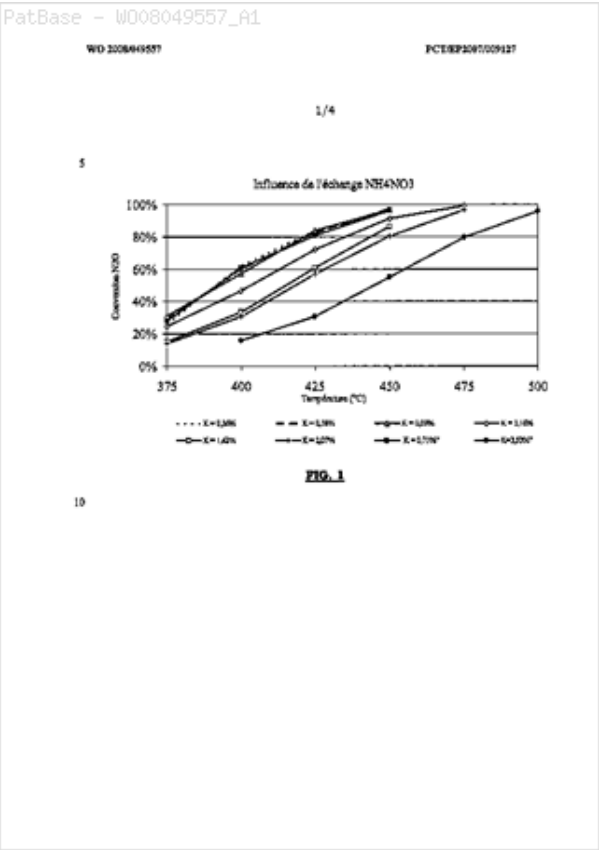
Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM
CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN
GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LC LI LK LR LS LT
LU LV LY MA MC MD MG MK ML MN MR MW MX MZ NA NE NG NI NL NO NZ OM
PG PH PL PT RO RU SC SD SE SG SI SK SL SM SN SY SZ TD TG TJ TM TN TR TT
TZ UA UG US UZ VC VN YU ZA ZM ZW

Title: CATALYST CONTAINING A FERRIERITE/IRON TYPE ZEOLITE FOR DECOMPOSING N₂O AND NOX AND N₂O CATALYTIC REDUCTION

Abstract: The invention relates to a catalyst for decomposing N₂O, containing an agglomerated ferrierite-type zeolite having an initial form Na, K that is ammonium-substituted and eventually iron-substituted, wherein the weight percent of iron ranges from 0.5 to 1.2 percent relative to the weight of zeolite while the weight percent of sodium and the weight percent of potassium are lower than 0.1 relative to the zeolite, said iron salt having an impurity level lower than 0.5 percent essentially consisting of other metallic salts. The invention also relates to a method for making said catalyst, to a method for treating gaseous effluents containing N₂O, and to the use of said catalyst in the treatment of gaseous effluents containing N₂O from tails of nitric acid workshops or workshops for the nitric oxidation of organic compounds in organic-chemistry synthesis.

Classifications:

International (IPC 8-9): B01D53/86 B01J29/00 B01J29/68 (Advanced/Invention); B01D53/86 B01J29/00 (Core/Invention)
International (IPC 1-7): B01D53/56 B01D53/86 B01J29/65 B01J37/00
CPC: B01D53/8628 B01D2255/20738 B01D2255/50 B01D2257/402 B01D2257/404 B01J29/68 B01J37/30 B01J2229/42 Y02C20/10
European: B01D53/86F2C B01J29/68 L01D255/207E L01D255/50 L01D257/402 L01D257/404 L01J229/42 L01J37/30 Y02C20/10



Family:

Publication number	Publication date	Application number	Application date
AR063525 AA	20090128	AR2007P104685	20071023
AT550088 E	20120415	AT20060022215T	20061024
CL2007003051 A1	20080530	CL20070003051	20071024
EP1918016 A1	20080507	EP20060022215	20061024
EP1918016 B1	20120321	EP20060022215	20061024
ES2383453 T3	20120621	ES20060022215T	20061024
PT1918016 T	20120604	PT20060022215T	20061024
WO08049557 A1	20080502	WO2007EP09127	20071022

Priority:

EP20060022215 20061024

Probable Assignee: GPN

Assignee(s): (std): GPN ; GPN INST REGIONAL DES MATERIAU ; IRMA ; LE GUERN DELPHINE ; LE LAMER OLIVIER ; NAVASCUES LUC ; NSTITUT REGIONAL DES MATERIAUX AVANCES IRMA ; HAMON CHRISTIAN

Assignee(s): INSTITUT REGIONAL DES MATERIAUX AVANCES ; INSTITUT REGIONAL DES MATERIAUX AVANCES IRMA ; REGIONAL DES MATERIAUX AVANCES INST ;

REGIONAL DES MATERIAUX AVANCES IRMA INST ; GPN INST REGIONAL DES
MATERIAUX AVANCES ; GPN INSTITUT REGIONAL DES MATERIAUX AVANCES

Inventor(s): (std): CHRISTIAN HAMON OLIVIER LE LAM ; HAMON CHRISTIAN ; LE GUERN
DELPHINE ; LE LAMER OLIVIER ; NAVASCUES LUC

Inventor(s): OLIVIER LE LAMER ; CHRISTIAN HAMON ; LUC NAVASCUES ; CHRISTIAN
HAMON OLIVIER LE LAMER DELPHINE LE GUERN Y LUC NAVASCUES ;
CHRISTIAN HAMON OLIVIER LE LAMER DELPHINE LE... ; DELPHINE LE GUERN

Agent(s): VILLASECA; KILLIS ANDREAS; LEYDER FRANCIS

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI
CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH
GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA
LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ
NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM
SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Title: CATALST PRODUCTION METHOD THEREFOR AND USE THEREOF FOR DECOMPOSING N₂O

Abstract: Source: US2010209325A Catalysts for the decomposition of N₂O into nitrogen and oxygen in the gas phase, which comprises a porous support composed of polycrystalline or vitreous inorganic material, a cerium oxide functional layer applied thereto and a layer of oxidic cobalt-containing material applied thereto are described. The catalysts can be used, in particular, as secondary or tertiary catalysts in nitric acid plants.

Classifications:

International (IPC 8-9): B01D53/56 B01D53/86 B01D53/94 B01J21/02 B01J21/08 B01J23/02 B01J23/10 B01J23/58 B01J23/75 B01J23/76 B01J23/83 B01J23/86 B01J35/10

B01J37/02 (Advanced/Invention);

B01D53/86 B01J23/83 B01J35/10 B01J37/02 (Advanced/Non-invention);

B01D53/56 B01D53/86 B01D53/94 B01J21/00 B01J23/02 B01J23/10 B01J23/76 B01J35/00

B01J37/00 (Core/Invention);

B01D B01J (Subclass/Invention)

International (IPC 1-7): B01J23/86

CPC: B01J23/86 B01D53/8628 B01D2255/206 B01D2255/20746 B01D2257/402 B01J35/10

B01J35/1014 B01J35/1038 B01J37/0205 B01J37/0244 Y02C20/10

European: B01D53/86F2C B01J23/86 B01J35/10 B01J37/02M4 L01D255/206 L01D255/207F

L01D257/402 L01J35/10A4 L01J35/10B2 L01J37/02B4 Y02C20/10

US: 423/239.1 423/239.100P 423/583 423/594.16 423/594.19 423/594.6 502/251 502/251S

502/304 502/304S 502/325 502/328 502/340

Family:

Publication number	Publication date	Application number	Application date
AU2008286480 AA	20090219	AU20080286480	20080711
AU2008286480 BB	20120412	AU20080286480	20080711
BRPI0816155 A2	20150218	BR2008PI16155	20080711
CA2696028 AA	20090219	CA20082696028	20080711
CL2008002400 A1	20081219	CL20080002400	20080814
CN101795765 A	20100804	CN200880102960	20080711
CN101795765 B	20130807	CN200880102960	20080711
DE102007038711 A1	20090219	DE200710038711	20070814
DK2178638 T3	20130527	DK20080784724T	20080711
EG25952 A	20121112	EG20100020231	20100210
EP2178638 A1	20100428	EP20080784724	20080711
EP2178638 B1	20130227	EP20080784724	20080711
ES2409214 T3	20130625	ES20080784724T	20080711
IN00826CN2010 A	20100806	IN2010CN00826	20100211
JP2010535622 T2	20101125	JP20100520435T	20080711
KR101511075 B1	20150410	KR20107003294	20080711
KR20100041835 A	20100422	KR20107003294	20080711
MX2010001708 A1	20100311	MX20100001708	20080711
PT2178638 T	20130517	PT20080784724T	20080711
RU2010109428 A	20110920	RU20100109428	20080711
RU2456074 C2	20120720	RU20100109428	20080711
US2010209325 AA	20100819	US20080733147	20080811
US8871673 BB	20141028	US20080733147	20080711
WO09021586 A1	20090219	WO2008EP05685	20080711
ZA201000305 A	20100929	ZA20100000305	20100115

Priority:

DE200710038711 20070814

WO2008EP05685 20080711

WO2008EP05685 20080811

Probable Assignee: THYSSENKRUPP UHDE GMBH

Assignee(s): (std): BURCKHARDT WOLFGANG ; FROELICH FRANK ; SCHWEFER MEINHARD ; SEIFERT FRANK ; UHDE GMBH ; SIEFERT ROLF ; THYSSENKRUPP UHDE GMBH ; UDE GMBKH

Inventor(s): (std): FRANK FROELICH ; FRANK SEIFERT ; FRELIKH FRANK ; FROELICH FRANK ; MEINHARD SCHWEFER ; ROLF SIEFERT ; SCHWEFER MEINHARD ; SEIFERT FRANK ; SEIFFERT FRANK ; SHVEFER MAJNKHARD ; SIEFERT ROLF ; WOLFGANG BURCKHARDT ; ZAJFERT FRANK ; ZIFERT ROL F ; BURCKHARDT WOLFGANG ; BURKKHARDT VOL FGANG

Inventor(s): BURKKHARDT VOL'FGANG ; ZIFERT ROL'F

Agent(s): DAVIES COLLISON CAVE; ACKERMANN JOACHIM; Ackermann Joachim; LEHMANN MARIA ISABEL; FERRELLS PLLC; MICHAEL W

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Title: MIXED OXIDES CATALYSTS

Abstract: Source: US2010111795A Mixed oxides catalysts usable in particular in the full oxidation to CO₂ and H₂O of volatile organic compounds (VOC), in the decomposition of nitrogen protoxide to nitrogen and oxygen and the combustion of CO, H₂ and CH₄ off gases in fuel cells, comprising oxides of manganese, copper and La₂O₃ and/or Nd₂O₃, having a percentage composition by weight expressed as MnO, CuO, La₂O₃ and/or Nd₂O₃ respectively of 35-56 percent, 19-31 percent and 20-37 percent. The oxides are supported on inert porous inorganic oxides, preferably alumina.

Classifications:

International (IPC 8-9): B01D53/44 B01D53/56 B01D53/62 B01D53/72 B01D53/86 B01D53/94 B01J21/12 B01J23/00 B01J23/10 B01J23/34 B01J23/72 B01J23/83 B01J23/84 B01J23/89 B01J23/89 B01J29/04 F23C10/01 F23D14/18 F23G7/07 (Advanced/Invention);

B01J35/10 B01J37/02 (Advanced/Non-invention);

B01D53/46 B01D53/56 B01D53/62 B01D53/86 B01D53/94 B01J21/00 B01J23/10 B01J23/16 B01J23/72 B01J23/76 B01J23/89 B01J29/00 F23C10/01 F23D14/18 F23G7/06 (Core/Invention); B01J35/00 B01J37/00 (Core/Non-invention)

CPC: B01D53/865 B01D53/8668 B01D2255/206 B01D2255/2073 B01D2255/20761 B01D2255/9207 B01D2257/108 B01D2257/402 B01D2257/502 B01D2257/7022 B01D2257/708 B01D2258/0208 B01J23/002 B01J23/8892 B01J35/1019 B01J35/1038 B01J37/0244 B01J523/00 Y02C20/10 Y02E20/12

European: B01D53/86K2C B01D53/86P B01J23/00B B01J23/889B B01J37/02M4 L01D255/206 L01D255/207D L01D255/207H L01D255/920S L01D257/108 L01D257/402 L01D257/502 L01D257/702A L01D257/708 L01D258/02A L01J35/10A6 L01J35/10B2 L01J523/00 Y02C20/10 Y02E20/12

US: 423/239.1 423/239.100P 423/599 423/604 423/605 431/7 431/7S 502/241 502/241S 502/302 502/302S 502/303 502/303S 502/324 502/345

Family:

Publication number	Publication date	Application number	Application date
BRPI0904292 A2	20100914	BR2009PI04292	20091030
CA2684262 AA	20100505	CA20092684262	20091103
CN101733126 A	20100616	CN200910211847	20091105
EP2184105 A1	20100512	EP20080168381	20081105
JP2010110755 A2	20100520	JP20090247832	20091028
KR20100050429 A	20100513	KR20090106111	20091104
SG161191 A1	20100527	SG20090072018	20091028
US2010111795 AA	20100506	US20090612188	20091104
US8815767 BB	20140826	US20090612188	20091104

Priority:

EP20080168381 20081105

Probable Assignee: SUED CHEMIE CATALYSTS ITALIA SRL

Assignee(s): (std): CREMONA ALBERTO ; ESTENFELDER MARVIN ; SUD CHEMIE CATALYSTS ITALIA S R L ; SUD CHEMIE CATALYSTS ITALIA SR ; SUED CHEMIE CATALYSTS ITALIA S ; VOGNA EDOARDO ; SUED CHEMIE CATALYSTS ITALIA

Assignee(s): SUED CHEMIE CATALYSTS ITALIA S R L ; SUD CHEMIE CATALYSTS ITALIA SRL ; SUED CHEMIE CATALYSTS ITALIA SRL

Inventor(s): (std): CREMONA ALBERTO ; ESTENFELDER MARVIN ; VOGNA EDOARDO ; MARVIN ESTENFELDER ; EDOARDO VOGNA ; ALBERTO CREMONA

Agent(s): MODIANO MICAELA NADIA; SCULLY SCOTT MURPHY AND PRESSER 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 NO PL PT RO RS SE SI SK TR

Title: SYSTEM AND METHOD FOR CONTROLLING AND REDUCING NOX EMISSIONS

Abstract: Source: US7914747B A system is provided for reducing NO_x emission. The system includes a gas production source configured to produce a gas stream comprising NO_x, and an oxidation catalyst positioned downstream of the gas production source. The oxidation catalyst is configured to oxidize NO gas molecules in the gas stream to yield higher order N_xO_y molecules. A removal system is positioned downstream of the oxidation catalyst and is configured to remove higher order N_xO_y molecules from the gas stream by solvent absorption or reaction.

The system further includes a secondary NO_x trimming system positioned downstream of the oxidation catalyst, wherein the secondary NO_x trimming system is configured to inject a reactant into the gas stream, the reactant configured to react with NO_x molecules present in the gas stream.

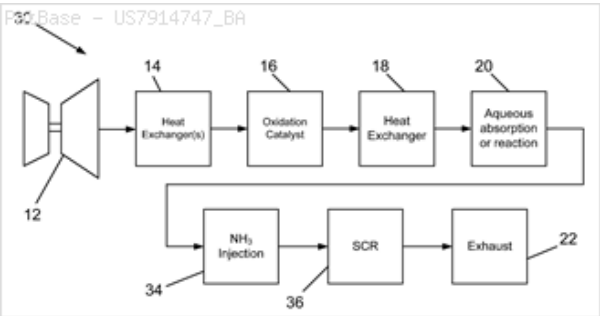
Classifications:

International (IPC 8-9): B01D50/00 B01D53/14 B01D53/56 B01D53/86 B01D53/90 B01D53/94 B01J23/42 F23J15/00 (Advanced/Invention)

CPC: B01D53/1456 B01D53/56 B01D53/8625 B01D2251/104 B01D2251/2062 B01D2257/302 B01D2257/404 B01D2258/0283 Y02C20/10

European: B01D53/14H B01D53/56 B01D53/86F2 L01D251/104 L01D251/206A L01D257/302 L01D257/404 L01D258/02K Y02C20/10

US: 422/170 423/210 423/239.1



Family:

Publication number	Publication date	Application number	Application date
CN102233239 A	20111109	CN201110113814	20110421
EP2380652 A1	20111026	EP20110162748	20110415
JP2011230121 A2	20111117	JP20110090647	20110415
US7914747 BA	20110329	US20100766593	20100423

Priority:

US20100766593 20100423

Probable Assignee: GENERAL ELECTRIC CO

Assignee(s): (std): GEN ELECTRIC

Assignee(s): GENERAL ELECTRIC CO ; GENERAL ELECTRIC COMPANY

Inventor(s): (std): KRAEMER GILBERT OTTO ; OTTO KRAEMER GILBERT

Agent(s): ILLINGWORTH LAW WILLIAM ILLINGWORTH; SUTHERLAND ASBILL AND BRENNAN LLP

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 ME MK MT NL NO PL PT RO RS SE SI SK SM TR

Title: METHOD FOR REMOVING N₂O AND NO_x FROM THE NITRIC ACID PRODUCTION PROCESS, AND AN INSTALLATION SUITABLE FOR SAME

Abstract: Source: US2013336872A The invention relates to a process and apparatus for preparing nitric acid by catalytic oxidation of NH₃ by means of oxygen and subsequent reaction of the NO_x formed with an absorption medium in an absorption tower, which comprises a catalyst bed for N₂O decomposition arranged in the process gas downstream of the catalytic NH₃ oxidation and upstream of the absorption tower in the flow direction and a catalyst bed for NO_x reduction and effecting a further decrease in the amount of N₂O arranged in the tailgas downstream of the absorption tower in the flow direction, wherein the amount of N₂O removed in the catalyst bed for N₂O removal arranged in the process gas is not more than that which results in an N₂O content of >100 ppmv and a molar N₂O/NO_x ratio of >0.25 before entry of the tailgas into the catalyst bed for NO_x reduction and the catalyst bed for NO_x reduction and effecting a further decrease in the amount of N₂O arranged in the tailgas contains at least one iron-loaded zeolite catalyst and NH₃ is added to the tailgas before entry into the catalyst bed in such an amount that an NO_x concentration of <40 ppmv results at the outlet from the catalyst bed and the operating parameters are selected in such a way that an N₂O concentration of <200 ppmv results.

Classifications:

International (IPC 8-9): B01D53/86 C01B21/26 C01B21/38 C01B21/40 (Advanced/Invention)

CPC: B01D53/8628 B01D53/869 B01D2255/2065 B01D2255/20738 B01D2255/20746 B01D2255/20761 B01D2255/502 B01D2255/504 B01D2257/402 B01D2257/404 B01J29/072 B01J29/46 B01J29/68 B01J29/7615 B01J2229/42 C01B21/265 Y02C20/10 C01B21/40 C01B21/38 Y02P20/153

European: B01D53/86F2C B01D53/86V C01B21/26C C01B21/38 L01D255/206N L01D255/207E L01D255/207F L01D255/207H L01D255/502 L01D255/504 L01D257/402 L01D257/404

US: 422/162 423/392

Family:

Publication number	Publication date	Application number	Application date
AU2012219988 AA	20120830	AU20120219988	20120214
AU2012219988 AH	20130926	AU20120219988	20120214
AU2012219988 BB	20160107	AU20120219988	20120214
CA2825669 AA	20130725	CA20122825669	20120214
CL2013002413 A1	20140328	CL20130002413	20130821
CN103415463 A	20131127	CN201280009723	20120214
CN103415463 B	20150916	CN201280009723	20120214
DE102011011881 A1	20120823	DE201110011881	201110221
DE502012001687 D1	20150108	DE201250001687T	20120214
DK2678270 T3	20150223	DK20120706771T	20120214
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IN05758CN2013 A	20140905	IN2013CN05758	20130718
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RU2013142913 A	20150410	RU20130142913	20120214
US2013336872 AA	20131219	US20120984921	20120214
WO12113516 A1	20120830	WO2012EP00642	20120214

Priority:

DE201110011881 20110221

WO2012EP00642 20120214

EP20120706771 20120214

Probable Assignee: THYSSENKRUPP UHDE GMBH

Assignee(s): (std): GROVES MICHAEL ; RUTHARDT KLAUS ; THYSSENKRUPP UHDE GMBH ; SIEFERT ROLF ; SCHWEFER MEINHARD ; THYSENKRUPP UHDE GMBH ; FUCHS JUERGEN ; THYSSENKRUPP IND SOLUTIONS AG

Assignee(s): FUCHS JURGEN ; THYSSENKRUPP INDUSTRIAL SOLUTIONS AG

Inventor(s): (std): FUCHS JUERGEN ; FUCHS JURGEN ; GROVES MICHAEL ; RUTHARDT KLAUS ; SCHWEFER MEINHARD ; SIEFERT ROLF

Inventor(s): ERFINDER WIRD SPAETER GENANNT WERDEN

Agent(s): DAVIES COLLISON CAVE; BERESKIN AND PARR LLP SENCRL SRL; ALESSANDRI AND COMPANIA; ACKERMANN JOACHIM; WOLFF FELIX; CARPINTERO MARIO

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Title: DEVICE AND METHOD FOR ELIMINATING NOX AND N2O

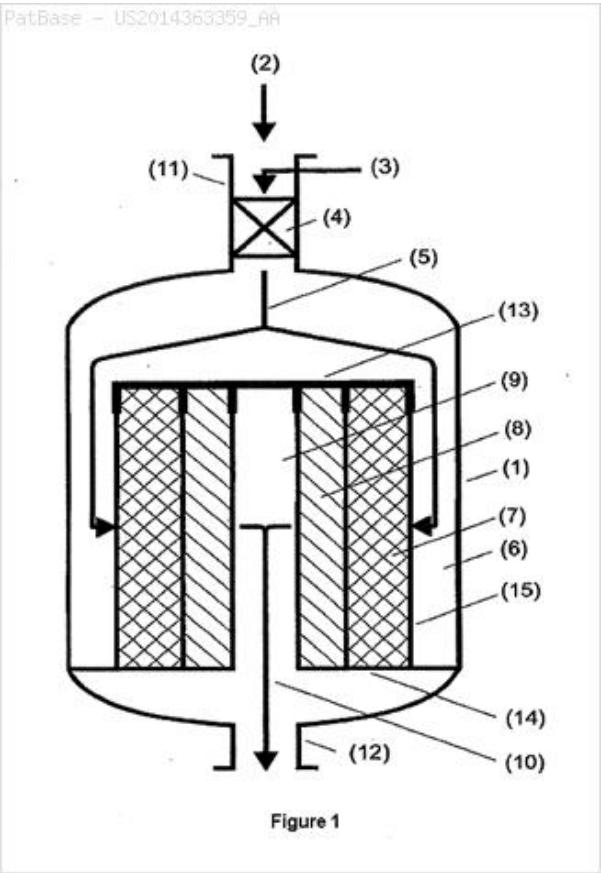
Abstract: Source: US2014363359A A device and a method are described for lowering the content of NOx and N2O in gases. The device comprises: A) a container (1) and, arranged therein, B) two reaction steps connected one after the other for removing NOx (DeNOx stage) by reducing NOx with a nitrogen-containing reducing agent and, downstream thereof, for removing N2O by catalytic decomposition of N2O to N2 and O2 (DeN2O stage), which each consist of one or more catalyst beds (7, 8) and through which the gas that is to be purified flows, wherein C) the at least one catalyst bed of the DeNOx stage (7) contains a catalyst for reducing NOx with nitrogen-containing reducing agents which catalyst contains zeolites doped with transition metals, including the lanthanides, D) the at least one catalyst bed of the DeN2O-stage (8) contains a catalyst for decomposing N2O into N2 and O2, which contains one or more catalytically active compounds of elements selected from groups 5 to 11 of the Periodic Table of the Elements with the exception of iron-doped zeolites, and E), upstream of the DeNOx stage (7), a device for introducing a nitrogen-containing reducing agent into the stream of the NOx and N2O-containing gas is provided. The combination used according to the invention of catalysts permits a very simple structure and a very economic operation of the reactor.

Classifications:

International (IPC 8-9): B01D53/56
B01D53/86 (Advanced/Invention)
CPC: B01D53/869 B01D53/8631 B01D53/8628 B01D53/8696 B01D2255/1025 B01D2255/20738 B01D2255/20746 B01D2255/20753 B01D2255/20761 B01D2255/50 B01D2255/9202 B01D2257/402 B01D2257/404 Y02C20/10
US: 422/170 423/239.2

Family:

Publication number	Publication date	Application number	Application date
AU2012351148 AA	20130620	AU20120351148	20121208
CA2859443 AA	20140616	CA20122859443	20121208
CL2014001575 A1	20141003	CL20140001575	20140613
CN104220147 A	20141217	CN201280069841	20121208
CO7061063 A2	20140919	CO20140132579	20140618
DE102011121188 A1	20130620	DE201110121188	20111216
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IN05610DN2014 A	20150327	IN2014DN05610	20140707
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MX2014007061 A1	20150820	MX20140007061	20121208
PE20912014 A1	20141212	PE20140000974	20121208
US2014363359 AA	20141211	US20120365949	20121208



US9238196 BB	20160119	US20120365949	20121208
WO13087181 A2	20130620	WO2012EP05082	20121208
WO13087181 A3	20130822	WO2012EP05082	20121208

Priority:

DE201110121188 20111216 WO2012EP05082 20121208

Probable Assignee: THYSSEN KRUPP UHDE GMBH

Assignee(s): (std): PINNOW STEFAN ; SCHWEFER MEINHARD ; SIEFERT ROLF ; THYSSEN KRUPP UHDE GMBH ; THYSSENKRUPP UHDE GMBH ; THYSSENKRUPP IND SOLUTIONS AG

Assignee(s): THYSSENKRUPP INDUSTRIAL SOLUTIONS AGTHYSSENKRUPP ALLEE 145143ESSENDE ; THYSSENKRUPP INDUSTRIAL SOLUTIONS AG

Inventor(s): (std): PINNOW STEFAN ; SCHWEFER MEINHARD ; SCHWEFER MEINHARD DR ; SIEFERT ROLF ; SIEFERT ROLF DR

Inventor(s): SIEFERT ROLFDE ; STEFAN PINNOW ; SCHWEFER MEINHARDDE ; PINNOW STEFANDE ; ROLF SIEFERT ; MEINHARD SCHWEFER

Agent(s): SHELSTON IP; SHELSTON IP PTY LTD; BORDEN LADNER GERVAIS LLP; ESTUDIO CAREY LTDA; THYSSENKRUPP NORTH AMERICA INC; ACKERMANN JOACHIM

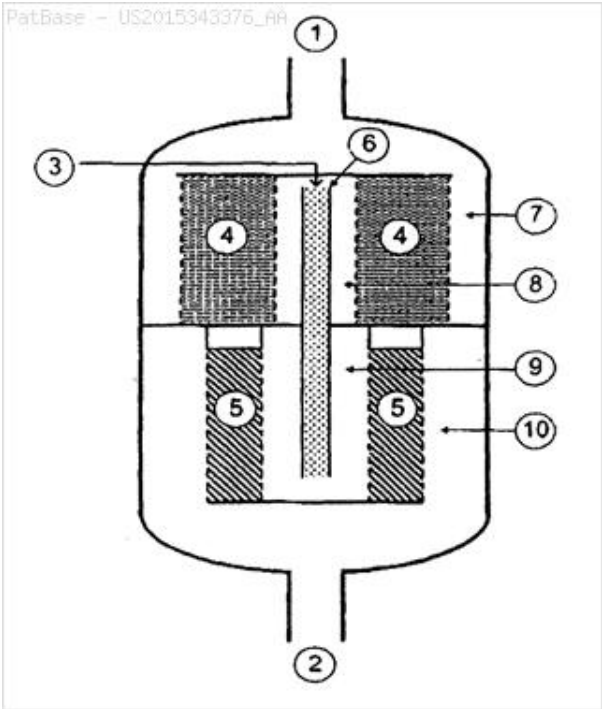
Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Title: ELIMINATION OF AMMONIA AND LOWER ALKANES AND/OR HYDROGEN FROM WASTE GAS STREAMS IN INDUSTRIAL PLANTS

Abstract: Source: US2015343376A Methods for the combined elimination of both ammonia and lower alkanes and/or hydrogen, which are contained in one or more waste gas streams in an industrial plant, are disclosed herein. The method is effectuated by combined oxidation and reduction according to the reduction-oxidation process, wherein the ammonia and the lower alkanes and/or hydrogen are completely or partially reacted by chemical reaction to form nitrogen, carbon dioxide and water. The waste gas stream containing ammonia and lower alkanes and/or hydrogen is passed over one or more catalysts for the combined oxidation and reduction, and the oxygen content in the waste gas stream is set in such a way that ammonia and the lower alkanes and/or hydrogen are oxidized first in an oxidation zone to form nitrogen, carbon dioxide and water, and the nitrogen oxides resulting therefrom are subsequently reduced in a reduction zone to form elemental nitrogen.

Classifications:

International (IPC 8-9): B01D53/58
B01D53/72 B01D53/86
C07C273/04 (Advanced/Invention)
CPC: B01D2251/102 B01D2251/11 B01D2251/202 B01D2251/208 B01D2255/1021 B01D2255/1023 B01D2255/1025 B01D2255/106 B01D53/864 B01D53/8671 B01D53/869 B01D2257/108 B01D2255/30 B01D2255/50 B01D2255/207 B01D2255/2092 B01D2257/7022 B01D53/8634 B01D2257/406



Family:

Publication number	Publication date	Application number	Application date
DE102013000013 A1	20140703	DE201310000013	20130102
US2015343376 AA	20151203	US20130759097	20131220
WO14106533 A1	20140710	WO2013EP03900	20131220

Priority:

DE201310000013 20130102 WO2013EP03900 20131220

Probable Assignee: THYSSENKRUPP INDUSTRIAL SOLUTIONS AG

Assignee(s): (std): THYSSENKRUPP IND SOLUTIONS AG ; THYSSENKRUPP IND SOLUTIONS GMBH

Assignee(s): THYSSENKRUPP INDUSTRIAL SOLUTIONS AG ; THYSSENKRUPP INDUSTRIAL SOLUTIONS GMBH

Inventor(s): (std): MUELLER IVO ; SCHWEFER MEINHARD

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

INFORME DE BÚSQUEDA DE PATENTES PARA EL No de Radicación: 14-132579						
CRITERIOS PARA LA BÚSQUEDA (anexar pantallazo o reporte en PDF, junto con los boleanos utilizados)						
Palabras clave utilizadas		Method for reducing nitrous oxide, catalytic, device for reducing the nox.				
CLASIFICACIONES INTERNACIONALES UTILIZADAS PARA LA BÚSQUEDA		B01D53/86				
BASES DE DATOS CONSULTADAS.						
ESPACENET		Patent scope		Patbase		USPTO
JPO						
INFORMES DE EXÁMENES REALIZADOS EN OTRAS OFICINAS (documentos patentes, literatura no patente etc...)						
Oficina	Fecha del examen o de reporte de búsqueda de documentos	Anterioridades encontradas para el examen o reportados en el examen de búsqueda(relacionarlos todos)	Reiv. afectadas	RELEVANCIA (requisito que afecta)	FUERON TENIDOS EN CUENTA PARA EL EXAMEN EN LA OFICINA COLOMBIANA	
					SI	NO
WIPO	03/07/2013	Selective catalytic reduction of N2O US2002127163	1-5, 8-10, 12-19	Novedad	X	
		Catalyst for removing nitrous oxide in exhaust gas JPH06126177	1-5, 8-11, 13-17	Novedad		X
		catalyst for decomposing N2O, its use and method for the production thereof WO0158570	13-17, 19	Novedad		X
		Method for the simultaneous removal of nitrogen oxides and laughing gas from a gas stream containing nitrogen oxides and laughing gas WO02060563	1-19	A		X
DOCUMENTOS ADICIONALES ENCONTRADOS POR EL EXAMINADOR DE ACUERDO A LOS CRITERIOS DE BÚSQUEDA.						
Method for reducing nitrous oxide in gases and corresponding catalysts WO9964139						
Method For Reducing the Nitrogen Oxide Concentration in Gases US 20080241034						
Catalytic exhaust gas treatment apparatus US 3733181						
Method and device for reducing the nox and n2o of gases WO03105998						
Installation for treatment of fluids comprising multiple beds of particles supported by a separation grid EP1022056						
Denitrification method US 20050244320						
Method for the removal of nox and n2o from the residual gas in nitric acid production US2003143142						
catalyst for decomposing n2o, its use and method for the production thereof WO0158570						
catalyst for removing nitrous oxide in exhaust gas JPH06126177						
Observaciones						
Fecha del reporte de búsqueda:		29/04/2016				

Patent US3733181 - Catalytic exhaust gas treatment apparatus

US 3733181 A

ABSTRACT available in

IMAGES (5)

Publication number US3733181 A
Publication type Grant
Publication date May 15, 1973
Filing date May 14, 1971
Priority date May 14, 1971
Also published as DE2306471A1
Inventors J Tourtelotte, Fisher J Villiers
Original Assignee Chemical Construction Corp
Export Citation BibTeX, EndNote, RefMan
Referenced by (43), Classifications (47)
External Links: USPTO, USPTO Assignment, Espacenet

DESCRIPTION (OCR text may contain errors)

CLAIMS available in

y 1973 J. F. TOURTELLOTTE ET AL 3.

CATALYTIC EXHAUST GAS TREATMENT APPARATUS 5 Sheets-Sheet 1 Filed May 14, 1971 Q Q DUWN DQDOO \$0 0
QO D O 0 wo o u tw OB D00 JOHN F TOURTELLO-TTE JOHN F. VILLIERS-FISHER I N VENTORS AGENT May 15,
1973 J. F. TOURTELLOTTE AL CATALYTIC EXHAUST GAS TREATMENT APPARATUS 5 Sheets-Sheet 2 Filed May
14, 1971 F I G 2

JOHN E TOURTELLOTTE JOHN E VILLIERS-FISHER INVENTORS

BY T

A G E N T May 15, 1973 J. F. TOURTELLOTTE ETAL 3,733,181

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WO03105998 (A1)

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INPADOC legal status

INPADOC patent family

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Bibliographic data: WO03105998 (A1) — 2003-12-24

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METHOD AND DEVICE FOR REDUCING THE NOX AND N2O OF GASES

Page bookmark WO03105998 (A1) - METHOD AND DEVICE FOR REDUCING THE NOX AND N2O OF GASES

Inventor(s): SCHWEFER MEINHARD [DE] GROVES MICHAEL [DE] SIEFERT ROLF [DE] MAURER RAINER [DE] ±

Applicant(s): UHDE GMBH [DE] SCHWEFER MEINHARD [DE] GROVES MICHAEL [DE] SIEFERT ROLF [DE] MAURER RAINER [DE] ±

Classification: - international: B01D53/86; B01J19/30; B01J29/06; B01J29/08; B01J29/18; B01J29/46; B01J29/85; B01J29/70; B01J8/00; B01J8/02; B01J8/04; B01J23/14; B01J29/24; B01J29/68; B01J29/76; (IPC1-7): B01D53/86; B01J19/30; B01J29/06; B01J8/02; B01J8/04
- cooperative: B01D53/8628; B01J29/08; B01J29/18; B01J29/46; B01J29/65; B01J29/707; B01J8/008; B01J8/0411; B01J8/0413; B01J8/0453; B01D2255/20738; B01D2255/50; B01D2257/402; B01D2257/404; B01J2208/00539; B01J2208/00849; B01J2208/025; B01J29/14; B01J29/24; B01J29/68; B01J29/7615; Y02C20/10

Application number: WO2003EP06051 20030610

Priority number(s): DE2002126461 20020613

Also published as: DE19226461 (A1) EP1515721 (A1) EP1515791 (B1) ES2369078 (T3) ES2391380 (T3) → more

Abstract of WO03105998 (A1)

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The method comprises the following steps: conduction of the gas containing N2O and NOx over a series of two catalyst beds consisting of one or more zeolites charged with iron; addition of a reduction agent for NOx between the catalyst beds; setting of a temperature of less than 500 DEG C in the first and second

